

JPM A 01 080  
7/1809

FINAL REPORT

ICES/ICRW RESEARCH PROJECT ON MATERNAL NUTRITION AND HEALTH  
STATUS OF FEMALE TEA PLANTATION WORKERS IN SRI LANKA -  
A CASE STUDY OF THE NUWARA ELIYA DISTRICT

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This report was produced by the International Centre for Ethnic Studies, Kandy, Sri Lanka with support from the International Centre for Research on Women through Cooperative Agreement # DAN-1010-A-00-7061-00 with offices of Nutrition and Health of the U.S. Agency for International Development

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## PREFACE

The present study looks at a group of women through the perspective of maternal nutrition and health care. The sample is drawn from an identifiable geographical entity and the study seeks to capture the multi-dimensional factors that affect an important stage in a woman's life.

The field survey component formed the fundamental basis of the study. We were fortunate in obtaining the services of a set of educated young people, who were able to establish a rapport with the respondents of the field survey. Despite the uncertain civil conditions that prevailed in the country during the study period, we were able to keep to our target time-frame due to the willingness and enthusiasm of the field investigators and the chief field coordinator.

My debt to the many individuals who gave their time, energy, wisdom and counsel to see to that this study became a reality is too numerous to acknowledge individually. Some of them however, cannot go unmentioned. Prof. Kingsley de Silva, Executive Director of the International Centre for Ethnic Studies, Dr S.W.R. de A. Samarasinghe, Associate Director of the International Centre for Ethnic Studies gave us valuable intellectual support through the many stages of the study and made available to us all the institutional facilities through the ICES. I am very grateful to them.

Dr Judith Timyan and Ms Geeta Rao Gupta of the ICRW took a keen interest in the study and were always ready to give us useful comments on earlier drafts. We are deeply appreciative of their support.

Dr R.S. Perera, Director of Welfare of the State Plantation Corporation (SLSPC) and Dr D.R.R. Bandara, Director of Welfare, Kandy Region of the Janatha Estate Development Board (JEDB) not only facilitated our field survey in the plantations under the management of the SLSPC and the JEDB but also helped us in many ways to complete our study. We are very thankful to them. I wish to thank the Chairman of the SLSPC and the JEDB for granting us permission to undertake the field survey in the plantations under the management of the two boards.

I wish to thank Dr Zuhair for the wonderful work he did for us as the statistical consultant and Dr Malini Udupihilla for the thorough clinical examinations she conducted. I thank Ms Indu Illeperuma, Ms Anomi and Ms Sakuntala who assisted us with computer data entry.

Collaborative research is never very easy unless 'like-minded' people are involved. I was very fortunate to work with the principal researchers of the calibre of Prof. Sirima Kiribamune and Dr Wijaya Jayatilake. We were always able to work as a team and without their unstinting support this study would not have been a reality. I am deeply grateful to them.

I owe a special word of thanks to our research assistant, Ms Nishadi Ranasinghe for very efficiently looking after the "nitty gritty" administrative aspects of the research project, so that we could get on with the actual research. To the young staff of the ICES, Nalini, Kanthi, Sepali, Eranganie, Seela, Bernadine, Chalani, Tilak, Samarakone and Kusum I am thankful for the support they gave us.

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7th July 1989.

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## FINAL REPORT

# MATERNAL NUTRITION AND HEALTH STATUS OF INDIAN TAMIL FEMALE TEA PLANTATION WORKERS IN SRI LANKA - A CASE STUDY OF THE NUWARA ELIYA DISTRICT

## Chapter 1

### Introduction

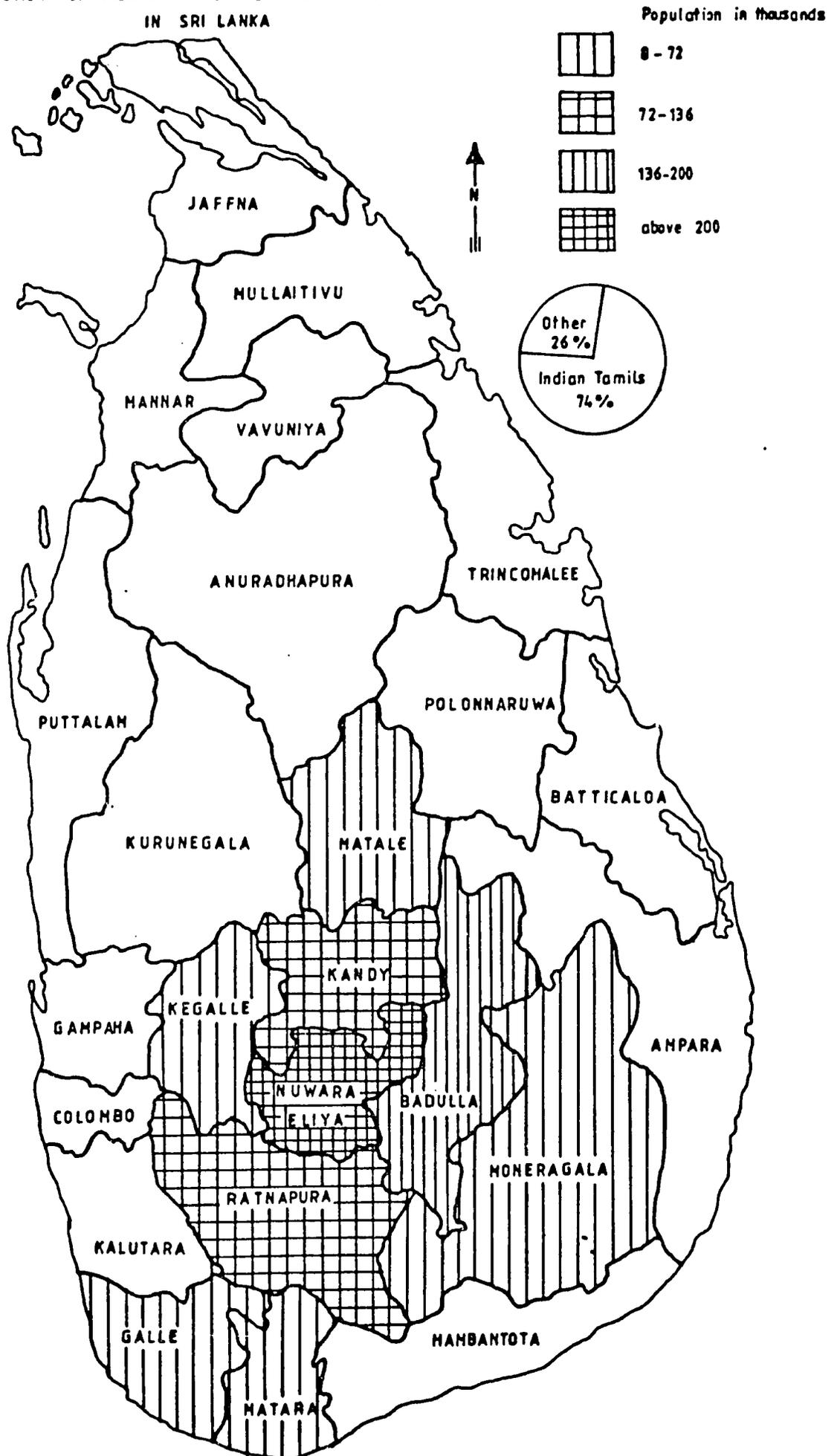
#### 1.1 General Background

The annual GNP per capita for Sri Lanka in 1988 was \$ 400 (World Bank, 1988). However, for a country which is listed among the 37 'low-income' countries of the world, its record of a relatively high level of the physical quality of life is quite remarkable (see Sen, 1981, Samarasinghe, 1989a). Nearly one half of Sri Lanka's estimated population of 16.4 million are females.<sup>1</sup> Gender specific aggregate statistics which reflect the diffusion of welfare among the female population of Sri Lanka reveal that they have benefitted to a great extent from state-sponsored welfare measures adopted by successive governments since the 1930s. While the maternal mortality rate has declined sharply over the years, the female literacy rate has increased and is fast catching up with male literacy. The infant mortality rate has also shown a sharp drop indicating among other things, better levels of nourishment for pregnant mothers and better access to a pre and post-natal health delivery system.<sup>2</sup> Life expectancy at age one in Sri Lanka is better among females

compared to males. On the other hand access to wage employment for Sri Lankan females is very low compared to males, unemployment among females is higher and in common with many other agricultural societies the female contribution in households and family farm production is ignored in official statistics (Jayaweera and Jayawardena, 1985; Samarasinghe, 1989b).

Hidden underneath the national aggregates are deviant groups who display "off-curve" characteristics. Indian Tamil plantation workers<sup>3</sup> are one such easily identifiable group. They form a separate official census category and account for 5.6 per cent of the total Sri Lankan population.<sup>4</sup> Nearly 80 per cent of this group live in cash crop plantations.<sup>5</sup> A vast majority among them (80 per cent) live and work in tea plantations. Tea is the principal plantation crop in Sri Lanka and the main source of foreign exchange. The tea crop accounts for 223,000 hectares (10 per cent of the total cultivated area of Sri Lanka) and employs 400,000 people (16 per cent of the total labour force). More than 70 per cent of the acreage under tea is located in the central highlands of Sri Lanka above an elevation of 2000 feet above sea level. The heaviest spatial concentration of tea plantations is in the Nuwara Eliya district which forms our main field study area. The Indian Tamil plantation workers being mainly employed in the tea sector, show a distinct spatial concentration among the central highland districts, especially the Nuwara Eliya district<sup>6</sup> (see fig. 1).

Fig.1  
 DISTRIBUTION OF INDIAN TAMIL TEA PLANTATION WORKERS  
 IN SRI LANKA



## 1.2 Characteristics of the Female Indian Tamil Population

The 'off curve' characteristics of the Indian Tamil group is relatively more visible among the females than males, compared to male female distinctions in other ethnic groups. This is mainly due to the fact that the female Indian Tamil group has a very high wage employment rate compared to all other female groups, while their status in relation to female-specific welfare indicators such as maternal health is lower, compared to other groups. The female labour force participation rate among the Indian Tamils stood at 54.3 per cent in 1981. The rural non-estate female labour force participation was 17.7 per cent for the same year. When the pattern of regional variation is scrutinized for female labour force participation rates among the eight districts which record a female labour force participation rate of 15 per cent or more, six of them have tea plantations with Indian Tamil female plantation labour. Among them Nuwara Eliya district records the highest percentage figure for female employment in Sri Lanka (Samarasinghe, 1989b).

Although the Indian Tamil women have better access to wage employment their physical quality of life as revealed by welfare indicators is well below the national average. The maternal mortality in the main tea plantation areas where the Indian Tamil population predominates is given below.

Table 1

Maternal mortality rates of the main tea plantation districts where Indian Tamil population is concentrated (per 1000 population, selected years)

	Percentage Indian Tamil	Years				
		1972	1974	1976	1979	1980
Nuwara Eliya	52.3%	2.3	2.4	3.1	1.4	1.0
Kandy	24.1%	2.2	2.6	2.0	1.2	1.0
Badulla	17.8%	2.0	1.4	1.4	0.9	1.0
Ratnapura	17.1%	1.1	0.8	1.8	1.2	1.0
Kegalle	9.4%	1.1	1.7	1.5	0.6	0.4
Sri Lanka	5.6%	1.3	1.0	1.0	0.8	0.6

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Source: Dept. of Census and Statistics, 1987

Nuwara Eliya district has consistently recorded an above average maternal mortality rate. It has the highest percentage of Indian Tamil plantation workers. The same pattern is seen in infant mortality rates (Table 2). The lower health status of the Indian Tamil plantation population is also illustrated by their lower life expectancy at age one. Female life expectancy is lower than male life expectancy for Nuwara Eliya.

Table 2

Infant mortality rates in the main tea population districts (per 1000 live birth) (selected years)

	1972	1974	1976	1979	1980
Nuwara Eliya	85	119	100	79	74
Kandy	66	92	61	60	55
Badulla	59	73	51	57	47
Ratnapura	61	66	64	55	43
Kegalle	49	60	51	33	31
Sri Lanka	46	51	44	38	34

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Source: Dept. of Census and Statistics, 1987.

Table 3

Life expectancy at age one 1971, 1980 in  
predominantly tea plantation districts

	1971		1980	
	Female	Male	Female	Male
Nuwara Eliya	55.1	56.1	64.6	64.71
Kandy	62.2	60.6	68.28	65.05
Badulla	61.9	61.2	67.26	65.08
Ratnapura	63.4	63.8	69.21	68.52
Kegalle	69.0	66.8	73.30	70.77
Sri Lanka	67.1	64.2	71.7	67.8

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Source: column 1 - Table 4 mortality and morbidity in Sri Lanka, S.L.N. Rao in Population Problems of Sri Lanka, Demographic Training and Research Unit Colombo.

column 2 - Dept. of Census and Statistics unpublished data 1987.

The Indian Tamil plantation population records the lowest levels of literacy for the country (males and females). Only 66.9 per cent of this population group were literate compared to 88.4 per cent for the Sinhalese and 86.9 per cent for the Sri Lanka Tamils. Among all males in Sri Lanka the Indian Tamil group has the lowest literacy rate with 78.6 per cent while among females the Indian Tamils record the lowest rate among all groups with 55.1 per cent. The widest gender gap in literacy among all ethnic groups in Sri Lanka is also seen within the Indian Tamil plantation group.

### 1.3 Historical Background

The 'off curve' characteristics of the female Indian Tamil plantation population reflects a 'separateness' from other

Sri Lankan groups, especially the majority Sinhalese and the minority Sri Lankan Tamil groups. This separateness of the Indian Tamil group owes much to the genesis of the plantation structure itself and to the nature of its subsequent evolution up to present times.

Coffee and later tea plantations introduced by the British in the 19th century brought in a new dimension to the economy of Sri Lanka. The plantation economy was structured as a large scale organised sector based on an export oriented cash crop targetted for profit maximization. The labour input was explicitly wage oriented. The plantations were physically separate and isolated from the native population. The relatively large input of labour required was recruited from south India since the native Sinhalese for various reasons were reluctant to join the labour force (Roberts, 1973, Bandarage 1983, Wesumperuma, 1986). In the late 19th and early 20th centuries tea plantation labour was recruited from the economically depressed classes of south India, mostly from the Adi-Dravida or 5th caste, a group recognized as socially "inferior". Also among the labour recruits on the plantations were agricultural workers of the 4th caste such as "Vellalas" who had higher ritual status than the Adi-Dravidas. The Vellalas played the leadership role of "kanganys" or supervisor of labour gangs, and plantation management contracted them to bring over new labour recruits from south India. The labour gangs were under his management and depended on him for work and sustenance. The scheme of

recruitment was to bring entire families and females and children were also given employment in the plantations. The governors' dispatches during the colonial period consistently refer to them as "coolies" and their dwellings in the newly opened plantations as "coolie lines".<sup>7</sup> From the very outset of recruitment a household/family was considered to be a single unit and wage payments, food rations and basic living accommodation were provided for that unit. It suited the early planter community to view women and children as cheap supplementary labour and even calculated their earnings as part of a 'family wage'. Indian Tamil female workers were seen as "secondary earners" in relation to male breadwinners, although they constituted in their own right an important segment of the productive labour force of the tea sector. In fact, until an amendment to the Estate Indian Labour Ordinance was introduced in 1978, the employer could terminate a married woman's services, if the management decided to lawfully terminate her husband's employment.

It was not in the interest of the capitalist management structure during the colonial period or immediately afterwards to offer anything beyond the minimum standard of living for the immigrant labour. Since labour had to be residential, they were provided with barrack type line-rooms and minimum food rations, (mainly rice) as part of their wages. Wages were kept at a minimum. Health care facilities were very poor. Education was not considered a necessity (see Wesumperuma, 1986; Roberts, 1973; Chatopadya, 1979). When Sri

Lanka (known as Ceylon then) won independence in 1948 from the British, nearly 100 years since their original recruitment, the Indian Tamils could be identified as a polarized group, who enjoyed high employment rates, low wages and had a low standard of living.

#### 1.4 Political Process

One of the most important factors that led to diffusion of egalitarian social welfare measures in Sri Lanka is the introduction of universal adult suffrage in 1931. With an elected parliament since independence in 1948, the bulk of the spread of free education (from kindergarten through university), free health services and food subsidies reached increasing numbers of people in Sri Lanka. However, in 1948, the Indian Tamils were disenfranchised and hence effectively debarred from the political decision-making process. Consequently, this group was ignored by the elected representatives of parliament who owed allegiance to the voters. Thus egalitarian social welfare measures which led to the democratization of education and the wider spatial distribution of health services bypassed the Indian Tamils who were spatially concentrated in selected areas. Although the agreements reached in the 1960s and 1970s<sup>8</sup> brought in a large majority of Indian Tamils into the mainstream of political life, the gap created earlier between this group and the others in Sri Lanka could not be bridged over a short period. Hence the immediate post-independence political process contributed to the social welfare disparities

observed between the Indian Tamil group and the other Sri Lankan groups.

### 1.5 Geographical Separation

The historical and the political process outlined above combined with certain economic and geographical factors, gave the Indian Tamil group a distinctive "separateness" which inhibited any interaction with areas outside the geographical boundary of the plantations. Each plantation consisted of a highly organised hierarchical system ranging from management to labour. They resided within the perimeter of the plantations. The basic needs of the labourers - as perceived by the management, i.e., food rations, health care, shelter, water, sanitation and education were the responsibility of the management. Isolated within the spatial area of the plantations and separated from the Sinhalese population by language, religion and ethnicity,<sup>9</sup> their interaction with non-plantation segments of society outside the geographical areas of the plantations is either minimal or totally non-existent. As noted earlier, historical processes and more contemporary political processes led to a lower social and welfare status for the Indian Tamil population in Sri Lanka. The absence of interaction with other communities no doubt further inhibited any transfer of the positive aspects of welfare which benefitted other groups in Sri Lanka. The physical mobility of Indian Tamil people is mainly within the plantation areas.<sup>10</sup> Thus it seems that the lack of interaction with other communities is the result of their

ethnic and language differences with the neighbouring Sinhalese, the distinct economic activity they are engaged in which necessitates a residential labour concentration and the overall geographical exclusivity of the plantation area itself. Their lack of exposure to a world outside the tea plantations would have contributed towards a perpetuation of a distinct "culture of poverty".

In terms of welfare indicators, the performance of the Indian Tamils as a group is low, compared to other ethnic groups in Sri Lanka. However, it has been noted that within the geographical area of plantations in the central highlands there are small pockets of Sinhalese villages which are worse off than the plantation communities (Goonatilake, 1978). These are also deviant groups. Nevertheless, as a single homogeneous group the Indian Tamil plantation group has a lower level of 'physical quality of life' than any other single group. One researcher has also noted that higher infant mortality rates recorded in plantations may be due to higher rates of reporting. He contends that while still births may go unregistered in rural non-estate areas, they may be artificially high on plantations due to registration of miscarriages as still births in order to enable the women workers concerned to claim maternity benefits (Fernando, 1969). However, the fact of the matter is that whether it is foetal loss or still birth, it affects the mother's health. Our concern is with the total maternal health status of the female Indian tea plantation workers.

## 1.6 Women's Status in Society and its Impact on Maternal Nutrition and Health Care: Some Key Issues

The subject of the present research study is a selected sample of Indian Tamil female tea plantation workers of Sri Lanka who are mainly tea pluckers<sup>11</sup>. As noted in the preceding section, female plantation workers belong to the unskilled labour category. They are employed at a pre-determined wage by two semi-government management boards of Sri Lanka known as the Sri Lanka State Plantation Corporation (SLSPC) and the Janatha Estate Development Board (JEDB).<sup>12</sup> In probing the maternal nutrition and health status of the tea plantation workers, while we lay emphasis on the pre-natal and post-natal nutrition and health care of the woman, we also attempt to identify the many facets of her life as a female plantation worker in order to understand the totality of forces that affect her ability to produce a healthy infant, while retaining her own health.

During the period of pregnancy the quality and quantity of food nutrients a woman consumes should increase (see Harmish and Munro, 1981). It is estimated that 500 to 600 extra calories above the norm should be consumed during the pregnancy and lactation periods. However, it is evident that in many poor societies, especially in South Asia women do not get the required quantity or quality of food to guarantee her health or that of her baby (see Chen, Haque and D'Souza, 1981). While poverty is often cited as the main cause it is

also argued that cultural food taboos and the secondary status given to women in society have caused a sacrificial value system with respect to their food consumption. Generally males are served first and females subsequently. If the quantum of food available is limited, women may get less than required. Given the fact that in many poor societies women are subject to frequent pregnancies and associated lactation, the food consumption habit is not known to change to ensure better nutrition during the pregnant and lactating periods. Furthermore, there has been little or no study of the possible effects of reducing human energy expenditure on maternal welfare or in other words of reducing the overwhelming drudgery of poor women.

While nutrition plays a key role in maintaining the health of the baby and ensuring the birth of a normal weight baby, pre-natal and post-natal maternal welfare depends on access to a health care delivery system. Such health care systems are usually institutionalized. Constant monitoring of the pregnant woman during the pre-natal period for (a) anthropometric measures (height, arm circumference and weight) and (b) biochemical measures (hematocrit level) would indicate the pregnant mother's needs for extra nutrition. Such a system of monitoring would indicate iron deficiency, the primary cause of anaemia in a pregnant woman, which can have adverse effects on the mother and the foetus, and also decrease the work capacity of the human population (White, 1980). Furthermore the health care delivery system should

also ensure access to a clinically sterile baby delivery system which would reduce both maternal mortality and infant mortality. During the post-partum period, when she is lactating, it is equally important that she receives nutritional supplements to ensure that her health is maintained. Recovery from child birth also calls for a rest period from work.

In reality a woman's access to better nutrition and health care during pregnancy and lactation is dependent on the attitude of society to the general well-being of females. In many contemporary societies women's well-being is directly linked to the level of resource generation and her less than equal access to income generating resources.

Males who have had better access to resources are generally known to control women. The decision-making powers they enjoy ensure overall social empowerment as well. The historical antecedents of gender subordination is well documented (see Lerner, 1986). In contemporary society it cuts across nations, classes, regions and races (Sen and Grown, 1987). Women's subordinate role is well reflected, especially in third world agricultural societies where her significant contribution to the survival of human society is generally ignored (see Dixon-Muller, 1985; Beneria, 1982; Boulding, 1977).

Gender subordination reflects a psychological and social reality upon which each society in general rationalizes gender divisions and sex-roles. Access to income generating

resources for women could not be expected to automatically activate in all societies a string of impulses that would lead to a better level of well-being for herself or her household. While the accepted social reality of one society may lead males to consider such females a mere resource that they ultimately control, in another society female incomes may ensure better well-being for herself and her family as suggested in the studies by Kumar and Guyer (see Kumar, 1971; Guyer, 1980).

Associated closely with the incidence of gender subordination and its impact on women's well-being is the class structure. While gender subordination is visible across the entire class structure, women in the lower classes, faced with severe problems of economic survival, have to undergo much hardship in meeting the basic needs of their households. Although such women may have equal access to remunerated wage labour as males, they are often allocated more labour intensive, poorly remunerated tasks which would often involve longer hours of work as well. The women would neither have the skills nor the political bargaining power to seek better employment. Furthermore, despite their time consuming wage employment schedule, women are expected to fulfil the societal expectations of looking after the home and children. Caught between the demands of wage work and domestic chores performed at low levels of household technology, women would have to decide individually, the priority claims on her "time". Since wage work is essential

for the very survival of the household, "other work" assumes lower priority. Furthermore it is not surprising that her personal welfare, especially health would be allocated the lowest priority in relation to "time available".

The unquestioning acceptance of a value system which imposes relatively greater burdens and responsibilities on women may be linked to their illiteracy and lack of educational attainment. It has been repeatedly acknowledged by policy makers that the spread of education among both men and women should be a fundamental strategy for the upliftment of the status of women in poor third world societies. Education imparted through a system of formal education could affect women primarily in two ways. First by providing a variety of skills demanded by the modern labour market, their wage employment opportunities may be expanded. Second, by drawing girls from the only environment they know, i.e., home, to a different environment of schools they would be exposed to a wider world of learning which relies more often on logical reasoning. Exposure to a wider world of learning would undoubtedly increase their desire for a better life and stimulate and strengthen their decision-making in areas that affect them most, i.e, control of their earned incomes, fertility control, maternal and child care nutrition and aspirations in terms of employment. Unskilled female wage labour has either no education or very minimal levels of education. Hence in the absence of skills they are forced to accept the inevitable manual labour for survival. At the same

time they would also be more prone to accept the value system which continues to subordinate them since they would not have the opportunity to be exposed to any other.

The scrutiny of the level of material welfare cannot be divorced from the economic, social and cultural forces that pervade society. Although the child-bearing capacity of women is glorified in Asian society, society's attitude towards the pregnant and lactating mother, as reflected in the care bestowed upon her reflects in general the subordinate position she holds as a female.

## Chapter 2

### · Research Design, Methodology & Hypotheses

#### 2.1 Objectives of the Study

Aggregate statistics suggest that the Indian Tamil female plantation workers are a deprived group who need the urgent attention of policy-makers and others concerned with the alleviation of poverty and improvement of welfare in Sri Lanka. The general objective of the study was to examine in detail the determinants of maternal nutritional and health status of female Indian tea plantation workers in Sri Lanka.

In the first instance the study has an exploratory goal whereby it seeks to examine the nutritional and health status of the selected sample population. Secondly, it will examine how the behaviour of certain factors affect the nutritional and health status of the sample population. The factors identified are as follows:

- a) Income level and control of income
- b) Working conditions
- c) Socio-cultural activities in the community and in the family reflecting women's status
- d) Family demography
- e) Health care delivery system
- f) Food habits
- g) Special maternal nutritional programmes
- h) Morbidity
- i) Dwelling environment
- j) Literacy and educational attainment

Thirdly, based on the above factors, the study seeks to identify specific policy recommendations to improve the maternal nutritional and health status of the Indian Tamil female workers in the tea plantations of Sri Lanka.

## 2.2 Conceptual Framework and Hypotheses

The standard conceptual framework for the study of social welfare status in a community is largely predicted on the key variable "income" defined to mean the resource flow for "consumption", accruing to an individual or household from all sources (including gifts, government services, subsidies etc.) and in all forms (cash and kind) during a given period of time. The study makes use of the income concept as part of its study framework. However, it clearly differentiates between types of resource flows to an individual whereby "personal income" is defined for the purpose of the study as the cash remuneration received by the sample population and/or the household, for wage work and sale of produce. Resource flows such as state-sponsored health care, educational services and other welfare services will be defined as "welfare services".

The study hypothesizes that the social welfare status of the population is dependent on the entire resource flow ("income and welfare services"). It will go beyond that and hypothesize that an adequate resource flow is not a sufficient condition to improve maternal welfare among Indian Tamil female plantation workers.

The conceptual framework will be expanded to include the following explanatory hypotheses as well.

1. Poor maternal welfare is explained by inadequate personal income leading to malnutrition and inadequate health care.
2. Female earnings, however high they are, may not have the theoretically expected impact on female welfare if female earners do not control them.
3. The subordination of women to men for cultural reasons acts as an impediment to maternal welfare. The secondary status given to females throughout their life span does not see a reversal during periods of pregnancy and lactation.
4. The need to do manual work in the field forces women to neglect nutrition and health care during the pre-natal and post-natal periods due to inadequate rest.
5. The need to work compels women to under-utilize the formal health care system and nutrition support programmes.
6. Family demography (unsatisfactory child spacing, foetal loss, abortions done under unsatisfactory conditions etc.) is not conducive to maternal health and welfare.
7. The unsatisfactory physical dwelling environment leads to poor maternal welfare.
8. Poor personal hygiene results in poor maternal health.

9. The work environment, particularly exposure to chilly weather and rough terrain, leads to illnesses which would have a debilitating effect on the health of expectant women and lactating mothers.
10. The comparatively low level of literacy among Indian Tamil female plantation workers results in inadequate attention paid to maternal nutrition and health care.

In testing the main hypotheses and the supplementary hypothesis the role of the following factors (independent variables) are examined.

- i) Personal income level
- ii) Working conditions
- iii) Socio-cultural attitudes in the community and family as regards the status of women
- iv) Family demography
- v) Health delivery system
- vi) Food habits, food intake
- vii) Special maternal nutrition
- viii) Morbidity

Based on the research findings the study proposes specific policy recommendations for the upliftment of maternal welfare on tea plantations.

### 2.3 Methodology

The research study has obtained data from two sources.

1. Documented data on the plantation economy in general and the Indian Tamil female tea plantation workers in particular.

2. Field investigations on nutritional levels and health status of a selected sample of women in the tea plantation sector.

2.3.1 Field Survey

A. Field interviews based on a carefully structured questionnaire with the wage-earning sample of women to ascertain:

- i) Nature of control over household finances
- ii) Household spending habits
- iii) Quality and quantity of food consumption of the household, particularly among males and females
- iv) Nature of work habits, perceptions of their impact on their health
- v) Nature of the health care delivery system and their perceptions on their efficacy
- vi) The cultural, political and educational perceptions of women as they impact on the access to health facilities and food by women

B. Interviews based on a questionnaire among a selected small sample of males (mainly husbands of the main sample of women) to ascertain:

- i) Nature of employment
- ii) Level of personal income and nature of control of income

iii) Attitudes among the men in relation to their wives working habits, nutritional programmes and health care in general.

C. Interviews based on a questionnaire with the senior management. The managers or superintendents of the plantations are resident in the tea plantations. They head the hierarchy of the employment structure of the plantations and are in overall charge of the welfare of the resident labour who form our main sample. The questionnaire administered to the management was in order to gather information on earnings, working conditions, health and welfare programmes and to gain an insight into the perceptions of the management on the efficacy of welfare programmes for women and the impact of such programmes on health and nutritional status.

D. Interviews with health workers in the tea plantations and estate medical assistants (EMA)/assistant medical practitioners (AMP)<sup>1</sup> in charge of maternity wards of plantations to gather information about the ante-natal and post-natal health and nutritional status of plantation workers.

E. Scrutiny of health records maintained by the plantation health clinic.

F. Individual reports based on their observations submitted by the investigators for each of the plantations visited, on key factors such as food habits, sanitation, plantation women's attitude towards work, education and personal health.

G. Clinical tests performed by the consultant physician of the project to determine the general health status of the women in the sample.

#### 2.4 Geographic Location of the Sample

As noted earlier Nuwara Eliya district forms the main tea plantation district of Sri Lanka where the Indian Tamil group of Sri Lanka predominates. Hence the geographical location of the study area is the Nuwara Eliya District.

Nuwara Eliya district is located in the central highlands of Sri Lanka (see figure 2). Its elevation ranges from 1500' to 8500' above sea level and it belongs to the "wet zone" of Sri Lanka where the annual average rainfall is above 75". The annual temperature ranges from 75<sup>0</sup>F (day time) during April/August to 10<sup>0</sup>F (night time) during December/January. The terrain is mountainous and tea is planted on the mountain slopes.

#### 2.5 Sample Frame and Size

The average extent of a tea estate in the study area is about 400 hectares with a work force of about 1000 people of whom roughly half would be women.

The study was undertaken in 22 estates. The selection was made with a view to representing known variations in terms of access to main towns and in order to ensure as wide a spread as possible over the geographical area of the Nuwara Eliya district (see figure 2).<sup>1</sup> The total female sample was 411.

### 2.5.1 Selection of Sample

A sample of 18 women were to be selected from each plantation chosen for the study. However the actual numbers varied depending on the availability of pregnant and lactating women. In addition to the women, three men from each of the plantations also formed part of the sample. In each of the plantations selected an attempt was made to conform to the following sample size.

#### Indian Tamil

Pregnant women	4
Lactating women	4
Unmarried women (young women)	3
Old women	4
Men	3

Sinhalese women\* 5

Total sample 23

==

\* Resident labour

A plantation usually has many divisions. These are geographical demarcations. The larger the plantations the greater would be the number of divisions. The resident labour works only within his/her own division and the dwelling clusters are located within the

division. In obtaining the sample, efforts were made to obtain a representative sample from all the divisions of a selected plantation, taking into account the numerical strength of the population of each division.

The selection of the sample was undertaken after discussion with the estate medical assistants of each plantation and scrutiny of the census report of the plantation population maintained by the welfare supervisor of the selected plantation. In selecting the sample among pregnant and lactating women efforts were made to take them from among an age range of 17 years to 44 years.

#### 2.5.2 Problems Encountered in Selecting the Sample and Incorporation of Proposed Solutions

While in general, it was possible to adhere to the norms agreed upon on the selection of the sample frame and size, certain changes were made subsequently. The age range among pregnant and lactating women was always not available. While in certain plantations there was a large pool of pregnant and lactating women to choose from, in a few plantations the number available either among pregnant or lactating women was limited. In such cases adjustments were made to incorporate more from among the group that was available.

In certain plantations there were no Sinhalese resident workers at all. In such plantations the sample size is smaller than the norm.

Thirdly, in selecting the sample of older women, we were confronted with the problem of ascertaining their correct age. While the younger population living in the plantations have birth certificates, the older people do not have them. Consequently it was not unusual for a grandmother with a grandson of 15 years and a grand daughter of 32 years and a daughter of 49 years claim that she is only 56 years of age! In such cases, the actual age of the respondent had to be conjectured in relation to important events.

The category of young women was defined to mean those who are unmarried and who live with their parents (average age range 16 years to 25).

The original sample design was structured to incorporate mainly Indian Tamil plantation women, and a few Sinhalese women who are resident workers. The rationale for the inclusion of the Sinhalese women workers in the sample was to probe the variations if any between the two groups who are resident in the same locality in relation to maternal welfare. Subsequently we incorporated into our study a tea plantation in the Nuwara Eliya district, which has a predominantly Sinhalese labour force. This we believe will give us an insight as to whether maternal welfare

norms are different between the two ethnic groups whose employment and resident structure are similar.

Clinical tests were carried out by the consultant physician in twelve of the twenty two estates on the same sample selected for the main questionnaire survey. The clinical tests followed upon the main questionnaire survey, and the selection of the plantations was based on the preliminary scrutiny of the questionnaire survey data, and the observed variations among them.

## 2.6 Field Surveys

### 2.6.1 Stage I - Pilot Survey

The chief research investigator, the field coordinator, assistant field coordinator and an investigator conducted the field survey on Somerset estate in Nanuoya in the Nuwara Eliya district. The original questionnaires which were discussed at a workshop (No.1, September 1988) and subsequently amended were administered to the selected sample population from among the workers, resident health personnel and senior management. The responses were analysed, the questionnaires further amended and codified for computer entry and analysis.

### 2.6.2 Stage II - Main Field Survey

Ten field investigators, 10 females and one male were trained by the three principal research

investigators to administer the questionnaire to the sample population among workers.

All field investigators were from the Kandy district (adjacent to the study area of the Nuwara Eliya district). Being Tamil they spoke the language of the respondents. The original questionnaires which were in English were translated into Tamil.

Field investigations were undertaken first in the plantations which are managed by the Sri Lanka State Plantation Corporation, and subsequently in those plantations under the Janata Estate Development Board.

The respondents of each of the plantations were requested to come to the plantation clinic and the questionnaire was administered to them by the trained field investigators. No other persons apart from babies and little children who accompanied their mothers were there during the interview. The management and health personnel extended their fullest cooperation and facilitated a free discussion uninhibited by the presence of other people. Subsequently, the investigators visited the homes of the respondents to make observations on their dwelling environment.

The resident health and welfare personnel of the estates are (1) EMA, (2) Mid-wife, (3) Welfare supervisor, (4) Creche attendants, (5) Health orderly,

(6) Maternity ward attendants and (7) Line sweepers. They all come under the overall authority of the senior manager (see Diagram I).

Among the health and welfare personnel the questionnaire was administered to the EMA the midwife and welfare supervisor. The questions were all open-ended and facilitated a discussion. This section of the field survey was undertaken by the chief investigators the chief field coordinator and the assistant field coordinator.

The interviews with the resident senior managers were carried out by the chief research investigators.

Half way through the field survey, workshop No. 2 was held to discuss the preliminary feedback from the field investigations. Experts in the field of the plantation economy of Sri Lanka and women's studies drawn from the academia, plantation management boards and independent researchers were invited for the workshop.

The field surveys of all plantations selected for the study were completed by the end of March 1989. Altogether the field survey spanned six months.

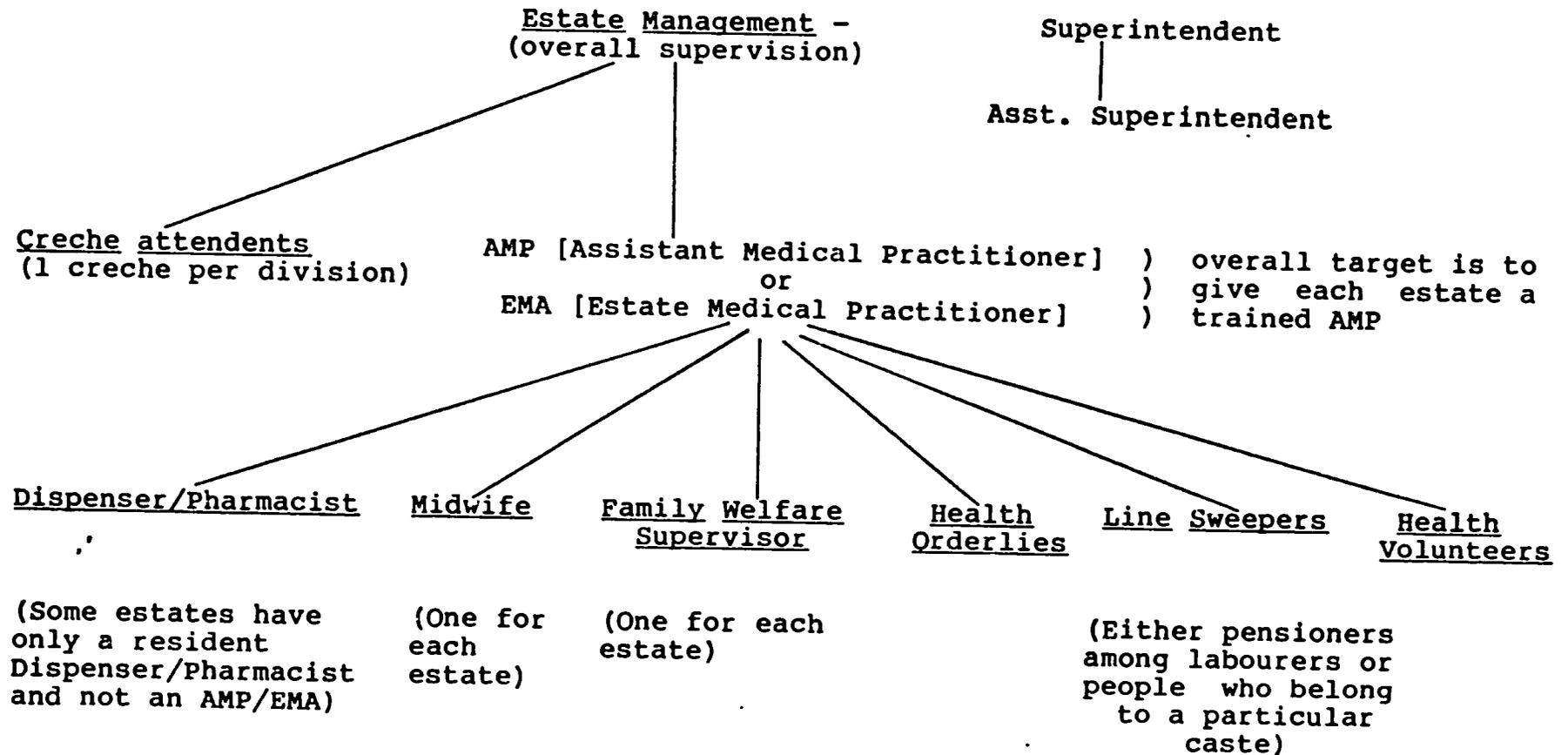
### 2.6.3 Stage III - Field Survey Data

Field survey data obtained are of two types, i.e.,  
i) Qualitative data obtained from open-ended

Diagram I

Estate Health and Welfare (Resident Personnel in each Estate)

Population per estate ranges between 1500-5000 people



discussion from the sample of labourers (both female and male) from resident plantation health personnel and from senior management personnel.

- ii) Quantified data obtained from the questionnaire administered to the labour category and from clinical tests.

#### Analysis of Data

The qualitative data is analysed in relation to predetermined themes and factors. The quantified data is also categorized under the same themes and factors, frequencies obtained and correlations worked out in order to understand relationships between and among factors that contribute towards maternal welfare of the Indian Tamil female plantation workers.

## Chapter 3

### **Analysis of Data: Maternal Nutritional and Health Status (Dependent Variables)**

#### **3.1 Nutritional Status**

Good health and nutrition result from a complexity of interacting factors, one of which is food. The nutritional status of an individual is affected by the quantity and type of foods available in the market or at the household farm level, the ability of the individual or the household to obtain the food available, the motivation of the decision makers of the household to obtain the food and the family and maternal technologies available to use the food to satisfy the nutritional and health needs of the individual (see Mata, 1988, Amarasekera, 1982). In addition, certain groups defined as "vulnerable groups" such as, pregnant mothers and the developing foetus, the infant, pre-school child and lactating woman, need special foods and supplementary nutrients.

#### **3.2 Quality and Volume of Food Consumed**

In this section we seek to establish the quality and type of food intake by the Indian Tamil female plantation workers of Sri Lanka. An attempt will be made to measure the food intake and the resultant caloric and protein consumption against, (a) the accepted norms defined as adequate for the group and (b) against the norms of the rest of the population of the country.

Rice is the staple diet of all Sri Lankans regardless of income or sector. Coconut comes next in calorie contribution

followed by bread, wheat flour, and sugar. The entire group of food items accounts for more than 80 per cent of household caloric intake (Sahn, 1988).

Table 3.1

Share of food quantities consumed, sources of calories per household (1980/81) - All-island per capita per year

Food items -----	Quantities consumed average - all income classes -----	Calorie % -----
Rice (lbs.)	247.1	48.1
Wheat flour (lbs.)	17.7	3.3
Coconuts (number)	97.0	17.9
Bread (lbs.)	43.2	6.3
Condiments (ozs.)	505.3	2.1
Pulses (lbs.)	8.3	1.4
Other grains (lbs.)	2.2	1.3
Meat (lbs.)	4.8	0.5
Fish (lbs.)	27.4	2.3
Sugar (ozs.)	372.0	6.2
Oil (btls.)	4.7	3.7
Roots and tubers (lbs.)	18.6	1.2
Vegetables (lbs.)	80.7	1.4
-----		

Source: Sahn, David (1988) calculated by the author, from the raw data tape of the "1980/81 labour force and socio-economic survey", conducted by the Sri Lanka Ministry of Plan Implementation, Department of Census and Statistics, Colombo.

Indeed taking the total population of the country, there are sectoral and regional variations in the consumption patterns of the main food items, the most significant being the consumption pattern of wheat flour. The average yearly consumption of wheat flour is only 13.7 and 14.0 pounds per capita in the urban and rural areas respectively, while it is 75.2 pounds per capita in estates (Census and Statistics,

1982). For all income levels above Rs 200/= per capita consumption of wheat flour was significantly higher in the plantation sector than in the other two sectors (Central Bank, 1984). The energy content for 100 grams of edible rice or wheat flour is 346 kscal (Ministry of Plan Implementation, 1982).

Rice which is the principal dietary item of all Sri Lankans accounted for an average monthly per capita consumption of 8.4 kilograms in 1981. When disaggregated by sector, i.e., urban, rural and plantation sectors, per capita monthly consumption was 7.3, 8.7, 8.6 kilograms respectively (Central Bank, 1984).

It is evident that in terms of both rice and flour consumption the plantation sector, where the Indian Tamil population is concentrated, has reached a high level. This is borne by the caloric intake variation shown in Table 3.2. Consequently, among the households with inadequate intake of calories and protein, urban and rural sectors have higher levels than the plantation sector.

Table 3.2

Per capita calorie and protein consumption by sector

(1969/70, 1973, 1980/81)

	Total calories	Total protein	Starchy stable ratio	Per cent protein from animal source
	-----	-----	-----	-----
<b>All Sectors</b>				
1969/70	2264	53.8	55	11.9
1973	1936	44.2	-	-
1980/81	2239	52.8	57.3	16
<b>Urban</b>				
1969/70	2161	52.2	53	25.3
1973	1951	45.1	-	-
1980/81	2095	53.4	56.1	22.2
<b>Rural</b>				
1969/70	2268	61.6	55.2	20
1973	1837	57.3	-	-
1980/81	2257	52.3	64	15
<b>Plantations</b>				
1969/70	2459	61.6	58	15.3
1973	2345	57.5	-	-
1980/81	2400	56.9	63	9

Source : J.D. Gavan and I.S. Chandrasekera. The impact of public food grain distribution and food consumption and welfare in Sri Lanka (Washington DC, IFPRI, 1979) 1980/81 Socio-economic Survey, Department of Census and Statistics, 1983; and B. Martines International Labour Organization, Geneva, 1983.

Edirisinghe (1986) using Lipton's criteria of the "ultra poor" (Lipton, 1983) attempts to assess the nutritional poverty at the individual household level. The "ultra poor" households are defined as those failing to achieve 80 per cent of recommended calorie allowance although they allocate over 80 per cent of their expenditure on purchase of food. The highest incidence of ultra poor, as would be expected, is

in the poorest quantile, but the plantation workers fare much better than the agricultural workers who are mainly in the subsistence paddy sector.

Table 3.3

Incidence of "ultra poor" in agriculture

	Among the poorest 20%		Among all household	
	%		%	
	<u>1978/79</u>	<u>1981/82</u>	<u>1978/79</u>	<u>1981/82</u>
General farmers	15.8	17.8	3.0	3.2
Plantation workers	14.0	23.8	3.2	6.3
Agricultural workers	23.8	36.7	10.8	15.4

Source: Edirisinghe, 1986.

A significant factor that emerges in disaggregation nutritional statistics by sector is that the plantation sector taken as a whole has higher calorie consumption and protein consumption than the norm for the country. However, its animal protein consumption is well below the mean for the country.

Table 3.4

Per cent of households with inadequate intake of calories and protein

<u>Categories/year</u>	<u>Calories</u>	<u>Protein</u>	
Urban	1969/70	36.3	45.5
	1980/81	50	35.27
Rural	1969/70	31.7	44.5
	1980/81	43	38
Plantations	1969/70	19.7	19.5
	1980/81	33	28.32

Source : Same as Table 3.2

Household data as shown in the preceding discussion is gender neutral, and no attempt has been made to disaggregate such data by sex. The statistics reveal the acceptance of an assumption that intra-household distribution of food resources is equitable. This is an unrealistic assumption. Women and children are at greater nutritional risk and are often discriminated against (see among others Miller, 1981, 1984, 1989; Basu, 1989, Sen and Dasgupta, 1983, Chen, Haque and D.Souza, 1981). Hence although the household nutrient consumption in the plantation sector is high compared to other sectors, this does not necessarily mean that the share enjoyed by women is adequate or that pregnant or lactating women enjoy extra nutrition.

The average calorie requirement recommended per day for an adult male has been estimated at 3000 and for an adult female at 2,200 (Ratnayake, 1983).

The recommended balanced diets per day for Sri Lankans by age, sex and moderate activity are as follows.

Table 3.5

Recommended balanced diets per day for Sri Lankans by age, sex and moderate activity (edible portions grams per capita per day)

	Adolescents		Adult males		Adult females		Pregnant	Lactating
	Male	Female						
Age (selected)	16-19	16-19	20-29	30-39	20-29	30-39		
Body weight (kg)	51.0	43.8	55	55	47	47	47	47
Total energy giving foods (cereals, nuts, oils, fats, yams)	728	582	746	716	532	532	589	655

Source: Food and Nutrition Statistics, 1982, Food and Nutrition Policy Planning Division, Ministry of Plan Implementation, 1982.

It is noteworthy that the female tea plantation workers do energy sapping manual work which involve long hours as well. Hence the type of diet and volume of food recommended will not be adequate to satisfy their nutritional demands. However, before we proceed to analyse the field data in relation to the consumption of extra nutrients by the pregnant and lactating mothers, it is relevant to point out two nutritional policy measures, which indicate that vulnerable groups in the plantations do not obtain sufficient calories although the entire population group seems to reach the recommended caloric requirements.

In a study undertaken to assess the protein energy malnutrition (PEM) levels of pre-schoolers of Sri Lanka it was estimated that the plantation sector, where Indian Tamils predominate, records the highest incidence of chronic under nutrition and concurrent undernutrition.<sup>1</sup> Furthermore in the Nuwara Eliya district the plantation sector records higher chronic undernutrition and concurrent undernutrition as well.<sup>2</sup> While many factors may determine this phenomenon, including low levels of knowledge of nutritional needs on the part of the mothers and time available to mothers to supply such needs, the fact of the matter is that a vulnerable group from among the plantation sector population does have below average nutritional levels.

The "Triposha"<sup>3</sup> food supplement was formulated to serve the population who were defined as "nutritionally vulnerable" and identified as lactating and pregnant women, infants and pre school children. It was intended to reduce the incidence of protein energy malnutrition, nutrition anaemia and xerophthalmia. Implemented in 1973 its major channels of distribution were the health clinics of the plantation sector, plantation creches, primary schools and certain social service institutions (see Ministry of Plan Implementation, 1984). In terms of the outreach, the major channel of distribution was the plantation sector health clinics. Since 1977 the Sri Lanka health districts of Nuwara Eliya and Kandy have accounted for 15 per cent of the total allocated for pregnant women, and 32 per cent of the total

allocated for lactating women. Among pregnant women the share claimed by Kandy and Nuwara Eliya is second only to the districts of Colombo and Gampaha in the western province which have the largest population densities of the country. As for the share claimed for lactating women it reached 15,912 women in the districts of Nuwara Eliya and Kandy compared to 4591 lactating women reached in Matara which had the second highest share among lactating women. While the relatively higher incidence of triposha distribution in the Kandy and Nuwara Eliya districts, specifically among plantation sector women may be linked to more effective channels of distribution, it also establishes the need for supplementary nutrients on the assumption that such pregnant and lactating women's nutrient intake falls short of the expected norm.

### 3.2 Field Data on Food Consumption

#### General Observations

The sample population of female workers on average ate three meals a day, i.e., breakfast, lunch and dinner. While some women had their breakfast before they set out for work at 7/7.30 a.m., some had their breakfast during the tea break between 9.30 and 10.00 a.m. Most of the women came home for lunch, but did not have more than 30 minutes to prepare and have the meal. Dinner was the main meal which they had around 7/7.30 p.m.

Breakfast consisted of a home cooked roti (similar to pita bread) made out of wheat flour, water and scraped coconut. A roti would be about the size of a dinner plate.

Rotis are generally eaten with a curry and less frequently with sambol (scraped coconut mixed with red chillie powder, salt and lime/lemon juice) or with a banana. The accompanying curry is mainly left-overs from dinner of the previous evening. Breakfast also consists of tea with sugar.

Most of the tea plantation households have roti for lunch. Although rice with one curry is also eaten for lunch, the frequency of consumption of the latter is less. The accompanying curry is either a vegetable curry, curry made out of pulses or a mixed curry with vegetables and pulses.

Dinner is mainly rice with one curry. In some homes two curries are also cooked. The popular vegetable tubers used are those grown in the Nuwara Eliya district such as beet, carrot, turnips, leeks and white potatoes. Pulses used are black gram, green gram, cowpea, Lanka lentils and Masoor lentils.

Animal proteins are very seldom consumed. Most women claimed that beef was repulsive to them. Tinned fish, chicken and mutton (goat meat) were consumed on the days they received their wages. Dry fish was also consumed occasionally. Milk was not a regular item in the diet of adult household members, and egg consumption was also very limited.

### 3.2 Analysis of Field Data on Food Consumption

Food consumption data for the day preceding the interview was obtained from all the female respondents for

all the members of the household. Male respondents were not included since they were husbands of pregnant/lactating/older women categories.

Certain limitations of the data should be noted. In the first instance, the primary data was obtained from the female respondents who were requested to recall the food items consumed the previous day. Making allowance for a degree of misreporting (mainly exaggeration), an attempt was made to reduce such exaggeration by the cross-checking done by the investigators in the discussions when homes were visited which followed upon the interviews. Secondly, our detailed food consumption statistics are only for one day with detailed information with respect to the main meal which is dinner. The tea plantation workers are wage employees and the same seasonality of food availability and scarcity that affect other categories of agricultural workers do not affect them (see Ratliwala, 1985). However, the twice a month wage payment schedule does affect the pattern of food consumption. Interviews were not held on wage payment days since the respondents were not free to be interviewed. The survey time-frame had a spread which reduced any bias favouring lean periods of purchasing power or days immediately following pay days. Thirdly, the quantity of food was roughly estimated on the number of spoons of edible food consumed. Rice was measured in terms of a large serving spoon popularly used in Sri Lanka for serving cooked rice, while the curries were measured in small serving spoons. One large spoon holds

approximately 75 grams of boiled rice and the small spoon holds approximately 15 grams of curry. A cooked roti weighs approximately 100 grams, its uncooked wheat flour content is roughly 75 grams. Fourthly, the emphasis was on obtaining data on the main meal, i.e, evening dinner, which is mainly rice-based. As noted earlier, lunch is mainly roti and curry. Adult females on average consume 1 to 1 1/2 rotis and adult males 1 1/2 to 2 for lunch.

### 3.2.1 Food Habits

48.1 per cent of calories consumed by Sri Lankan families are accounted for by rice (Table 3.1). Per capita consumption of rice by Indian Tamils in the plantation sector is also high (Central Bank, 1984). The consumption level of wheat flour, mainly in the form of roti, among the plantation sector population is far above the average for the country. The ubiquitous curry that the Indian Tamil plantation workers consume is made up of mainly vegetables/tubers mixed with condiments cooked in water/oil/coconut milk (extracted from the kernal of the coconut) or in a combination of all three. The quantity of curry consumed is far less than the quantity of rice (boiled) or flour (roti) consumed.

National macro data suggest that vegetable proteins such as green gram, cowpea, masoor lentils etc. contribute towards the relatively high vegetable protein content estimated to be consumed by the

plantation sector. Our survey revealed that the sample households consume pulses in the form of a single curry only very infrequently. The women interviewed stated that they drop a small quantity of pulses into the main vegetable curry. Discussions on the food purchases revealed that they buy on average 1 kilogram of pulses on each pay day (twice a month). This works out to approximately 66 grams per day for the entire household. Given the fact that a plantation household has 4.6 persons on average, it is reasonable to argue that pulses are used only in small quantities in their diet, mainly to add "taste" to the main vegetable curry.

Among the 132 lactating mothers (LMs) in the sample only 5 (3.7%) had a pure pulses only curry. They each had servings of 2 small spoons. Among the 84 pregnant women (PW) in the sample a total of 3 (3.5%) had such a curry. Among the control group of Sinhalese women (SCW) from a total of 60 women 10 (16.6%) had a curry made of pulses. In the Nuwara Eliya state plantation (NSPC) 98 per cent of the labour force are of the Sinhalese ethnic group. The number of women in the NSPC sample is very small. Among 4 LMs and 3 PWs none had pulses only curry. In fact the consumption pattern of the Indian Tamils in the Indian Tamil predominant plantations and the Sinhalese in the Sinhalese dominant plantations seem to be similar. However, the

minority Sinhalese group in the predominantly Indian Tamil plantations seem to show a different pattern of consumption.

The consumption pattern of animal proteins as revealed in the survey is very low and confirms the pattern observed in the macro data (Table 3.2). While meat was not eaten by any of the respondents for any of the meals recorded in the survey, fish/dry fish was consumed by 6 LMs (4.5%), 7 PWs (8.3%) and 6 of the SCW (10%). Each respondent had one piece of fish/dry fish (approximately 25 grams) cooked in a curry (of water/oil/coconut milk or combination of the three). In the NSPC group only one pregnant woman had fish/dry fish in curry form for any meal during the previous day.

For the entire sample population eggs were consumed only by 2 PW and 2 young women (YW). They were from the Indian Tamil group. Milk was also not a popular item. Some adults drink tea with milk, but the majority of the sample population drink tea without milk but with sugar. Sugar is usually not mixed in the tea. A small portion of sugar is taken in the palm and licked alternately with each sip of hot tea. Tea without milk, but with sugar is a very popular item in the diet of the plantation workers. As for fresh fruits, bananas are occasionally eaten by a few with roti for breakfast. A few individuals in the sample

claimed that they ate margarine with roti for breakfast.

### 3.2.2 Food Consumption Pattern (one day)

Important for this study is the scrutiny of the actual amounts of food eaten by the respondents and a look at the intra-group variations among the women's categories as well as between male and female groups.

Table 3.6

Rice consumption - average one day

(edible portions in spoons - large 75 grams per spoon)

Category	Edible portions	% male quantity over female quantity
-----	-----	-----
[ PW	3.42	
[ Husband	4.5	24%
[ LM	3.57	
[ Husband	4.7	24%
[ YW	3.5	
[ Brother/father	4.3	18.6%
[ OW	3.5	
[ Husband	3.84	14.4%
[ SW	3.58	
[ Husband	3.84	6.7%
-----	-----	-----

Source: Field data

The field data on rice consumption for one day indicate that pregnant women (PW) or lactating mothers (LM) do not come anywhere near the extra quantities recommended for pregnant and lactating women. It is suggested that for Sri Lanka pregnant women should

consume approximately 14 per cent more cereals than the quantity recommended for non-pregnant women in the age range 20-39 years, and that lactating women should consume approximately 27 per cent more cereals than for the corresponding age group of women who are not pregnant or lactating. (Table 6.9, Food and Nutrition Statistics, 1982, Ministry of Plan Implementation, Sri Lanka). Admittedly our main data is for only one meal. However, dinner is the main meal. Breakfast and lunch are more 'scrappy' meals for females since they have to get back to work. Moreover, the quantity of food consumed by PWs and LMs for breakfast and lunch is smaller than the quantities consumed for dinner.

The PW category seem to consume less than all other categories of women while the LM category consume marginally higher quantities than the category of YW or OW. The Sinhala predominant NSPC sample as noted earlier is very small. Generalizations based on such a small sample may not be universally valid. However, field data of the NSPC - Sinhala predominant residential plantation group - suggest that while the PW group consumes even less (3.00 spoons of rice per person) than the same category in the Indian Tamil group, the LM group of the NSPC seems to be consuming more (3.75 spoons of rice per person) than the corresponding LM group among the Indian Tamil group.

Field data on the consumption pattern of vegetables (in curry form) is shown in table 3.6.

Table 3.7

Vegetable/tuber consumption pattern (dinner - one day)  
edible portions in spoons (approximately 20 grams per spoon)

Category	Edible portions	% of male quantity over female quantity
-----	-----	-----
[ PW	1.86	
[ Husband	1.96	3.1%
[ LM	2.06	
[ Husband	2.14	5.6%
[ YW	2.0	
[ Brother/father	2.1	4.7%
[ OW	1.94	
[ Husband	2.0	3%
[ SCW	2.0	
[ Husband	2.0	-

Source: Field data

The quantity of vegetable/tubers consumed is smaller and the male-female difference is negligible.

Women in the plantation sector are engaged in hard manual labour which involves climbing steep slopes with a large basket hanging down their back and secured around the forehead. Tea plucking has to be done, come sunshine, rain or chilly weather. They work

longer hours compared with men, notwithstanding that they consume less food than men. The data suggest that pregnant women do not eat the extra quantities that are medically recommended to ensure the satisfactory development of the foetus and adequate health status of the woman. Lactating women consume more food than pregnant women but the increase is only marginal and cannot be accepted as adequate to maintain for women a satisfactory health status.

It should be noted here that alcohol is consumed by a larger percentage of adult females in the plantation sector compared to non-plantation females. This was revealed during the field survey. In fact alcohol is routinely smuggled into the delivery room of the maternity ward and given to the woman just before the delivery of the baby. It was also stated that lactating mothers were regularly given a dose of alcohol for 30 days after delivery. It is accepted as a standard 'pick me up' following the physical ordeal of child birth.

The state-sponsored food supplement programme known as the "Triposha" programme has been incorporated into the plantation sector. The resident health personnel explained that the foreign funding it depended upon is drying up, and they are unable to provide all pregnant women and lactating mothers with the necessary requirements of supplementary feeding.

The intra-household food consumption pattern reveals that males are favoured in food distribution. This is especially noted in relation to relatively more expensive items of food as dry fish and fish. While 7 PWs had one piece of dry fish/fish each, 8 of the husbands in the group had also dry/fish where the average consumption was 2.8 pieces per person. Among the LMs, while 6 had dry fish/fish of one piece each, 8 husbands among the group had dry fish/fish where the average consumption was 2.23 pieces. Among the SCW 6 women and 6 husbands consumed dry fish/fish and the average consumption was 1 piece for women and 1.1 pieces for men.

The carbohydrate content of the food taken by both men and women is high since rice and flour account for a very high percentage content of a typical meal. Vegetable/tubers cooked in water, coconut milk/oil or in a combination of the three items is consumed for both lunch and dinner. The quantities are much smaller than rice or flour. Pulses are rated third in their diet. Portions consumed are small. Tea and sugar are consumed daily. Although an occasional banana is eaten, fruits do not form a regular item of the diet. Milk is mainly consumed by pre-schoolers and children.

Pregnant women and lactating mothers receive less than the required extra nutrition in terms of additional food quantities at the household level.

Time factor is of crucial importance in understanding the ability of women in the plantation sector to provide the food needs for herself and her family. Household technology available to plantation women is very low. Food preparation in the traditional way is time-consuming and given the wage work schedule of Indian women plantation workers they would tend to 'make do' with minimum amount of time on cooking. Rachael Kurian (1981) discusses in detail the daily life of a female tea plucker. Her work day starts before sun rise. She gets up around 4 a.m. to fetch water and prepare breakfast/lunch, clean the house, get the children ready for creche and/or school. These chores have to be completed before she reports for work at 7 a.m. The morning meal is home made bread (Roti) with a watery curry and tea. The tea pluckers work in groups and keep filling the baskets with tea leaves until the tea break at 9.30/10.00 a.m. The lactating mothers visit the creche to nurse the babies. Resuming work after about half an hour she keeps plucking until 12.30 or 1.00 p.m. She takes the load to the weighing shed, visits the creche, nurses baby, goes home for the mid-day meal which she cooks the previous evening. She is back again in the field at 2 p.m., plucks tea until 4.30 p.m. She takes the load to the weighing shed and waits her turn. She visits the creche to collect the children and gets back home around 5.30 in the evening. She starts the

evening chores, cleaning the house, washing clothes, preparing the evening/mid-day meal, feeding the children, cleaning them up and getting them ready for bed. She is the last to go to bed around 10 or 10.30 p.m. She usually sleeps on a mat or a gunny bag spread on the floor. There is usually only one string cot in the one-roomed line room which is used by the husband. She is free on Sundays and she is entitled to a few days paid leave. However, during the heavy season for tea plucking (May to July) she goes to work even on holidays to earn double the normal rate for "over kilo" plucking.<sup>7</sup> Her work involves climbing steep slopes, being exposed to rain, chilly winds and hot sun. She carries a weight of up to 20-25 kilos in a basket strapped to her back.

Her daily work schedule is long and hard. Consequently, while the time left for cooking is very limited she will also be very tired at the end of the day. A typical meal (dinner) consists of rice with one curry. Being Hindus, some of the Indian Tamil plantation workers avoid eating beef, but this is not a strictly observed taboo. The real problem is inaccessibility to a variety of food items given the time constraint. The basic food items such as flour and rice are provided by the management and the cost is deducted from the wages. To purchase other items of food they have to visit the grocery store in town. The

small grocery store, typical of a plantation does not stock a variety of food items and what is available are relatively more expensive than in a larger store in town. The physical location of plantations makes access to such stores difficult, and women would not have the time to visit them regularly. Since fish or meat cannot be stored for lack of refrigeration, such items are included in the diet only very rarely. Time available to the women plays a decisive role in determining the variety of food purchased and cooked. Low incomes which have often been cited as a cause of low nutrition of the plantation workers (Rote, 1986), was especially true during the British colonial period (Wesumperuma, 1987). However, incomes have increased since nationalization in 1975 (Peiris, 1989) and the percentage of "ultra poor" is low compared to certain other groups. One of the crucial factors which has affected both the allocation of time for cooking and for purchase of food, is the lack of time available for women, a condition imposed by a tight wage-work schedule.

### 3.3 Nutritional and Health Status - Clinical Records

A study was undertaken in 1982 by the State Plantation Corporation (SLSPC) to estimate the health status of 9576 pregnant women resident in all the plantations under the SLSPC management. The population was largely Indian Tamil plantation workers. While 47 per cent of the pregnant women

had haemoglobin levels below 50 per cent only 7.7 per cent recorded satisfactory haemoglobin levels (above 70 per cent). According to the same study 22% of the pregnant plantation workers of the Nuwara Eliya district recorded haemoglobin levels above 70 per cent. In all other plantation districts a 70% haemoglobin level for pregnant women was recorded for less than 10% of the total.

Institutional births of babies in the Nuwara Eliya district (at 32% of the total births) was very low. The average for the study area was 48.7%. The study contends that the alternative to institutional births are the home deliveries under insanitary conditions by traditional midwives or no mid-wives at all (SLSPC, 1983).

All the plantations in our sample maintain the "Mother's Yellow Book" separately for each of the pregnant and lactating women resident in the plantations. The resident EMA and the mid-wife document the records of the nutritional and health status of each of the pregnant and lactating women. The mother's yellow book has separate sections to record haemoglobin levels, odema, vitamin deficiency, weight gain and the type of medication given.

In terms of haemoglobin levels recorded against pregnant women only 10 per cent of the total was recorded to be anaemic. Amongst lactating mothers 29.7 per cent had anaemic conditions.

It should be noted here that all female plantation workers are given iron supplements daily by the management free of charge. EMAs records show that a few pregnant women are injected with 20 cc of iron supplement on a monthly basis. However, it is interesting to note that 10% of the pregnant women are still reported anaemic which suggests that the problem may be with the inadequacy of the food nutrients they consume.

### 3.4 Field Survey Data

Information on nutritional and health status of the sample population was obtained by two methods, i.e.,

- (1) Interviews with the sample population
- (2) Clinical examination of a cross-section of the sample population conducted by the consultant physician.

#### 3.4.1 Results of the Interviews with the Sample Population

The discussions with the sample of women indicated that their most common ailments were

- a) Respiratory illnesses : colds, coughs leading to fever, asthma, chest pains
- b) Bowel disorders
- c) Aching limbs, back ache

The relatively high incidence of respiratory illnesses and bowel disorders are confirmed by clinical records as well. Many women complain about aching limbs - colloquially referred to as "APR" (Atha Paya Rudawa) by medical personnel. Women tea pluckers do not use

foot wear. They are also required to climb steep slopes carrying a heavy basket.

### 3.4.2 Foetal Loss

Foetal loss due to spontaneous miscarriages and induced abortions are fairly common among the female tea plantation workers. In fact, Langford (1982) speculates that the reported low fertility among Indian Tamil plantation workers may be due to relatively high levels of foetal loss. In a more recent study it is speculated that induced abortions may be more prevalent among the group. It further adds that unlike in the case of Buddhists, Muslims, Christians and Hindus outside the plantations, who by and large believe that induced abortions go against religious norms, the majority of "estate (plantation) Tamils believe that Hinduism is not opposed to abortion" (Caldwell and others, 1987). It may be a way of rationalizing the incidence of induced abortions. No one admits to having an induced abortion, since it is illegal in Sri Lanka. Hence we could at best only deduce on the frequency of its incidence by talking to people in the community.

It was revealed that induced abortions were performed by (a) local women using a variety of "techniques" ranging from crude instruments to many varieties of "decoctions", and food items and (b)

illegally in privately owned clinics outside the plantations. The techniques used, as well as the clinical conditions under which the abortions were done were, without a doubt, hazardous to the woman's health. It seemed evident that induced abortions were performed largely on young unmarried girls. However, this seems to be no bar to their eventual marriage, as it is the case among the other communities outside the plantations where the custom making sure of the chastity of the bride on her wedding night could make or break a marriage.<sup>4</sup>

Our discussions with the women in the sample as well as the health personnel of the plantations revealed that foetal loss through spontaneous abortions are also common. Among 9 married women in Somerset estate (lactating and pregnant categories) between the ages of 18 and 33, 3 have had spontaneous abortions.

#### 3.4.3 Work Schedule during Pregnancy

Female tea plantation labourers work as tea pluckers throughout the period of their pregnancy. The field survey did not indicate any instance where for a medical reason, rest from work was recommended for a pregnant woman. Workers lose income if they stay away from work, unless they are hospitalized for seven consecutive days. Even then, they are entitled to only half pay.

Traditionally, pregnant women tea pluckers are given easier fields (less steep, closer to roads). However, it was found that this was not strictly observed and it depended on the "goodwill" of the "kangapulle" (field supervisor). Most of the pregnant women in the sample claimed that they were not given easier fields during the period of pregnancy.

Certain plantations insist that pregnant mothers should take their maternity leave 2 weeks prior to the date of child birth. This cannot be strictly observed since pregnant women are either not certain of the due dates or because the baby arrives earlier than the expected date.

#### 3.4.4 Clinical Visits during Pregnancy

In all the plantations in the sample, from the 3rd month of pregnancy women were required to report to the EMA and the mid-wife in the clinic. This was generally done. Mid-wives also visited pregnant women in their homes.

#### Delivery of Babies

The welfare divisions of both the JEDB and SLSPC managements insist that all deliveries should be institutional. Since 1987, it is the responsibility of the local resident health personnel (EMA) to send women giving birth to the 1st and the 5th child to the government hospital which is generally located in the

nearest town. It was obvious, however, that the women concerned are very reluctant to go to the town hospital. All other deliveries are expected to be done in the maternity ward of the plantation. Every plantation in the sample had a maternity ward. Nevertheless, it was evident that all deliveries were not institutional. Women wait until the last moment to summon the estate lorry which provides them conveyance to the maternity ward. By the time it arrives - if it is available when called - it is already too late resulting in a "line room"<sup>5</sup> home delivery. There is also an adherence to a traditional custom that require the woman to go to her mother's home to deliver her first baby. This can be done only in the woman's home which is the "line room".

#### 3.4.5 Maternity Leave

Women in the plantations are entitled to 12 weeks of maternity leave for the first two babies and six weeks of maternity leave for subsequent babies. This practice was strictly observed in all the plantations in the field survey. Women wage earners in the plantation sector are also entitled to a maternity benefit payment which adds to approximately Rs 1800/=. However, deductions are made for their stay in the maternity ward.

### 3.5 Clinical Examination of a Selected Sample

A health survey of a sample of plantation women was carried out by the consultant physician to assess their nutritional status and general health status.

The clinical examination followed upon the questionnaire survey administered to the female plantation workers. Ten plantations were selected for the clinical examination from among the JEDB and SLSPC managed plantations of the original sample.<sup>6</sup> The sample population selected for the clinical examination was the same as for the earlier questionnaire survey. In selecting the 10 plantations care was taken to include certain observed variations among them such as, the size of the plantations, access to main towns, quality of health institutions available within the plantation, and the availability of non-wage work income especially from vegetable cultivation. In addition, the Nuwara Eliya State Plantation (NSP) which is a Sinhalese labour dominant plantation was also included in the clinical survey.

Table 3.8

<u>Category</u>	<u>No.</u>	<u>mean</u>	<u>age</u>	<u>Range</u>
Lactating mothers	22	25.2	+3.3	19-29
Pregnant mothers	18	26.3	+5.1	19-37
Young females	16	22.4	+3.6	18-27
Sinhalese residents	15	31.6	+9.5	18-48
Older females	20			48-72
<u>Total</u>	<u>91</u>			

### 3.5.1 Clinical Examination

A complete physical examination was carried out of all women in the study. Assessment of anaemia was done by clinical examination of the conjunctiva and the tongue. Special attention was paid to the presence of skin infections and obvious vitamin deficiencies.

### 3.5.2 Special Tests

Heights and weights were measured in all the women. Mid-arm circumference (MAC) and triceps skinfold thickness (TSK) were measured by a standard technique using a Harpendon skinfold calliper. The mid-arm muscle circumference (MMC) was calculated using the formula.  $MMC = MAC - n \times TSK$ .

The results of these tests were compared with that of available figures for Tamil and Sinhalese female medical students of mean age 21.4 years (Balasuriya et al, 1987, Balasuriya, 1984).

### 3.5.3 Results

Table 3.9 gives the percentage of anaemia, vitamin deficiencies and dental caries in the different categories of women examined. On physical examination, 15.4% of all women were found to be anaemic. The highest incidence was found in the group of lactating mothers (27.3%).

The incidence of dental caries was high. The highest incidence was again in the lactating group.

Table 3.10 gives the incidence of disease among the group. A high proportion of the women gave a history of frequent respiratory illnesses which included cough with expectoration, sore throat, pain in the chest and fever. Several of them were subject to asthma, in some cases from childhood. They took medicines from the estate dispensary. The illness lasted on the average about 3-4 days and they lost an average of 4-8 work days a month on account of the illness.

The percentage of goitre in the study sample was 9.9%, but the interesting fact was that 7 out of the 9 women with goitres were from one estate. When this estate was left out of the reckoning, the percentage fell to 2.2%. It would be informative to study this estate further to confirm this result and to determine the probable causes of such a high incidence of goitre.

#### 3.5.4 Anthropometric Measurements

The anthropometric measurements of the five categories of women examined are given in Table 3.11. Young females had a mean height of 148.8 + 4.4 cm which was significantly lower than a group of Tamil female medical students of a similar age group ( $p < 0.001$ ) and Sinhalese students of similar age ( $p <$

0.001). The total group of women studied had a mean height of  $146.88 \pm 5.8$  cm. This too was significantly lower than that of the medical students. The Sinhalese resident group had a mean height of  $150.5 \pm 5.0$  cm. This result was significantly higher than that of the young females studied, who were predominantly of Tamil ethnic origin. This difference was significant ( $p < 0.05$ ).

A similar result was obtained as regards weight. The mean weight of young females was  $43.9 \pm 5.5$  kg and was lower than that of medical students. This difference however, was not significant. Sinhalese residents had marginally higher body weight than the young girls. The older females had very low body weights ( $36.9 \pm 6.3$  kg).

The mid-arm circumference (MAC), triceps skinfold thickness (TSK) and mid-arm muscle circumference (MMC) were considered only in the young females, Sinhalese residents and the older females as these measurements are unreliable in pregnant and lactating women. In the group of young females, MAC was not significantly different from the comparison group of medical students. TSK was higher in the medical students and interestingly, MMC was very much higher than that of the medical students. The Sinhalese residents had slightly higher values for the above three measurements than the young females.

### 3.5.5 Conclusions

The predominant features of this study are as follows.

1. There was a high frequency of respiratory illness among the population of estate women studied. Loss of 4-8 work days a month appear to be considerably higher than the general female population, and would represent a considerable loss of income for daily paid workers. This high incidence could probably be due to several factors. Cold climate, exposure to chilly winds and rain during work, inadequate clothing and shelter and poor housing could be some of the factors.
2. High incidence of goitre observed in one estate was significant. A further study of the goitre rate of the estate population should prove useful.
3. The population studied appear to be shorter than a group of students of similar age. This probably reflects a certain degree of undernutrition in childhood and adolescence. Sinhalese residents appeared to be somewhat taller than their counterpart young females. The lower body weight observed in the older age group shows a considerable degree of undernutrition. A dietary survey would be useful in this context.

4. Significantly lower triceps skinfold thickness in the young females and the older females is noteworthy. This fact indicates a lower body fat content in these females. Nutritionally, the older females were the most affected.

However, the mid-arm muscle circumference (MMC) which indicates the amount of muscle at the mid point of the arm was higher in the estate workers than the medical students. This is not surprising as the estate workers engage in hard physical labour while the comparison group of medical students, one would assume, are engaged in sedentary work.

5. The Sinhalese resident group appear to be better nourished than the young female workers as indicated by higher measurements for height, weight, MAC, TSK and MMC.

Table 3.9

Clinical assessment of anaemia and dental caries

<u>Category</u>	<u>Anaemia (%)</u>	<u>Caries (%)</u>
Pregnant mothers	17.7	33.1
Lactating mothers	27.3	39.0
Young females	0.0	3.0
Sinhalese residents	15.3	10.8
Older females	15	

Table 3.10

Frequency of illnesses in the whole group

<u>Illness</u>	<u>%</u>
Respiratory	44.0
Vit. def.	5.5
Asthma	14.2
Scabies	5.5
Goitre	9.9
Aches and Pains	22.3

Table 3.11

Anthropometric measurements (means)

	<u>Ht (cm)</u>	<u>Wt(kg)</u>	<u>MAC(mm)</u>	<u>TSK(mm)</u>	<u>MMC(mm)</u>
PM	147.2	46.2			
LM	146.5	42.8			
YF	148.8	43.9	231.8	12.1	193.6
SR	150.5	44.6	244.3	13.7	203.5
OF	142.9	36.9	234.8	6.9	214.9
ALL	146.9				
TMS	154.7	46.4			
SMS	153.8	45.4	230.6	14.1	186.2

PM = pregnant mother  
LM = lactating mother  
YF = young female  
SR = Sinhalese resident  
OF = older female  
ALL = total group  
TMS = Tamil female student  
SMS = Sinhalese medical student  
MAC = mid-arm circumference  
TSK = triceps skinfold thickness  
MMC = mid-arm muscle circumference

### 3.5.6 General Conclusions: Maternal Nutritional and Health Status

- (1) The range of food items consumed in general by the plantations is limited. However sector-wise macro data as well as field survey data indicate that rice and flour consumption is high. Animal proteins are not an important item in the diet.
- (2) Females in general consume less food than the males despite the acknowledged fact that they work harder and work longer hours.
- (3) Pregnant mothers do not take additional amounts of food as medically recommended. The survey results show that they consume less than the average for women in the sector.
- (4) Lactating mothers consume marginally more food than the other women in the sample. However the quantity consumed falls short of the higher quantity recommended for lactating mothers.
- (5) There is no evidence to show that any additional money is spent for food for the pregnant women or lactating women.
- (6) The supplementary "Triposha" food programme encompasses the plantation sector. The target group includes pregnant women and lactating mothers. However its outreach depends on the

supplies provided by foreign funding. In addition it is doubtful whether the women who are given it actually consume it.

- (7) Respiratory illnesses, bowel disorders are common illnesses among the female work force in the tea plantations. In addition they complain of aching limbs, back ache and frequent headaches.
- (8) Foetal loss seems to occur both through spontaneous as well as induced abortions.
- (9) Female tea plantation labourers are engaged in wage employment throughout the period of pregnancy and this involves climbing steep slopes, carrying a heavy basket.
- (10) The health care system in the plantations is institutionalized.
- (11) "Line room" deliveries still occur under poor hygienic conditions despite certain regulations adopted to compel women to enter the maternity ward for deliveries.
- (12) Women workers are entitled to maternity leave and cash benefits.

## Chapter 4

### Factors Affecting the Maternal Nutrition and Health Status of Female Tea Plantation Workers Analysis of the Field Data

In this chapter we seek to probe the possible relationship between the dependent variables examined in the preceding chapter, i.e., maternal nutrition and health status of female tea plantation workers and a set of independent variables selected on the basis of the hypotheses identified in chapter 2. These hypotheses are based on certain theoretical concepts and relationships. The major concepts for which explanatory variables were identified are as follows:

1. Family demography
2. The quality of dwelling environment
3. Personal hygiene
4. Use of health care services
5. Control of income
6. Nutritional status
7. Health status

It should be noted that these concepts are multi-dimensional. Hence several indicators or factors can measure different aspects of the concepts. Testing the relationship between these concepts and other explanatory variables is therefore a sensitive exercise since the latter could also be multi-dimensional. If the measure considered does not 'capture' a substantial part of the meaning of the concept, the relationship that emerges or the lack of a relationship, may be due entirely to the weakness of the measure. The method of ensuring that the measures are valid is to test the measures for

their validity, both on the basis of theory and also on the basis of statistical tests of validity verification.

First the face validity of the measures was assessed. These were discussed at the first workshop and several important suggestions were considered in the final selection of the measures.

The relationships between the major concepts and the explanatory variables were tested using simple bivariate analysis relying on the most simple analytical methods, comparison of means and chi square tests of frequency distributions. Simple two way tables were constructed for the analysis.

#### 4.1 Family Demography

##### 4.1.1 Number of Children

Children of working age above 14 years are an economic asset in the plantations. They are at this age eligible for work in the plantations and register with the management. Though they help increase the total earnings of the family by joining the estate labour force, bearing the children, which is an exclusive biological function of the women, could be costly. The opportunity cost of bearing children would be loss of income during child bearing. The women also have to bear the physical cost of child bearing.

The ability of the tea plantations to absorb an ever increasing worker population has diminished over

the years. Many managers complained that they had excess labour of which they had very little control. Many young new workers have to work as casual wage earners for long periods. Access to education and a greater awareness of the outside world may motivate the young to move out of the plantations. Thus women may choose to have fewer children. They may also wish to have the children within the shortest duration to return to productive work in the plantation labour force.

Table 4.1

Frequency of respondents by the number of children ever had for different age categories

Age Years	Mean number of children	Number of children										
		1	2	3	4	5	6	7	8	9	10	11
16-21	1.3	22	3	2	0	0	0	0	0	0	0	0
22-26	2.0	20	25	15	9	0	0	0	0	0	0	0
27-31	2.5	11	21	26	4	2	1	0	0	0	0	0
32-36	2.8	4	10	9	5	3	0	1	0	0	0	0
37-41	3.8	1	2	10	5	5	3	0	0	0	0	0
42-45	3.8	0	1	4	2	3	1	0	0	0	0	0
46-56	5.1	2	0	4	7	8	7	1	0	3	0	1
57-68	4.2	5	4	4	1	8	8	1	1	1	0	0
67 ->	4.8	0	1	4	3	1	3	1	1	0	0	0

The ages of women were related against the number of children ever had. The age range of the female respondents was divided into eight groups. For each group the mean number of children ever had was calculated (Table 4.1). According to the data in Table 4.1, though the number of children the younger

women choose to have is not complete due to the woman's age, one still sees a close positive relationship between the age categories and the mean number of children.

#### 4.1.2 Child Spacing

Child spacing is a practice promoted by the family planning health services the world over to ensure proper maternal health and other positive family health aspects. One could expect that child spacing is widely practised among those who have greater access to education and information, which is likely to be the younger population.

To assess the relationship between the observable occurrence of child spacing and age, the same age categories were cross classified with the mean time difference between children.

Table 4.2

Relationship between age and the mean time difference between children of mothers in the study sample

Age categories	Mean time difference in years between children	No.
16-21	2.60	35
22-26	2.21	66
27-31	3.26	69
32-36	3.90	32
37-41	3.68	31
42-45	4.28	12
46-56	2.77	35
57-66	4.10	39
67->	3.43	15

According to the data presented in Table 4.2, mothers above the age of 40 have a longer average space between children when compared to the younger mothers.

The longer space between the children among older women may be due to the practice of prolonged breastfeeding (see Ratnayake and others, 1984). The practice of mothers taking the very young infants to the field to breastfeed at work may be a reason. This practice has now been replaced by the modern creche facilities and the support of the extended family system. Furthermore, the young mothers may also be attempting to have the desired number of children in quick succession so that they could resort to a permanent technique, commonly referred to as "tubectomy" or the "LRT" (Ligation and Resection of Tubes), of limiting family size and return to the plantation workforce for economic reasons. However, these explanations are only tentative and must be examined further.

## 4.2 Dwelling Environment

### 4.2.1 Quality of Dwelling Environment

The quality of the dwelling environment would undoubtedly reflect the access of a population to satisfactory living conditions. Workers' dwellings in the tea plantations are reported to be poor. Field investigations revealed that large majority of tea

plantation workers had kept the inside of their houses clean and tidy.

But the surrounding areas in most instances were very unclean. Stagnant water, refuse dumping and throwing the washings from the kitchen around the house and dirty drains, were common observations made during field investigations. These practices increase the occurrence of flies and roaches. In the barrack type of houses where the surroundings were common property, cleaning was not done by any one of the residents. Most residents expected the cleaning to be done by the plantation drain sweepers.

#### 4.2.2 Control of Income

The quality of the dwelling environment is generally considered to be the responsibility of the women. Women who are able to be more assertive and are able to control their income may be able to use their earnings to improve the quality of the living space. This hypothesis was tested by scoring all the houses on a scale of dwelling environment quality and relating the score to the level of control women have over the earnings.

The dwelling environment quality was measured by a scale which considered the following aspects: absence of proper drains, stagnant water and flies, were

given a score of one each. Presence of any of these factors were given a score of zero. The sum of these scores was considered to be the measure of dwelling unit environment quality. The houses could get a minimum score of zero indicating poor quality of the environment and a maximum of three indicating that the quality of the dwelling environment was satisfactory. The control of income was measured as a dummy variable, in terms of who decides on the expenditure on clothing. If women were in total control over the expenses and also if the expenses were decided jointly by them and their spouses or jointly with any other family member they got a score of one, if any others decided on the expenses, the score was zero.

We found that at all levels of the quality of dwelling environment, a relatively smaller proportion of women had total control or were equal partners in deciding on expenditure. Here the purchase of clothing is considered to be the indicator. This suggests that control of expenses may not be related to the quality of the living space maintained by the household (Table 4.3).

The above situation may be because even though the women have control over expenses, they do not have the time to use their earnings or other resources to keep the house and its immediate environment clean, or they would expect the 'drain sweeper' employed by the

plantation management to clean the immediate environment of the dwelling.

Table 4.3

Dwelling environment and control of  
income on clothing

Control of expenditure on clothing	Dwelling environment quality							
	Good				Poor			
	3		2		1		0	
	No.	%	No.	%	No.	%	No.	%
Women or joint	14	45	80	43	50	53	11	28
Others	17	55	107	57	44	47	29	72
Total	31	100	187	100	94	100	40	100

4.2.3 Income, Education and Crowding

However when the level of income, years of education and total number living in the houses were considered, higher monthly wages were earned by those having "good" dwelling environments. This may be due to a spurious relationship, that is the fact that higher wage earnings are associated with other factors which in turn are associated with clean and hygienic living conditions. Characteristics that need to be examined here would be: are higher incomes possible only with longer hours of work each month, thus leaving little time for domestic chores? If so,

how are the domestic chores taken care of to obtain a relatively better dwelling environment?

Among those who had relatively well kept households that were clean and tidy, the mean level of education measured in years, was higher than for the other categories (Table 4.4). At the same time it should be noted that the category which shows the lowest score for dwellings had a mean level of education which is higher than the educational levels of intermediate categories (Table 4.4). While education seems to be important in relation to the relatively higher levels of domestic environment it is evident that education by itself cannot explain entirely the differences in the quality of the dwelling environment. Table 4.5 which probes the relationship between the quality of living environment and literacy also shows a somewhat similar pattern.

Crowding was measured by the number of people sleeping in the houses. Houses which were kept well and were clean had a relatively lower degree of crowding (five people sleeping in the house) whereas the poorly kept houses that were unclean were very crowded. At the highest level of uncleanliness nearly 10 people slept regularly in the house (Table 4.4).

Table 4.4

Income, number sleeping in house, education and the quality of the dwelling environment

Quality of dwelling environment	No.	Income	No. of persons sleeping in home	Years of education
Good - 3	34	414.8	5.1	5.4
2	216	336.8	5.5	4.1
1	110	326.0	5.3	3.9
Poor 0	50	342.2	9.84	4.5

Table 4.5

Quality of living environment and literacy of the respondents

Quality of dwelling environment	Literacy				
	Literate		Illiterate		
	No.	%	No.	%	
3+2	56	(64.3)	178	(59.5)	234
1+0	31	(35.7)	121	(40.5)	152
	87	100	299	100	386

**4.2.4 Ethnicity**

Among the two ethnic groups represented in the tea plantation sector the Indian Tamil group forms the majority segment, while the Sinhalese resident labour forms a small minority group. As noted earlier, most Indian Tamils are Hindus, while the majority of the Sinhalese working in the plantations are Buddhists. Both groups in the sample live within the plantations as resident labour. Table 4.6 shows the relationship between the quality of the dwelling environment and ethnicity.

Table 4.6

Relationship of the quality of dwelling environment to ethnicity

Quality of dwelling environment score	Cultural sub-groups			
	Sinhala Buddhist		Tamil Hindus	
	No.	%	No.	%
Good 3	5	5	26	10
2	43	45	143	54
1	37	39	59	22
Poor 0	11	11	36	14
	96	100	264	100

The majority of around 80% of the Sinhala Buddhist and Tamil Hindu households had a score of 2-1 on the dwelling environment quality scale. The differences in the distribution of the sample along the different levels of the scale between the two cultural sub-groups were not statistically significant.

4.2.5 Type of Estate

The type of plantation management system was identified as an explanatory variable for the quality of dwelling environment. These two organizations receive financial assistance from various sources for infrastructure development.

In the SLSPC plantations, 66% of the sampled housing units were better kept, whereas for the JEDB sample this proportion was 55.

Table 4.7

Quality of dwelling environment and type of estate  
(SLSPC vs JEDB)

<u>Quality of dwelling environment</u>	<u>SLSPC</u>	<u>JEDB</u>	<u>Total</u>
Good 3+2	149 (36%)	101 (25%)	250
Poor 0+1	77 (19%)	83 (20%)	160
	226	184	410

4.3 Personal Hygiene

Personal hygiene was measured by the frequency of head baths taken per week and also by the use of latrines. The practices of personal hygiene were examined in relation to the age of the respondents, education and literacy, access to health care information, and the distance to the dispensary and the health care orderly.

With the increase of social welfare programmes particularly education, the younger plantation workers are likely to have more years of formal education and will be more exposed to concepts of personal hygiene. Furthermore with the increase in investments into the health care system in the plantations, the possibility of obtaining information would be higher. Thus a positive relationship was hypothesised between personal hygiene and the factors that contribute to an improvement in knowledge and attitudes to personal hygiene.

Table 4.8

The relationship between personal hygiene and age

Frequency of body baths	Mean age years	No.	S.D.	Range
6.7/wk	35	228	15	(16-70)
3,4,5/wk	32	115	14	(17-75)
1/wk or none	39	10	16	(20-60)

4.3.1 Age

A regular pattern is difficult to identify between age and the frequency of body baths taken per week by the respondents (Table 4.8). Most people do bathe frequently and this practice may be transferred across the generations. The use of very hot water to bathe was observed during the field visits. Every household has a large barrel that is permanently kept on an open fire place outside the house. This is used to boil water for bathing. This practice is followed even on warm days.

The boiling of water is also a task performed by the women and it is not uncommon for the women to bathe their husbands by pouring the hot water on them while they sat on the ground. Bathing is done outdoors.

Table 4.8

Personal hygiene related to education (body bath)

Frequency of body bath	Education years			Literacy		Total	
	(0-3)	(4-7)	(7-18)	Literate	Illiterate		
6-8/wk	53 (27%)	56 (28%)	16 (8%)	125	45 (13%)	178 (52%)	221
3,4,5/wk	25 (13%)	34 (17%)	11 (5.5%)	70	32 (8%)	77 (23%)	109
1 wk or none	2 (1%)	3 (1.5%)	0	5	1	8 (3%)	10
	80	93	27	200	68	262	340

Literacy nor education is positively associated with the frequency of head baths taken per week. If at all they are negatively related. These variables are not statistically significant (Table 4.9).

Providing a latrine to each family is the goal of the JEDB and SLSPC in the long-term housing development programme. In the past the estates had common latrines, the drain-type, where a constant flowing stream of water in a drain was used as the place in the toilet to defecate). Several toilets were built in line, one next to the other connected by this drain. Some plantations still have a few of this type of toilet or the water-sealed pit type. In the past if these were used by people, maintenance and cleaning was done by the plantation drain sweepers or

coolies. The users did not take the responsibility for maintaining or cleaning them.

Today the cottage type houses have attached toilets. They are not used by many due to beliefs and attitudes of pollution, and also because of other priorities of the workers such as storage for firewood, and pens for goats. One of the most frequent complaints was the lack of water especially during periods of drought. The management has initiated a programme of installing taps within easy reach of households. But they often run dry during the dry season.

Most new latrines built by the plantations remain unused and often misused. The adults continue to use the bushes and streams while the children use the vicinity and drains (Table 4.9).

Table 4.10

Relationship between personal hygiene  
(use of lavatory) and age, education and literacy

Use of latrine	Age S.D.	Education (years)			Literacy		Total
		(0-3) rate	(4-7) rate	(>8) rate	Lite- racy	Illite- racy	
Yes =	34 (15)	37 (28%)	28 (18%)	8 (5%)	22 (9%)	83 (40%)	115 51%
No =	35 (15)	28 (18%)	31 (23%)	8 (6%)	23 (10%)	85 (41%)	118 49%
		65	57	14	45	188	233

Among the respondents about half use the latrines. Use and non-use of latrines cannot be adequately explained by either the level of educational attainment or literacy (Table 4.10).

Table 4.11

Relationship between use of latrines,  
frequency of head baths and  
access to health care information

Access to health care information index	Latrine use				Body bath			
	No		Yes		(1 wk or less)		(3,4 or 5/wk)	
	%	No.	%	No.				
0	8	22	71	19	41	3	25	39
1	6	17	9	24	41	1	15	38
2	6	17	9	24	41	1	15	38
3	6	17	8	21	38	1	15	36
4	14	38	6	16	54	1	35	36
5	10	26	9	23	49	3	13	48
		137		127	264	10	118	235

Increase in access to health care information does not show a corresponding increase in the proportion of respondents using the latrines. A similar pattern is observed for the frequency of bathing per week (Table 4.11).

The distance to the dispensary and also the distance to the health-care orderly, are also not positively related to the two indicators of personal health care or hygiene (Tables 4.12, 4.13). Hence education, literacy and increasing the quantum of information flowing to the worker through the existing

health personnel by way of increasing accessibility to medical facilities and medical personnel is not likely to have any effect on the behaviour of toilet use. Improving the quality of the information via other methods and also providing disincentives for misuse of the toilets may be the answer to the problem.

Table 4.12

Relationship between access to health care (distance to health orderly) and the practice of latrine use and frequency of head baths

Distance in minutes to health orderly	Use latrine		Frequency of head bath		
	Yes	No	(1/wk or no)	(3,4,5/wk)	(6-7/wk)
5-15	30	29	46	35	1
20-30	16	37	56	27	3
35-45	3	5	9	7	0
60-70	12	12	27	6	1
90-120	3	4	13	7	0
	54	87	151	82	5

Table 4.13

Relationship between access to health care (distance to the dispensary in minutes) and the practice of use of the latrine and frequency of head baths

Distance in minutes to dispensary	Latrine Use		Frequency of head bath		
	Yes	No	(1/wk or no)	(3,4,5/wk)	(6-7/wk)
5-15	30	37	3	40	58
20-30	16	37	1	17	55
35-45	11	7	0	9	13
60-70	11	18	1	8	26
90-120	6	6	0	5	15
	74	105	5	79	169

#### 4.4 Use of Health Care Services

Availability alone will not necessarily guarantee use of any service. The demand or need for the services, associated with accessibility, awareness and other incentive factors will determine the level of use.

The younger plantation workers have better access to education than the older workers. With exposure to formal education, one would expect them to have a greater awareness and the desire to obtain the benefits of the formal health services.

When the mean age for those obtaining medical care for different reasons was calculated, one observes that the younger women may seek medical attention as soon as they fall sick and may be influenced less by such factors as possible loss of work or reliance on home remedies. Whereas among the older age groups prodding by the family may be an important factor in seeking medical attention.

Close proximity of the health care facilities was thought to be important for easy access and use. Testing this hypothesis was done considering the time taken to walk to the dispensary and motivation for respondents to use the facility. When the percentage distribution of respondents were examined the expected pattern was not observed. More than 1/2 of those who had visited the dispensary for different reasons had to travel half an hour. Hence distance to the facility does not become a serious limitation to the

use of the facility. This may be due to, among other factors, the provision of transport by the estate management (Table 4.14).

Table 4.14

Relationship between use of health care services and age and distance to dispensary

When medical help is sought	Age		No.	Distance to dispensary		Total
	Mean	SD		Upto 30 Mts.	>30 Mts.	
When sick	1	34.4	15	80	26	176
Can't cope with home remedies	2	33.5	15.1	41	38	79
Prevents going to work	3	30.2	13.5	8	13	21
When husband/ children prod	4	44.7	12.3	2	4	6
			Total	13	151	282

4.4.1 Education and Literacy

Education and literacy were also expected to be positively related to the use of health care services. However, reasons for which medical attention was sought at the plantation health care system were not found to be statistically significant to the factors examined (Table 4.15).

The evidence does not suggest that the distance to work is an important criteria for not seeking medical attention. Proximity to the dispensary may not be a

major problem at least in the case of relatively minor ailments and health problems.

Table 4.15

Relationship between the use of health care services, and education, and literacy

Reasons for visit		Education years			Literacy	
		[0-3]	[4-7]	(>8)	Illiterate	Literate
When sick	1	58	60	12	169	50
Can't cope with home remedies	2	30	26	12	82	23
Miss work	3	5	10	0	20	6
Family prod	4	0	4	0	8	3
		93	100	24	209	82

Table 4.16

Relationship between use of health care services and work habits, i.e., time spent to get to the field for work

Reasons for which medical attention is sought	Time to work	
	Mts .	S.D.
When sick	21.4	12.9
Home remedies fail	21.4	12.9
Miss work	26.3	10.4
Family prods	16.1	14.1

#### 4.5 Control of Income

Studies done on the economic contribution of women and their well-being have shown that when the control of earnings are in their hands they are able to spend it on the family's basic needs. Family expenses would be to purchase food, clothing, bedding and luxury items such as a radio. These expenses were considered to identify the female's control over expenses.

Men collecting the wages of female family members was a practice which was introduced by the colonial plantation managers. It is still an accepted norm in many plantations. In the sample of plantations in the study a few managers insisted that the women collect their wages. It was observed that among the majority of households in the sample men were "delegated" the responsibility of collecting the wages by their female family members.

It was revealed in the study that men collect the family earnings and they also do the purchasing of items required by the family. The supply of dry food rations for which deductions are made from the workers wages, is one of the means of ensuring that the earnings are spent on the basic needs of the family.

The changes that are occurring in the plantations may create a situation where more women will desire to collect their wages and also control their incomes and may become assertive enough to ensure this.

#### 4.5.1 Literacy and Education

Exposure to new concepts and ideas through improved education and increased literacy could make women more assertive and take control over the expenditure on domestic needs. Literacy and education are aspects which can be subjected to relatively easy policy manipulations.

To examine the relationship between the female plantation workers' control over the expenditure on selected categories of household items, literacy was cross tabulated with control over expenses on food, clothing, bedding and radios (Tables 4.17 to 4.20).

Table 4.17

Relationship between literacy and control of expenditure on food

	Literacy		Total
	Literate	Illiterate	
Respondents/Joint	27	93	120
Others	53	178	229

Joint : Women jointly with the husband

Others: Any other family member, the woman is not involved

Table 4.18

Relationship between literacy and control of expenditure on clothing

	Literacy		Total
	Literate	Illiterate	
Respondent/Joint	24	110	134
Others	43	140	183

Table 4.19

Relationship between literacy and control of income measured by who decides on expenditure on bedding

Expenditure Control	Literacy		Total
	Literate	Illiterate	
Respondent/Joint	14	42	56
Others decide	39	114	153

Table 4.20

Relationship between literacy and control of income measured by who decides on expenditure on radio

Expenditure control	Literacy		Total
	Literate	Illiterate	
Respondent/joint	14	38	50
Others decide	8	17	25

The relationship between control of expenditure on the different items and the education level of the plantation women was also examined by comparing with the mean number of years of formal education. Each of the items for which income had to be spent, women who either had total control over these decisions or who shared equally the responsibility with their husbands, had consistently higher levels of education. On the average this difference was 0.5. Hence plantation women who have had a relatively higher level of formal education will most likely be more assertive and exert greater control over how the family earnings are spent (Table 4.21).

Table 4.21

Relationship between control of expenditure on different items and level of education

Item	Controlled by	Level of education	
		No.	Years
Food	Joint or women	48	4.5
	Others	139	4.0
Clothes	Joint or women	80	4.0
	Others	106	3.0
Bedding	Joint or women	39	4.5
	Others	100	4.0
Radio	Joint or women	35	4.5
	Others	81	4.0

#### 4.5.2 Level of Income and Control of Expenses

The economic position and role of the woman in most situations determine her status. Increasing incomes is a major means by which women derive greater bargaining power and recognition both within the family and outside. This power and position will be reflected in her ability to control the expenditure pattern of the family. Higher levels of income hence can be a means to help women control their expenses. This was tested for the study groups. For each of the different expenditure items considered, women whose monthly earnings were higher were found to be either the sole decision-makers on expenses or they were joint decision-makers with their husbands (Table 4.22).

Table 4.22

Relationship between control of expenditure on different items and average level of income

Item	Control of expenses by	Monthly Average Wages*	
		No.	(Rs)
Food	Joint or women	125	363.38
	Others	247	351.63
Clothes	Joint or women	142	346.80
	Others	197	345.87
Bedding	Joint or women	60	373.41
	Others	168	352.10
Radio	Joint or women	51	410.59
	Others	135	370.73

\* Monthly net take home pay minus the advance payment. Deductions include the cost of monthly rations of rice and wheat flour.

#### 4.6 Nutrition Status

The nutrition status of women was measured for the pregnant and lactating mothers in the sample. The quality of

food intake during pregnancy and lactation was considered. The nutrition intake index was used to measure nutrition status. This is a simple but crude measure.

The nutrition status index was constructed giving different weights to items generally consumed during pregnancy and lactation. The quality of food as opposed to the quantity of food consumed was considered for the measure. Thus, items of higher nutritive value were assigned higher weight. Thripasha and milk were weighted by 3, eggs, beef and fish 2, dry fish 1.5, vegetables and fruits 1, and rice was assigned a weight of 0.5. The sum of the weights constituted the measure of nutrition status index for the respondents.

#### 4.6.1 Management System

The tea plantations in the country fall under two systems of management - SLSPC and JEDB. First, we attempted to identify if there was a difference in the nutritional status of women in these two systems.

The frequency distribution for the two plantation systems when cross tabulated into four ranges of the nutrition status index do not show a variation (Table 4.23). The difference in the cell frequencies were insignificant. This suggests that the nutrition status is not different between the two types of management systems and that any policy recommendations should be non-discriminatory.

Table 4.23

Relationship between nutritional status of mothers during lactation and pregnancy and type of estate

Nutritional status index score	Nutritional status during			
	Pregnancy		Lactation	
	SLSPC	JEDB	SLSPC	JEDB
0.5 - 3.5	7	1	-	-
4 - 7	18	18	14	8
7.5 - 10	13	8	10	8
10.5 - 14.5	12	12	7	13
	48	37	31	31

4.6.2 Age

The quality of food taken during lactation and pregnancy will be related to age. Those at a younger age, due to the novelty, and also exposure to education and information could be expected to have a higher nutrition status. The mean ages were calculated for comparison among the different ranges of the nutrition status index for lactating and pregnant women. The mean ages vary by 1-2 years. Thus age is not found to be significantly related to nutrition status. Their food intake during pregnancy or during lactation does not vary among the different age groups. It is likely that since the sample was small, there is a "bunching" of similar ages rather than a representative range of ages. The data was analysed for the breast feeding and pregnant mothers only.

4.6.3 Ethnicity

The differences in the level of nutrition among women during lactation and pregnancy was tested by

examining the frequency distributions along the two axis of ethnicity and the level of nutritional status score index.

Table 4.24

Relationship between nutrition status of lactating mothers and ethnicity during lactation

Nutrition status index score	Sinhala		Tamil			
	Buddhist		Hindu		Christian	
.5 - 3.5	6	50%	25	35%	3	33%
4 - 7	0	0%	17	24%	3	35%
7.5 - 19	3	25%	14	20%	1	11%
10.5 - 14.5	3	25%	15	21%	2	22%
	12	100%	71	100%	9	100%

Table 4.25

Relationship between nutrition status of pregnant mothers and ethnicity

Nutrition Status	Sinhala		Tamil			
	Buddhist		Hindu		Christian	
.5 - 3.5	2	10%	14	10%	2	12%
4 - 7	8	38%	44	31%	4	24%
7.5 - 10	0	0%	35	24%	5	29%
10.5 - 14.5	11	52%	50	35%	6	35%
	21	100%	143	100%	17	100%

When comparing the percentage distribution of respondents according to ethnicity for the different levels of nutrition status the following can be concluded.

1. Among both the major ethnic groups in the plantations the majority of lactating mothers

have not had higher nutrition status during lactation. In fact the majority of lactating mothers had low nutrition scores.

2. However, the situation reverses when the nutrition status of women during pregnancy is considered. For all categories of women, the majority had higher nutrition scores during pregnancy. This may be due to the relatively higher intake of 'Triposha' given by the state, which had a relatively higher nutritional weight.

#### 4.7 Health Status

Health status was measured on a scale ranging from 0 to 3. The severity index was also measured on a scale of 0 to 3.

The occurrence of headaches, backaches and accidental falls were assigned a score of 2 each. If the ailment was treated by a health-care worker in the medical service system, each ailment was given a score of 1.

Ailment	Absent = 0/ Represented=1	Took treatment (yes=1, no=0)	Score
Headache	0	0	0
	1	0	1
	1	1	2
Backache	0	0	0
	1	0	1
	1	1	2
Accidental falls	0	0	0
	1	0	1
	1	1	2

Five levels of health status were identified for purposes of analysis. Grouping of respondents by severity index and health status scale is shown below.

Health status scale	Severity Index			
	0	1	2	3
0	1	-	-	-
1	1	2	-	-
2	2	3	4	-
3	3	4	5	5

Improving the health status of plantation workers is a policy objective that has rationalized the liberal welfare programmes targetted to reach the plantation workers.

The first analytical attempt was to identify if the health status of the workers measured on the two scales differed between the two types of estates - SLSPC and JEDB.

Table 4.26

Relationship between health status and type of estate management system

Health status	SLSPC	%	JEDB	%
1	95	42	72	39
2	74	33	65	35
3	28	12	16	9
4	21	9	27	15
5	8	4	4	2
	226	100	184	100

The distribution of respondents by level of health status for both types of plantations (SLSPC and JEDB) are quite similar. From a host of other explanatory variables

identified, the following were selected to find out their relationship to health status:

1. Age
2. Distance to work
3. Weight carried
4. Number sleeping in home
5. Quality of dwelling environment
6. Access to health care information
7. Personal hygiene

Table 4.27

Mean age of respondents for each level of health status

Health status	Age	
	Mean	No.
1	37	163
2	31	135
3	31	42
4	31	48
5	35	12

The mean age for those at the lowest health status was 37 years. Those at the highest levels had a mean age of 35 years. It is clear that health status (measured as the health status index) is not correlated to age of respondents. Formal education too within the ranges that are observed for the sample is not significantly related.

Table 4.28

Relationship between distance to work, maximum weight carried and health status

Health status	No.	Minutes of walking to work (mts)	Max weight carried (kg)
1	167	19	20
2	139	23	23
3	44	21	27
4	48	25	30
5	12	19	32

When the distance to work and maximum weight of plucked leaf carried were considered as explanatory variables of health status, the mean distance to work in time was not associated positively to the level of health status. Those at lowest and highest levels on the health status scale actually had on the average a shorter distance to walk.

On the other hand the maximum weight carried by single worker differed among the health status groups. Those at the lowest level of health status carried a maximum weight of 20 kgs whereas for those at the highest level of health status this value was 32 kgs, a difference of 12 kgs.

Carrying bigger weights was not associated with current poor health status. However, women who continue to carry bigger weights may be subjected to health problems later. At the same time women with a poor health status probably were unable to carry heavy loads. A gradual build up of strength through better nutrition and work may help them to be "better workers" with greater economic value.

Table 4.29

Health status and the number of people sleeping in the house

Health status	Average number of people sleeping in house	No.
1	6	143
2	5.6	124
3	6.6	36
4	5.5	46
5	4.3	15

The other explanatory variables - crowding measured by the number of people sleeping in the house, quality of the dwelling environment, access to health care information and income measured by the wage of the preceding month were not found to be related to the health status of the female plantation workers in the sample.

#### 4.8 Conclusions

From the quantitative analysis attempted, two major areas of concern emerge. The first is one of methodology, the other that has policy implications.

The analysis attempted has relied on simple methods of comparison of means and cross tabulation for chi square analysis of frequency distribution. Certain relationships failed to be substantiated with statistically significant results. However, by and large the statistical exercise enabled us to understand the complex behaviour of the explanatory variables in their relationship to the dependent variables.

The lack of statistically significant relationships may be due to the nature of the measures adopted which capture only a minor aspect of the broader concepts. The salient facts that emerge from the quantitative analysis may be summarised as follows.

1. The plantation sector, being a money and income oriented system delivers many of the items necessary for maternal nutrition and well being via income incentives.

Increasing the money income is an effective means of stimulating certain behavioural patterns in the short run.

2. Ensuring a relatively high health status may be a means of increasing the economic productivity of the plantation workers. Thus movements in the welfare programmes, and the incentive structure have a direct economic benefit.
3. The practice of wage collection by the women coupled with their ability to control expenditure of the family income may be a means by which a better quality of living can be ensured for the plantation women.
4. Formal education is identified as a means of effective change in the behaviour of the plantation women. However, this factor alone will not be capable of totally transferring the conditions that will ensure better maternal welfare for plantation women.
5. The problem of crowding in houses is directly associated with the level of cleanliness. Occurrence of diseases such as scabies as was shown in the specific health status study is difficult to control and eradicate in congested environments where human contact is very high.
6. When considering the dimensions in the quantitative analysis, the two dominant ethnic groups did not emerge as distinct cultural sub-groups. The work and living

conditions, which are unique and homogeneous within plantations have given rise to a fairly homogeneous "plantation culture".

## Chapter 5

### Conclusions and Recommendations

#### 5.1 Conclusions

Macro level aggregate statistics on welfare in Sri Lanka suggest that as a clearly identifiable ethnic group the Indian Tamil plantation workers show a lower level of welfare compared to all other ethnic groups in Sri Lanka. It should be noted however, that the level of welfare of the Indian Tamil population has improved over the years and the gap between the Indian Tamil group and the rest is being gradually reduced.

Maternal welfare is a crucial component of the general welfare of the population. The objective of the present study was to take stock of the maternal nutrition and health status of the Indian Tamil female plantation workers, and identify the major factors that affect maternal welfare. The conclusions of the study are as follows.

- 1) Higher wage incomes of the women are positively related to better nutritional and health status. Female tea plantation workers are mainly employed as tea pluckers and the wage rate is uniform. However, the quantum of earnings differ leading to variations of income levels among the female workers, both at an intra-plantation level as well as at an inter-plantation level.
- 2) Wages of women plantation workers were traditionally paid to the husband/father/brother by the management.

This leads to a situation where women labourers in the plantations did not have access to their own earnings, and did not have control over expenditure. The present study revealed that payment of women's wages to the male members is still practised in many plantations, although a conscious effort is made by certain plantation managers to pay women their own wages. At the same time it was revealed that women who have higher wage incomes have a stronger say in controlling the expenditure which in turn seems to contribute to more satisfactory maternal welfare levels. The lower the income of the recipient, the less control she seems to have over expenditure.

- 3) Pregnant women consume less food at the household level than any other female group in the tea plantations. This may be linked to the belief prevalent among the less educated population in Sri Lanka that if pregnant women eat less they will have smaller babies and easier child delivery. However, the state-sponsored interventionist programme of supplementary feeding, i.e., Triposha, seems to have a better reach among them compared to lactating women.
- 4) Lactating mothers consume less food at the household level than is medically recommended. Anaemic levels are high among them.
- 5) The average caloric consumption of the Indian Tamil population group is high compared to the caloric

consumption level of the rural sector of Sri Lanka. The study revealed that plantation workers consume three meals a day. It was also evident that in the intra-household food allocation pattern there is a distinct bias in favour of men. While pregnant women do not seem to get extra food at the household level at all, lactating mothers receive a marginally higher allocation which is not adequate to maintain a satisfactory health status.

- 6) Although there are many shortcomings, the institutional medical facilities available within the locality, geared to provide medical care to the resident population, has certainly benefitted the pregnant and lactating women. The reduction of the infant mortality levels and maternal mortality levels in the plantation sector may be directly linked to the availability of resident health personnel and facilities. While the plantation sector has the best overall outreach for the supplementary 'Triposha' feeding programme, pregnant and lactating women are brought under the care of plantation medical personnel and records maintained.
- 7) An important aspect of the maternal welfare in the tea plantations is that while the institutional health care system seems to reach women during pregnancy and lactation, the food nutrients that they should get at the household level to ensure a healthy maternal status

seem to fall below the norm due to a bias in the intra-household food allocation pattern.

- 8) Women's work both in relation to the type of work performed and the time spent has an effect on maternal nutrition and health care.
  - a) Many of the illnesses that women complained of are work related, i.e., exposure to cold weather (respiratory illnesses), climbing steep slopes carrying heavy loads (aching limbs, back ache), walking over rough terrain and brushing against sharp twigs (lacerated feet). Lack of concern regarding the hazards women encounter at work such as those listed become more severe during times of pregnancy.
  - b) Related to women's work schedule and the resultant constraints are the effect they have on the general health of female workers. They are reluctant to take time off to visit the dispensary. Home remedies are often used and medical help is sought only when they cannot go for work. Female tea plantation workers are not entitled to casual sick leave benefits and hence stand to lose income if they absent themselves from work.
  - c) There is also reason to believe that work related time constraints also contribute to less than adequate nutritional levels. Rice and wheat flour

are provided by the management and the cost deducted from their salaries. However, shopping for groceries is done by males who have more free time. It is likely that there is no regular supply of such food items as with rice and flour. Women are responsible for the preparation of food. Given the poor household technology and limited free time available to women, a typical meal consists of a relatively large proportion of carbohydrates and much less quantities of proteins.

- 9) Domestic environmental conditions have had adverse effects on women's health in the tea plantation sector. Housing and environmental sanitation and the misuse and non-use of latrines have proved hazardous to the general health of the estate population. Houses are congested and badly ventilated. They are filled with smoke during cooking time and women are more vulnerable since they use the house space more. Use of drains as toilets by children and the bush by adults leads to soil pollution and during periods of drought polluted water often causes diarrhoea.
- 10) The welfare package that has been worked out in recent times and which is currently in progress in the plantation sector has yielded substantial results in terms of improved maternal care, housing and sanitation. But the visibility of these improvements remains poor

due to the enormity of some of the problems, especially housing and environmental sanitation where reform has been piecemeal and the pace too slow.

- 11) The low literacy level of women can be identified as a root cause underlying the problems associated with maternal health and nutrition. While the facilities provided for education among the Indian Tamil plantation population are still relatively low, the motivation for girls to continue with education is also minimal since wage employment is available for girls at a young age. The study revealed that poor education often made it difficult for women to absorb norms of family health and hygiene imparted through the health services.
- 12) The study made it very clear that the subordination of women is the norm both at the household level and at the employment level. It is openly acknowledged by the management that women's labour is more valuable than male labour as a factor of production. Although in theory they receive equal wages as male labourers, they have to work longer and they form the lowest hierarchy of employment in the plantation economy. The provision of maternal health facilities is looked upon as an investment for increasing labour productivity rather than in terms of the human welfare aspect. At the household level, subordination of women is seen in relation to control of expenditure, food allocation, lack of rest due to the socially expected multiple

burdens she has to carry, sleeping arrangements in the house etc. The tea plantation labourers belong to a set of powerful trade unions. The female labour component is very high in the tea sector and they all belong to trade unions. Union leaders are always males. Although trade unions have won several wage related concessions, maternal welfare for working women seems to get very low priority in any of their demands.

- 13) It becomes evident that the full benefits of a welfare programme cannot be enjoyed if the target group does not have the knowledge and the awareness of the personal utility of such programmes. It was felt that the management had to link certain programmes to cash incentives in order to "entice" the women target groups to make use of them. Women did not like to attend 'poly clinics' unless they were paid. Institutional delivery of babies was also linked to maternity benefits. Money incentives and cash emoluments seem to take high priority in the lives of female plantation workers. Health benefits seem to be less of a priority than the cash benefits they obtain from the health related programmes that women are drawn into.
- 14) State-sponsored interventionist strategies for the improvement of maternal nutrition and health have resulted in improvements up to a certain point. Beyond that, other agents of change from within the labour community (i.e., trade unions or female trade union

representatives) or from within the plantation community as a whole have either been inactive or absent for the maximization of state welfare strategies.

- 15) In the Nuwara Eliya district a distinct plantation culture has emerged without any ethnic bias due to environmental factors, uniformity in the type of work and similar administrative structures. However, minorities within the major ethnic community of any given estate display certain cultural traits which distinguish them from the rest.

## 5.2 Policy Recommendations

This study has confirmed the view that although female estate workers have achieved relatively high levels of income, their maternal health and nutritional status remain poor. The evidence gathered supports the hypothesis that the major determinants in this regard are certain historical, socio-cultural and work-related factors. Therefore any attempt to improve maternal health and nutrition in the estate sector has to take cognisance of these factors which have affected the lives of estate workers over a long period of time.

In order to enhance the quality of maternal health and nutrition it is important to direct planners and policy makers to the following areas which impinge on the estate health care system: (1) Management structures and policy issues, (2) Administrative arrangements, (3) Infra-structural

amenities, (4) The health care delivery system, (5) Female education and social mobility.

#### 5.2.1 Management Structures and Policy Issues - Estate Managers and Their Powers of Discretion

With the nationalization of tea estates in 1972 and 1975 and the creation of two boards of control the JEDB and the SLSPC, the large majority of the tea plantations in the Nuwara Eliya district came under the control of these two central organisations. Although there have been advantages resulting from central planning and direction, centralised control which gives the estate managers very little discretionary power has been disadvantageous. They have very little manoeuvreability to adjust welfare programmes to suit the peculiar circumstances of individual estates. Financial allocations for health-care are so closely controlled that the ability of managers to innovate or even address special circumstances is greatly curtailed.

#### 5.2.2 Training of Estate Managers

The advocacy of discretionary powers to management is not a plea for rigid patriarchal structures which are not conducive to the welfare of workers. In fact the socio-political changes which have affected the plantation sector demands from management new skills and perhaps new attitudes. The winning of political rights by a large percentage of plantation workers

since 1964 and the growth of a very powerful trade union movement in the plantation sector have increased the bargaining power of labour. This has led to higher wages and a growth in the aspirations of workers with regard to welfare facilities. Also with nationalisation and the retention of the profits of plantation agriculture in the country, perceptions regarding the welfare package on plantations have changed at policy level. Plantation managers have therefore to be sensitive to the aspirations of the workers, be alive to the socio-economic and political changes that are taking place in relation to the plantation system and be able to face the challenges of unionisation and politicisation of labour. Although there were some exceptions to the rule, by and large there was on the part of management a lack of empathy with the workers and a limited understanding of the changes that are taking place in the socio-economic and political structures around them. It is recommended that persons recruited for management positions in the plantation sector should have the necessary educational equipment for these tasks. Training in personnel management techniques and greater exposure to current affairs will help them to face the challenges they are called upon to deal with. Therefore a certain amount of decision-making power and a sensitivity to, and an understanding of the currents of change at managerial level should result

in an improved health care system in the plantation sector which will no doubt contribute towards enhanced maternal health and nutrition.

### 5.2.3 Planning

The importance of understanding the multi-faceted nature of a problem and the desirability of matching policy with the specific needs of the community are amply demonstrated in the case of sanitation and the supply of water. The shortfall in the number of latrines and the need to meet that shortfall are not matters of dispute. Programmes have been initiated to build latrines, although the pace at which this is done leaves much to be desired. While recommending an acceleration of the pace of construction, there is also a need to resolve the perennial issues of the non-use and mis-use of latrines. In order to do this it is necessary to understand certain social, cultural and geographical factors that impinge on the construction and use of latrines. Without this holistic approach, which is at present lacking, the vast amounts of money spent on latrine projects will be mostly wasted, for the feedback we have had from this survey is that a fair percentage of the new latrines are used as store-houses for fire-wood or as goat-sheds.

It is not surprising that in a situation of multiple needs and limited resources of time and

space, priorities in terms of maximum benefit will be the order of the day. In Nuwara Eliya district where it rains 162 days a year on average, to keep fire-wood and domestic animals in a sheltered place is of the utmost importance. Where families are often limited to a single line room and over-worked women have to make-do with a minimum of living space and of cooking time, the storage of dry fire-wood is a prime necessity. The temptation to use the latrine space to fulfil this sorely felt need is not surprising. The availability of the bush for toilet purposes and the fact that the practice is one which they have resorted to over time makes their choice easier.

In order to tear people away from this 'culture of poverty', it is necessary for policy planners and health-care advisers to probe deeper and devise new strategies to meet the situation. Some exploratory work has been done and new ideas have been implemented but without the anticipated results. As observed earlier, these strategies have been piecemeal efforts. That it is not possible to solve a problem by plugging one loop-hole or a few is to state the obvious. A comprehensive understanding of the situation on the ground is the answer.

The issue of latrines as explained earlier is a good illustration of this. From detached communal latrines to attached individual latrines and then to

detached individual latrines, a large number of which are used for the purpose of storing fire-wood or sheltering domestic animals, is the result of a lack of proper understanding of the problem in its totality. The trial and error method has not yielded the desired results and a substantial amount of the resources expended on this venture has been in a sense wasted. The steady decline in numbers of the category of 'drain sweeper' due to upward social mobility, the cultural prejudice of the workers to attached toilets due to perceptions of pollution and the non-availability of adequate water throughout the year, absolutely necessary for water-sealed toilets, are causal factors in the non-use of latrines, the last of which has still not being seriously planned for.

Although a great deal of money has been spent on a net-work of tanks and water pipes for the procuring of pure water to individual estates, no attempt has been made to enhance the overall water supply situation in the estates throughout the year. This can only be done through a well planned water diversion scheme, for in the Nuwara Eliya district as a whole, water is not a scarce resource. The increase of diarrhoeal diseases observed during periods of drought is related to the short supply of water which results in sluggish drains and the deterioration of environmental sanitation causing water pollution.

Planners should realize that water-sealed latrines are of no use without a steady and generous supply of water, in the same way that it has dawned on them that neither communal toilets nor attached toilets will motivate plantation workers to use toilets as a regular habit. It is therefore recommended that a perennial water supply system should be taken in hand as a part of preventive health care in the plantation sector.

#### 5.2.4 Mobilization of Women Through Interventionist Programmes

The lack of empathy with the work force on the part of management has to do with a seeming desire to maintain the yawning gap which existed between the two groups in colonial times. Despite state ownership of the plantations and regardless of the fact that the workers have come a long way since the period of the British raj when they were docile labour planted on foreign soil, the socio-cultural divide persists, and whatever contact there is, is strictly official. This attitude is also seen among middle level management as well, leading to a fairly strict compartmentalisation, in which women of the top management, middle management and the work force gravitate within the confines of their own social group. In these circumstances the women workers have lacked informed

leadership and no mechanisms have evolved for women oriented interventionist programs within the plantation sector. Consequently there has hardly been any mobilization of women's groups for the articulation and promotion of health care or any other welfare programmes on behalf of female workers.

Just as much as hierarchical structures have prevented social leadership from above, peer leadership too has been inhibited due to the patriarchal nature of Indian Tamil society. Although women participate in trade union protest and women union leaders known as 'thalaivis' have been appointed to trade union committees, they maintain a very low profile in these activities. The views of women, so essential for the planning of housing, sanitation and health care are hardly ever articulated. This is a major weakness in plantation society and needs to be remedied. Management can play an active part in the formation of women's groups through the intervention of the females in their own circles or through the assistance of women's organisations in the district. As long as the voices of women are unheard women's issues pertaining to health and nutrition will be tackled only through male perceptions.

#### 5.2.5 Sick Leave Policy

The difficulties faced by female workers if they need time off to seek medical attention while at work

and the loss of pay during periods of illness have been spelt out. The lack of timely medical intervention and of rest often exacerbates disease and debilitates women. It has been argued that in a commercial agricultural enterprise such as tea, where the regular plucking of leaf is a sine qua non for its viability, a disciplined labour force is essential. The rationale for the curbs on sick leave is the fear that malingerers can disrupt the production process. To our minds the counter-argument that the productivity of women who work in a state of ill-health cannot be high is more valid and under the supervision of the EMAs and midwives a scheme of paid sick leave should be worked out. This will be equally beneficial to management as well as to the workers.

### 5.3 Administrative Arrangements

#### 5.3.1 Women's Control of Income

It has been shown in this survey that women's incomes are not always translated into health care or nutrition due to certain socio-cultural and work-related factors. It is the view of this study group that impediments faced by women in this regard can be overcome through management intervention, making it possible for women to improve not only their own nutrition and health status but those of their families as well.

Although all plantations adopt a compulsory work stoppage at the time wages are paid, very few knock off work when the monthly advance is given. It is recommended that women should be given the option of collecting the advance payment. But more important would be a change of policy whereby management insists that each worker collects his or her own wages. Although patriarchal social norms may still force women to hand over their pay packets to their husbands or fathers, a certain psychological break through would have been effected and a beginning made to increase the purchasing power of the female.

Also important in this connection is the practice of paying out maternity benefits to husbands when the woman is confined. A regular observation is that much of this money is squandered by the men, depriving the women of their dues. It is suggested that this money should be paid to the women in instalments, part of it immediately before delivery and the rest after, when they are in a fit condition to collect the money.

### 5.3.2 Work Norms

Handling one's pay packet alone will not transfer decision-making power to women, especially in a climate of long working hours, multiple roles and constraints in respect of market accessibility. The male workers on the plantation are allocated task work for which flexi-time concessions are given, enabling

them to finish work by early afternoon. Women on the other hand have a work norm lasting from 7.30 a.m. to 4.30 p.m. and with the time taken for weighing in the leaf, it is closer to 5.30 p.m. or 6.00 p.m. when they return home, ready to plunge into domestic chores on behalf of the family. Flexi-time for women tea pluckers should be taken up for serious consideration. A shorter working day with reasonable plucking norms has been observed on a few plantations, an arrangement which merits wider application. This would set aside time constraints, allowing women not only to participate in financial decision-making if they are inclined to do so, but also afford them more time for the preparation of nutritious meals as well as for some relaxation. Pregnant women and lactating mothers would greatly benefit by such an arrangement.

### 5.3.3 Market Accessibility

The geographical isolation of the majority of plantations away from the metropolis and problems of transport restrict market accessibility, especially for women. Management could once again intervene in organising weekly fairs (periodic markets) on Sundays when women are free, as has been done on a few plantations.

## 5.4 Infra-structural Amenities

### 5.4.1 Housing

It is generally acknowledged that housing has constituted a health hazard for female workers from the early days of plantation agriculture. The early dwellings of workers consisted of rows of single rooms built back to back with a common verandah. There was little ventilation or light, and the single room was kitchen, bedroom, sitting room and dining-room all rolled into one for the entire family. The majority of houses in the plantations still conform to this model but innovations are being made. All new houses are built in the form of twin cottages with increased space and ventilation. The cold climate of Nuwara Eliya makes warmth a consideration in house building plans, and such designing is in evidence in the latest type plans. Attempts are being made to remodel some of the back to back line rooms, making a single unit of 2 line rooms, with a door-way through the common wall. However, with all the new housing, re-modelling and repair work that is being undertaken under different welfare programmes, the situation on the ground is far from satisfactory. In the first place the housing stock is not adequate for the growing plantation population and very often more than one family live in a single line-room. Also many newly marrieds have built small shacks for themselves.

These houses are even worse than the single line rooms.

What is needed is an acceleration of the present housing programs. Increasing the stock of housing and making the existing houses more habitable are of the utmost urgency. Some plantations face the problem of the occupancy of houses by ex-workers or their families who are not in plantation employment. Suggestions have sometimes been made to de-link housing from plantation employment. With increasing social mobility this may become inevitable from a long term perspective, an eventuality for which policy planners and management will have to be prepared for. However, in the short term more and better housing at a much faster pace than at present is recommended.

#### 5.4.2 Creches

The upgrading of creches comes within the ambit of the building programmes in the estate sector. But progress is slow and uneven. Lactating and young mothers need to use this facility to get to work. However, many among them look for other means of support such as old parents, an older child or a retired woman in the neighbourhood who will look after a child for a small payment. It would seem that the creches are used only if an alternative arrangement is not possible. The cleanliness in creches leaves much to be desired. The reluctance to use them has

sometimes to do with the quality of supervision. The education of girls takes a back seat when they are called upon to look after younger siblings, thus giving way to the vicious cycle of poor education and lack of awareness which were seen to have adverse effects on health and nutrition. The only way to increase the demand for creches among young mothers is to improve their quality with regard to space, cleanliness, amenities and supervisory personnel.

#### 5.4.3 Foot-wear, Warm-clothes and Bedding

Female plantation labourers who are called upon to work on the steep hill-slopes of the Nuwara Eliya district and who endure temperatures which average about 15 degrees celsius face certain health hazards as a consequence. We have noted that the rocky terrain and the sharp twigs of the tea bushes cause lacerated feet which required constant medication. Simple foot-wear such as rubber slippers which the women can probably afford are not suited for the land. It would seem that some suitable foot-wear is long overdue as a protection not only against the roughness of the ground but also its dampness. Illnesses due to exposure to a damp, cold climate have been documented. Women who set out for work around 7 a.m. are exposed to very low temperatures and back at home in the night, they sleep on mats or gunny sacks spread out on damp mud floors or cold cement floors, the single bed

in the house being usually reserved for the male head of household. Therefore it is recommended that apart from suitable foot-wear, women should be provided with warm capes to be worn at work and at home they should be encouraged to use some form of warm bedding such as mattresses.

#### 5.4.4 Tea Baskets

Despite the fact that women have toiled for well over a hundred years, bending over bushes of tea for long periods, carrying anything up to 15 kilos of green leaf at a time, their baskets held in place by a head band and suspended over their backs, hardly any thought has been given to the discomfort and health problems caused as a result. Frequent head aches, back aches and early abortions can be attributed to the posture at work and the manner in which heavy loads are carried. Devising a method of carrying the tea baskets without undue stress on any one part of the body is long overdue and should be urgently undertaken.

### 5.5 The Estate Health-care System

#### 5.5.1 Curative Medicine

The growth of an estate medical system from somewhat rudimentary beginnings is among the positive aspects of plantation life. The complaint that plantation populations receive favoured treatment

through the provision of a separate health care system is not new. As a response to this criticism today, state policy allows the populations of the villages in the periphery of the estates to use the estate medical services. This has brought in an entirely new dimension to this service, which now caters to the workers and their families, ex-workers and their families plus the people of the neighbouring villages.

Among the weaknesses noticed in the medical services available to plantation workers are insufficient medical cadres, especially estate medical assistants in relation to the large populations on the estates and the inadequacy of drugs supplied through an annual vote of the estate management boards supplemented by a small government grant. With the expansion of the estate medical services to embrace village populations, it would seem that the time has come to de-link the curative aspects of medical care from the estates. What we would like to advocate is a strengthening of the national health services by upgrading hospitals which are in close proximity to the estates and by setting up new medical centres where hospital services are not available closeby for the curative side of disease. Close links should be established with these hospitals and medical centres for the benefit of workers. This is not a recommendation to completely dispense with the health-

care system in the plantation but rather a plea for its further orientation toward preventive medicine.

#### 5.5.2 Preventive Medical Services

A close look at the more common illnesses among the plantation workers shows that they are largely preventible. Some of them like head-aches, back-aches and infected wounds are work related. Others like respiratory illnesses and frequent colds are the result of inadequate precautions against harsh climatic conditions as well as due to sub-standard housing. A third category of diseases such as diarrhoea and scabies can be attributed to poor environmental sanitation and hygiene and conditions such as anaemia and general debility are the result of poor nutrition. Almost all these diseases should be tackled at the preventive level for which the present medical staff can be utilized. The strengthening of certain welfare mechanisms and health education programmes will produce a healthier work force and curtail the need for curative medicine in the plantation sector.

The maternal health care structure is a positive aspect of the estate health delivery system and needs to be further strengthened through the introduction of more pre-natal and post-natal programmes, and visits by specialist doctors.

### 5.5.3 Health Education

Although efforts have been made to carry out health education programmes through pre-natal and post-natal health-care clinics and field visits by mid-wives and welfare supervisors the intensification of such programmes is a sorely felt need. Audio-visual methods of communication should be introduced in these programmes, especially because of the low level of literacy among plantation women. Language however has to be the principal means of communication and it is important that health care personnel should speak the language of the majority of the workers, i.e., Tamil. It was noted that some Sinhalese mid-wives trained for estate service did not speak Tamil, a serious omission which should be rectified. Problems of communication have led to grave misunderstandings, the issue of boiled water for drinking purposes being a case in point.

That the food culture of the plantation workers is weighted on carbohydrates has been noticed. As many of the workers have their own vegetable plots and some rear cattle and poultry, food habits can be influenced through nutrition education programmes. But much more important is devising a new food technology which will help the housewife cook better meals more economically and in a short time. Time is a major constraint in the preparation of nutritious meals. More efficient

stoves and mixed preparations incorporating a variety of foods should be made popular. Some of these ideas are not new but the tardiness with which they have been implemented have not yielded the anticipated results. The acceleration and wider application of effective food technologies throughout the estate sector is strongly recommended.

#### 5.5.4 Target Groups

It has been noticed that most health education programmes are targeted on women, especially mothers. This may be a useful device for family health but does not make the desired impact on maternal health and nutrition. In a society in which maternalistic attitudes and patriarchal norms are at a high premium, mothers and wives, however well advised, find it difficult to focus attention on themselves. In this survey it was seen that pregnant and lactating mothers hardly ever took any extra nourishment which probably accounts for anaemia among them. Apart from this attitudinal block, the purchasing of food is mostly a male concern. It is therefore imperative that the men in the family are made aware of the health and nutritional needs of pregnant and lactating women. It is suggested that the target groups for health education programmes should consist of both men and women, so that cultural barriers could be broken and the community as a whole is made aware of the nutritional needs of mothers.

### 5.5.5 Family Planning

The issues regarding unwanted pregnancies, illegal abortions and family planning methods available on estates have been discussed in detail. There is a strong case for a wider dissemination of information regarding temporary methods of birth control and an attempt made to popularise the use of I.U.D.s and condoms in addition to the pill and depoprovera. This will help women to space out their children better and also avoid the dangers of resorting to techniques of abortion which can prove to be fatal.

### 5.6 Education

The absorption of the plantation schools into the national education system was a progressive measure which has to some extent improved education among plantation children. A major problem that these schools are faced with is the lack of qualified teachers. Most of the estate schools are primary schools with classes from grade I to grade V. Children are forced to travel long distances for their secondary education, a factor which acts as a disincentive to female education. The upgrading of estate schools to secondary school status is tied up with the availability of qualified staff. Teacher training in the Tamil training colleges of the Nuwara Eliya district should be stepped up to meet this shortfall.

Female education will be a positive factor in improved maternal nutrition and health. Whether it is the overcoming

of cultural barriers, the formation of women's groups or the absorption of new ideas, education can play a significant role. One must however keep in mind the fact that education will not only increase awareness in women, but it will also generate forces which will disturb the socio-economic structures in plantation life. It was observed that in theory women felt that both girls and boys should have equal opportunities in education. The natural sequel to education is raised aspirations and there are at present some educated girls who are reluctant to pluck tea. It is therefore necessary that improvements in female education should be accompanied by the creation of suitable employment opportunities within or outside the plantation system.

Social mobility on the part of women and their consequent spill over into the adjacent towns will help to break the isolation of the plantation communities and make way for greater cultural interaction. This interaction could be facilitated if Sinhalese is made a compulsory second language in estate schools. The forces released by improving female education will help both in the short term as well as in the long term to improve the condition of women in the plantations. There is no doubt that the breaking down of political, social, economic and cultural barriers that exist between the plantation community and the rest of Sri Lankan society will act as a catalyst for change, bringing about improvements in the lives of women.

## Conclusion

In making recommendations for the improvement of maternal health and nutrition among plantation women, it is necessary to point out that some of the issues highlighted in this survey have already been identified in previous studies and even some of the suggestions made here are not completely new. What this study has been able to accomplish is to pin-point the fact that there are certain common denominators among the plethora of factors affecting maternal health and nutrition. Therefore solutions have to be found through an understanding of the linkages. What is seen as a major weakness in the plantation system is the piece-meal nature of reform and its excessively slow pace. Problems have been dealt with by palliatives and most issues are tackled in water tight compartments without taking into consideration their inter-locking nature. State policy, management structures, administrative arrangements, infra-structural amenities and the health care delivery system should link together for overall improvements in the plantation sector. The persistence of poor maternal health and nutrition is the result of uneven change and disjointed reform over time. A more holistic approach, keeping in focus the issue of maternal health and nutrition is recommended.

## Suggestions for Further Research

1. The parameters of the present study have been confined to the female Indian plantation workers in the Nuwara Eliya district. To bring the findings of the present study into sharper focus it would be necessary to juxtapose this

community with a comparable wage-earning, agro-based group of females. The full implications of the present study can be understood if and when such a comparative study is undertaken.

2. Regarding research strategies for the study of women's issues in patriarchal societies, it was strongly felt that probing the ideas and attitudes of men is absolutely necessary for a comprehensive understanding. It is recommended that future studies on women in Sri Lanka should take into consideration this crucial dimension in their research methodology.

## Notes

### Chapter 1

1. Population of Sri Lanka in 1981 was 15 million. By 1987 the estimated population was 16.3 ml. of which 8,339,000 were males and 8,022,000 were females.

2. a) Sri Lanka: Maternal mortality rates 1963-1981 (per 1000 live births)

1963	1971	1981
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2.4	1.4	0.6

b) Sri Lanka: Gender-specific literacy rates (percentage)

1963		1971		1981	
M	F	M	F	M	F
84.6%	67.3%	85.6%	70.9%	91.1%	83.2%

c) Sri Lanka: Infant mortality rate (per 1000 live births)

1963	1971	1981
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56	44.8	29.5

d) Sri Lanka: Life expectancy at age one

1963		1971		1981	
M	F	M	F	M	F
61.9	61.4	64.2	67.1	67.8	71.7

(Source: Dept. of Census and Statistics, 1988)

3. There is a distinction between the "Indian" Tamil plantation population of Sri Lanka and Sri Lankan Tamils. The Sri Lankan Tamils and the Sinhalese have been residing in Sri Lanka from the earliest period of recorded history. The "Indian" Tamils were brought to the island from South India during the mid 19th century by the British to work in the newly opened plantations, originally devoted to coffee and later to tea and rubber. The British colonial period lasted from 1798 to 1948.

4. The ethnic composition of the Sri Lankan population (1981) is as follows.

Sinhalese	73.95%
Sri Lanka Tamils	12.70%
Indian Tamils	5.60%
Ceylon Moors	7.05%
Others	.7 %

5. The plantation sector of Sri Lanka, also known as the estate sector in official statistics is categorized into three groups according to the main crop cultivated, i.e., tea, rubber and coconut. The three categories are spatially separate due to different climatic and agro-ecological requirements.

6.

Table 2

Ethnic Composition of the Plantation Population, 1981

District	Total Plantation Population	Main Plantation Crop	Indian Tamil Percentage	Sri Lanka Tamil Percentage	Sinhalese Percentage	Other Percentage
Nuwara Eliya	812,817	Tea	74.0	18.0	6.3	1.7
Badulla	161,344	Tea	77.0	13.3	7.6	1.9
Kandy	130,485	Tea	64.8	15.6	15.3	4.5
Matela	28,777	Tea/rubber	60.5	24.7	12.3	2.7
Kegalle	54,908	Rubber*/tea	69.7	13.9	16.3	0.1
Ratnapura	107,568	Rubber*/tea	78.1	8.7	11.7	1.4
Kurunegala	10,620	Coconut	37.8	14.5	47.0	0.9
Kalutara	44,518	Rubber	70.0	8.5	20.8	0.6
Galle	20,880	Coconut/tea/ rubber	48.3	14.4	36.6	0.7
Matera	20,077	Coconut/tea/ rubber	61.8	11.6	26.3	0.5
Moneragala	6,974	Tea	67.8	18.1	14.7	0.2

\* Mainly rubber

Source: Department of Census and Statistics, 1981.

7. "Coolie" - generally referred to as a native burden carrier or hired labourer. It denotes a subordinate position - an "inferior" class of people.
8. Sirima-Shastri Pact of 1964 provided that of an estimated 975,000 "stateless" Indian Tamil population, 525,000 were to be given Indian citizenship and repatriated to India over a 15 year period, 300,000 were to be given Sri Lankan citizenship. Negotiations over the remaining 150,000 people were left for a future date. In 1974, the two governments divided these on a fifty/fifty basis. Legislation was enacted in 1988 where 95,000 Indian Tamils in the plantations who were found to be neither citizens of India nor Sri Lanka were given Sri Lankan citizenship.

9. The majority Sinhalese are largely Buddhists and speak Sinhalese.  
The Indian Tamils are of Dravidian stock and are largely Hindus who speak the Tamil language.  
The Sri Lankan Tamils who have the same ethnic origin, language and religion as the Indian Tamils are spatially concentrated in the north and the east. Historically the two groups had developed separate identities.
10. Small numbers of Indian Tamil plantation workers who were displaced due to the land reform programmes of the early 1970s settled in the northern district of Killinochchi and Vavuniya.
11. Profile of an Indian Tamil female tea plucker.

The Indian Tamil female tea pluckers' job is to pluck from the tea bush the top two leaves and the bud which is thrown over the shoulder into a basket secured around her forehead and suspended down her back. The female tea plucker would have joined the labour force at the age of 14, some times earlier. Formal education has to stop by then. However, the average female tea plucker has either no education at all or have only proceeded to about grade 3 in an ill-equipped primary school. The average age of marriage of the female Indian Tamil tea plucker is 21 years (1981). The national singulate mean age of marriage for Sri Lankan females in 1981 was 23.4 years. The Indian Tamil female tea plucker is employed throughout her child-bearing years and she retires at the age of fifty five. While a few female workers in the tea plantations are employed as tea factory workers or as creche attendants the vast majority begin and end their wage employment as tea pluckers. She is a Hindu and speaks the Tamil language.

12. Prior to the land reform programmes of 1972 and 1974 tea plantations were privately owned either by individuals or public companies. Management of the public companies were by agency houses. In 1974, publicly owned plantations were taken over by the state. Individual ownership was restricted to 50 acres. The management of the state-owned plantations was vested in two semi-government boards.

## Chapter 2

1. The list of plantations in the sample with acreage JEDB/SLSPC separately.

### JEDB

	<u>Acreage</u>
i. Balmoral	1046.50
ii. Dayagama West	3565.60
iii. Eskdale	399.60
iv. Gonapitiya	1265.20
v. Helboda	1255.50
vi. High Forest	852.10
vii. Labookelle	2802.00
viii. Lippakele	485.60
ix. Melfort	605.40
x. Wedamulla	977.30

### SLSPC

i. Concordia	1237.20
ii. Courtlodge	848.00
iii. Edinburgh	729.00
iv. Logie	730.00
v. Mahagastota	652.60
vi. Mattakelle	894.40
vii. Nuwara Eliya	1516.70
viii. Park	800.00
ix. Pedro	759.50
x. Radella	778.00
xi. Somerset	530.00
xii. St. Clair	890.80

## Chapter 3

### 1. Protein-energy malnutrition (PEM)

It is diagnosed on the basis of growth characteristics (height and weight) observed with reference to the age of the child. Through such an approach, three types of undernourished individuals can be identified.

- i) Chronically under-nourished or "stunted" child
- ii) An acutely under-nourished or "wasted" child
- iii) A child displaying the features of both "acute" and "chronic" protein-energy malnutrition

### 2. Table Notes 3.1

Protein-energy malnutrition in pre-school children, 1980  
(per cent prevalent)

Sector	Normal	Under Nutrition		Concurrent
-----	-----	Chronic	Acute	Acute & chronic
-----	-----	-----	-----	-----
Rural	65.8	27.8	3.4	3.0
Plantation	35.0	56.3	2.6	6.1
-----	-----	-----	-----	-----

### Table Notes 3.2

Protein energy malnutrition in pre-school children  
Nuwara Eliya district (1980)

Sector	Normal	Under Nutrition		Concurrent
-----	-----	Chronic	Acute	Acute & concurrent
-----	-----	-----	-----	-----
Rural	57.3	34.6	5.6	2.6
Plantations	45.3	49.2	2.4	3.1
-----	-----	-----	-----	-----

Source: Food and Nutrition Statistics, 1982. Food and Nutritional Policy Planning Division, Ministry of Plan Implementation.

- ### 3. "Triposha" is a nutritious soya-based flour mix distributed by the CARE organization of the U.S. It is distributed free to undernourished infants, pre-schoolers, pregnant women and lactating mothers. Triposha provides a daily food supplement of 50 grams. The nutritive value of selected nutrients of 50 grams of Triposha is estimated to be as follows.

### Table Notes 3.3

#### Nutritive value of selected nutrients - 'Triposha' 50 grams

Food energy kcal	190.0
Protein, grams	10.0
Crude fat grams	3.0
Crude, fibre, grams	0.6
Ash, grams	2.0
Carbohydrate, grams	30.0
Calcium, mgs	450.0
Iron, mgs	9.0
Folic Acid, mgs	100.0
Vitamin B12, mgs	2.0
Vitamin HIU	850.0

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Source: Dr S.M. Gunasekera, "Supplementary Feeding", in Proceedings, Orientation Seminar on Food and Nutrition Policy Planning Objectives and Functions for Plantation Management Personnel, Food and Policy Division, Ministry of Plan Implementation, Sri Lanka, 1982, pp.21-23.

4. A tradition among many communities in Sri Lanka demands that a bride should be a virgin. Consequently, it is a part of the matrimonial ritual that the bride should 'prove' this to the bridegroom's parents/relations by a "show of blood" on the bed linen, when the couple return from their honeymoon. Recent research records the trauma of this practice for young brides (Sriyani Basnayake (1989) Virginity Test - A Bridal Nightmare, paper presented at the 1st National Convention on Women's Studies, Sri Lanka, CENWOR, Colombo).

In contrast the Indian Tamil plantation community is more liberal in its attitude towards a young woman's sexuality and there is no evidence of young brides being subject to a "virginity test".

5. "Line room" refers to a one-roomed dwelling of a plantation family. It is part of a "barrack-type" row or "line" of similar dwellings. These dwellings were originally built during the British colonial occupation of Sri Lanka. It should be noted however, that the JEDB and the SLSPC are gradually replacing the "line room" dwellings with new cottage type housing units for the workers.
6. Plantations selected for the clinical examination are as follows.
- |                |                      |                  |
|----------------|----------------------|------------------|
| (1) Melfort    | (5) Nuwara Eliya SPC | (9) Logie        |
| (2) Helboda    | (6) Concordia JEDB   | (10) High Forest |
| (3) Veddamura  | (7) Edinburgh SPC    |                  |
| (4) Labookelle | (8) Dayagama West    |                  |

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