FOOD CONSUMPTION AND ENERGY EXPENDITURE PATTERN OF SELF EMPLOYED WOMEN IN UNORGANISED SECTOR

BY

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THESIS

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DECLARATION

I hereby declare that this thesis entitled "Food consumption and energy expenditure pattern of self employed women in unorganised sector" is a bonafied record of research work done by me during the course of research and that the thesis has not previously formed the basis for the award to me of any degree, diploma, associateship, fellowship or other similar title of any other University or Society.

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CERTIFICATE

Certified that this thesis entitled "Food consumption and energy expenditure pattern of self employed women in unorganised sector" is a record of research work done by Smt. A.S. Sujatha under my guidance and supervision and that it has not previously formed the basis of the award of any degree, diploma, fellowship or associateship to her.

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INTRODUCTION

INTRODUCTION

Women in India, since time immemorial have formed an organic component of the working force in the Country(Singh, 1989). 12 per cent of this force is reported to work in the organised sector while 94 per cent work in the unorganized sector (Arunachalam, 1985). Their domestic role as wife and mother is reported to consume half of her time and energy and together with their additional work outside the home, most women were found to work a double day United Nations International Children's Emergency Fund (UNICEF, 1985). In this changing socio-economic environment, employed women have a vital role to play, not only as traditional home makers but also as wage earners. The multifarious role played by women has enabled her to achieve greater equality with men both within and outside the family, in the legal, social, educational, occupational and economic spheres of activity (Singh, 1972). But the new occupational status of women has affected her traditional role in the home and has resulted into many conflicts.

Employed mothers are reported to bear the triple responsibility of rearing their children managing their household and supplementing the family income (Daswani, 1987). Change in social pattern from joint family to nuclear family had also vested greater responsibilities on these employed women. The

continuous conflict between the demands of the home and the career brought various stress and strain on these women. Outside employment taken up by the women was generally reported to result in the negligence of their own health and had led to various nutritional problems (Rao, 1987).

Besides, outside employment is reported to affect the health and nutritional status of their children adversely due to lack of time in childcare practices.

Adequate information about the life of women engaged in employment outside the home in the state are at present not available. Hence the study on "Food consumption and energy expenditure pattern of self employed women in unorganized sector" was taken up.

The present study was conducted among women engaged in "stone breaking" on contract basis in the rural areas of Trivandrum district with special reference to their health, food habits and work schedule to fulfill multifarious roles as wage earner and housewife. Main objectives of the study were:

1) To assess the food consumption pattern of self employed women in unorganized sector in Trivandrum

2) To determine their daily energy requirement and energy expenditure pattern

3) To determine their nutritional status

4) To locate the nutritional and health problems prevalent among these women and

5) To assess the knowledge and attitude of self employed women in unorganized sector regarding food and health.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Of the Country's total population of 665 million, 321 million are females and 344 million males (1981 census). The census data further reveals that in the total rural population, 48 per cent belong to female population. Women are usually being inexorably elbowed out all remunerative well paid work (Kishwar 1988). Mankekar (1980) has reported that the women account for 40 per cent of total unemployment.

Kaur (1989) has reported that over the centuries, millions of women in the rural regions of India have been carrying on their shoulders the burden of poverty, ignorance, superstition and out-moded customs and traditions. He has also reported that infact one can call her the unsung heroine of our Country, who without any glare of publicity, contributes her best to the welfare and progress of our Country.

Unlike western countries, women in India are mainly unemployed home makers. These employed women in rural areas constitute 19 per cent of the total rural work force (UNICEF, 1985).

Women in unorganised sector suffer from fewer and poorer opportunities to work, face greater impact of employment, unemployment and casual nature of work, greater

vulnerability because of lack of skills and education, lesser mobility and heavy responsibilities, a systematic social practice of under rating of their work and lack of access to better technologies, tools and productive assets (Nair, 1990). During 1950-75 period, the share of females in the total increase in the labour force was estimated at about 52 per cent in the industrialised countries and 36.5 per cent in the developing countries (Nair, 1988). UNICEF (1985) has reported that women constitute more than a third of the World's economic active population.

According to Basu (1979) proportion of rural women in the age group of 15-59 engaged in labour force was estimated as 39 per cent. Mankekar (1980) has reported that women constitute about 33 per cent of labour force in the Country. Of the total labour force of 265 million in India, women are reported to constitute nearly about one third (Batra, 1982). Gulati (1984) indicated that despite some fluctuations, women's work participation rates in Kerala have declined as percentage of men's participation rates from 57 per cent in 1901 to 38 per cent in 1981. A study conducted by Chakrabarty (1985) has indicated that approximately 46 per cent of employed women are in the age group of 15 and 64 years. Bagchi and Umesh (1985)

have reported that in Malaysia and Sreelanka female labour constitute more than half of the labour force. The results of the study conducted by Patnaik and Debi (1987) in Orissa show that participation of female labour is higher in every field ie. farm, non-farm and household than that of males. It is also reported that the work participation rate for women in Tamil Nadu is only 26.5 per cent while that for men is more than double this level (Report of Tamil Nadu Corporation for Development of women, 1986). Giriappa (1988) has reported that according to 1981 census, main women workers have increased by 48.6 per cent during the decade 1971-81, whereas for men the increase has been by 20.8 per cent. Nair (1988) has reported that there is an annual increase in the female population of 2.8 million in the industrialised countries and 6.5 million in the developing countries. Sing et al (1988) pointed out that the female work participation rate has been 20.9 per cent during 1980-81, whereas the proportion being 23.9 per cent for the rural areas and 10.7 per cent in the urban areas. According to Jose (1989) in Kerala urban female work participation rate (11.76) is higher than that of all India level (8.32). He has also reported that even then within Kerala, female participation rate (17.72) is higher than the urban female participation rate and between 1971 and 1981 as 35.32 per cent

observed that 38.74 per cent of women are either main or marginal workers in India against 62.23 per cent of males. Rani and Rajaiah (1988) have reported that 79 per cent of women employed are engaged in agricultural activities. Nair (1988) has reported that landless women labourers constitute 55 per cent of the total women work force and majority of them belong to scheduled castes or scheduled tribes.

According to Thyagarajan et al (1978) factors such as mother's age, education and children's age are associated with maternal employment. He further reports that mothers were employed mainly to maintain the desired standard of living and to utilise education. Gulati (1984) has reported that almost 50 per cent of rural female workers are sole supporters to their families. Large majority of rural women are reported to prefer to remain in the villages seeking occasional employment available within short distance (Mohiuddin, 1985).

Patnaik and Debi (1987) have reported that the contribution of women towards agricultural output and family income is very significant particularly in small size holdings. According to Gowda and Indira (1987) as many as 75 per cent of the women workers of India are the sole wage earners in their families. Achaya and Bennet (1987) have stated that women as wage earners are important to rural families since they contribute 50 per cent

increase of rural work participation by women was observed in Kerala.

Marie (1976) has reported that a major factor which continues to characterise rural life in tropical and subtropical developing areas and have a special bearing on health, include the continuous heavy reliance on agriculture. According to Sreenivasan (1980) in the developing World, today women are responsible for 50 per cent of total food production. Farm women contribute only 36 per cent of the total employment in Agriculture (Mankekar, 1980). In India in rural areas nearly 99 per cent of female workers are reported to be depended on primary sector namely agriculture, livestock and forestry (Mies, 1985). According to Chakrabarty (1985) between 30 and 40 per cent of the agricultural labour force is composed of women. He has further reported that 81.4 per cent of women in rural areas are employed in Agriculture. According to Sharma (1985) rural women grow at least 50 per cent of World's food. According to a report of Tamil Nadu Corporation for Development of women (1986) more than half the female labour force in Tamil Nadu are working as agricultural labourers. The report further indicates that there are as many 899 female agricultural labourers in the state per 1000 male agricultural labourers.

According to Mazumdar (1975) activities such as application of manures, land preparation, seed grading, sowing, dibling,

planting, irrigation, fertilizer application, plant protection, weeding, harvesting, threshing, shelling, hulling, winnowing, feeding the cattle, looking after milch animals and poultry keeping are the main occupations of the farm women. The farm women are responsible for 60 to 70 per cent of agricultural operations including sowing, transplanting, harvesting and storage of farm produce. Mies (1985) has also reported that women provide the major share of labour for transplanting (70-80 per cent), weeding (70-85 per cent) harvesting (60 per cent) and threshing (25-40 per cent).

The results of a study conducted in two villages in each of the Palghat and Kuttanad regions reveals that women accounted for about two thirds of the total labour input in rice production (Agarwal, 1983).

A survey conducted by Sreenivasan (1980) in Tanzania shows that women work an average of 2600 hours a year in agriculture as opposed to only 1800 a year for men. In Sub-Saharan Africa, subsistence farming is essentially a female activity, and women are the primary labourers on small farms where they contribute two-thirds or more of hours of work (Chakrabarty, 1985).

A salient characteristic of the occupational structure

of women workers was that non-agricultural sector employed 51.49 per cent of total women workers (Jose, 1989).

Chakrabarty (1985) has reported that 13.6 per cent of women in rural areas are employed in non-agricultural occupations. According to Bhatt (1985) in India 80 per cent of employment generates from these 3 categories namely home based producers, petty vendors, and those who are selling various kinds of services including their own manual labour. Patil (1985) has reported that in terms of employment and output the informal sector contributes significantly to the national economy. A socio-economic survey of Madras city indicates that 23000 adult women are employed in various informal sector activities such as hawking, vending, service operations (Azad, 1986).

In Bangladesh, silk rearing and spinning provide a primary income to women who engage in silk spinning for eight hours a day or a supplementary income to those who work fewer hours (Chen, 1984). The statistics indicate that in India 12 per cent of working women, work in the organised sector while 94 per cent of women work in the unorganised sector (Patil, 1985). According to a study conducted by Samuel and Erappa (1986) women working in weaving industry are engaged for more working hours and are paid less wages. Gopalan (1987) has

to total household income, with boys and girls contributing 6 per cent and adult male 44 per cent. A study conducted by Bhatt (1988) reveals that 25.9 per cent of the female workers in India are the sole supporters of their families. The study further has revealed that 36 per cent of female workers had reported to be contributing over 50 per cent of the total family income.

According to Bhatt (1988) the average contribution of a single female worker in a family, works out to Rs.3130/- per annum.

A study of women participants in Maharastra's Employment Guarantee Scheme has reported that the nutritional status of children was better when women received the cash or grain payments directly (Rosenzweig, 1980).

Kumar (1978) has found a strong association between child nutrition and mother's income and no significant association with father's income, among low income households. Gulati (1978) has found that daily nutritional adequacy in agricultural labourer households in Kerala was related to women's employment than to men's employment. A case study conducted in India among employed women has found that increasing women's wages has a visible effect on child nutrition (Chakrabarty, 1985)

Bagchi and Umesh (1985) have reported that income generation of rural women is regarded as an important measure in the amelioration of rural poverty and studies conducted in Thailand, Mexico and Sudan have shown that increased income at the family level leads to increased calorie intake of infants and pre-schoolers.

Gulati (1978) has estimated that on days when both the male head of the household and his wife were employed their short falls in terms of calories were 11 and 20 per cent respectively, while on days on which the women were unemployed the short falls increased to 26 and 50 per cent.

Eventhough women contribute a lot to the welfare of the family, discrimination is shown in allocation of facilities at the household level. Dandekar's (1975) has stated that a greater proportion of ailing women than men received no treatment and those women who were treated received mostly home remedies or traditional medical care while men received institution based care. Jain (1980) has reported that discrimination in the allocation of food between males and females within the family, the males getting the better food, such as milk for the boys or more food is a common phenomenon in Indian families. Pyson and Moore (1983) have commented that when considering sex discrimination India can be roughly divided into two by a line

that follow the contours of Saptura hill range and extends eastwards into southern Bihar. According to these authors sex ratios and discrimination against females in respect of food and medical care are generally higher in the northern part. Bidinger et al (1986) have found that sex is a major factor affecting the energy intake of children under six years of age, and the equitable allocation of food resources. A study on the status of women in Pakistan by a commission (1988) reveals the discrimination shown against women with regard to food. According to Ghosh (1989) discriminations in feeding and allotment of work at the domestic sector make most rural women physically weak, undernourished and malnourished.

Rani & Rajaiah (1988) have reported that female work participation rate is high for low paid work and thus in the aspect of employment, females are discriminated against.

Das et al (1982) have found that girls in Punjab were taken to the less qualified doctors than were boys. Chitnis (1983) reveals that wage discrimination is partly legitimised on the basis of the argument that the work output of women is lower than that of men at the same task. Chitnis (1983) has also revealed that work habitually done by women is classified as 'lighter' or less skilled than the work done by men, and consequently paid less. Chen (1984) has reported that under

the traditional division of labour in Bangladesh, women are excluded from economic activities in the fields or outside the village and are confined to economic activities in and around their homestead or village. According to Das Gupta (1987) expenditure on medicines was higher for boys than girls. At Safdarjung hospital, New Delhi more male children attend the outpatient department compared to females, the cases of severe malnutrition are referred to the nutrition clinic where there are more females (54 per cent) as against 46 per cent for males (Ghosh, 1987).

According to Basu (1979) a very large proportion of the employed females in the rural areas in India, are engaged as unpaid helpers in family farm and non-farm enterprises, these women even though they work full time or part time are reported not to receive any cash payment in lieu of work performed. Mankekar (1980) has reported that women are not officially recognised as 'workers', they are listed as dependent housewives. Mencher (1983) has reported rigid six typing of jobs in rice production and processing. He has further reported that this classification has helped land owners to pay women lower wages than men. As wives, daughters or mothers of the males who are hired, women in traditional systems of employment are often required to work without any payment at all or at best for

payment of a small pittance (Chitnis, 1983). Chitnis (1983) has reported that the female labour force, particularly female labour employed in agriculture and in other unorganised sectors of the economy is highly disadvantaged in terms of self-protection and bargaining power and is therefore highly subject to exploitation. Binswanger and Rosenzweig (1985) have observed that low caste and harijan women have less access to agricultural wage employment and receive lower wages. In a study conducted in Kerala Mies (1985) has reported that men earned Rs.3.5/- for all types of agriculture work in 1978, while women only received Rs.1.50/- to Rs.2.50/- for an eight hour working day. Unpaid family workers in rural India constitute 15 to 17 per cent of the male labour forces and between 41 and 49 per cent of female labour force (Moihuddin, 1985). According to Chakraberty (1985) women frequently experience discrimination in pay, promotion, working conditions and hiring practices and even where policies of non-discrimination are in effect. He has also reported that cultural constraints and family responsibilities restrict their opportunities for employment. Bagchi and Umesh (1985) have reported that in Malaysia and Sreelanka female labourers receive lower pay than men for the same work, face extra burdens because of inadequate child care facilities and the long distances between home and work, he further reports that many a time pay of the women are collected by family

members. According to Sharma (1985) all the hours worked throughout the World, women contribute about two-thirds. The results of the study carried out in eight villages by Achaya and Bennet (1987) reveal that women's total village work was found to be 11 hours daily, as compared to 8 hours for men.

Nair (1988) has reported that except for the well to do families the women and girls have to work as self employed labour or wage earning labour to supplement the family earnings and to struggle for meeting both ends. A survey on construction workers found that among the women worked as load lifters, 82 per cent were temporary (Batliwala, 1988). He has further reported that 70 per cent of workers worked six days a week. A study conducted by Chaudary (1988) has revealed that 80 per cent of the respondents had to work for 8 hours. She has also reported that the women work twice as many hours as men for only one-tenth of the income. According to Jose (1989) the workers generally were finding their employment in low paid occupations and doing strenuous work than their male counterparts in the State.

Nair (1990) has also reported that although women work for longer hours and contribute substantially to the family income, they are not recognised as workers either by women themselves or the data collecting agencies and the government.

Women who are employed, undertake an extremely strenuous load of work in addition to the work load at home (Bagchi and Umesh 1985). According to Srivastava (1985) the continuous fatigue due to the dual role does not allow her to recoup the defence mechanism. An International Labour Organisation (ILO) study has estimated that the value of unpaid household work constitutes 25 to 39 per cent of the total national product in developing countries (Sarojini, 1989). According to Sharma (1985) women produce most of the food for domestic consumption and process, prepare and serve to the families. He has also reported that in some developing regions a quarter to half of rural households are permanently or defacto headed by women. According to the report of Tamil Nadu Corporation for development of women, the women in Tamil Nadu (1986) work a double day, if one considers that they do all the domestic work besides additional work outside home. Rani and Rajaiah (1988) have reported that women is considered physically weak but she has to play a dual role if she wants to do paid work. They have further reported that she must be an ideal housewife and sincere working women to undertake the double work.

Gupta (1989) has reported that rural women work for over $\frac{13}{14}$ hours per day engaged in chores like fetching water for the family, fodder for the cattle and toiling in the fields for

food production and processing. Rural women in the developing World and particularly those who are poor, invariably work hard at a variety of tasks, with little time for leisure and little control over productive leisure and little control over productive resources or even over their own income or labour (Chakrabarty, 1985). Shah (1985) has reported that when ninety per cent of the work is done at home by the employed women, hardly 10 per cent of the family income is spent for her benefit. In a study done by Gowda and Indira (1987) it is revealed that 25 per cent of women employed in factories were in the habit of taking up subsidiary occupations to augument their income.

Chaudary (1988) reveals that 24.4 per cent of employed sweepers of Patna Municipal Corporation had no co-operation extended by their husbands in domestic work.

According to Thyagarajan et al (1978) employment provided satisfaction and a sense of fullfilment for the women and hence they were able to combine dual roles effectively. If women were paid for domestic work and child care, their wages would account for upto half of the national income (Gupta and Gupta, 1987). Ghosh (1989) further reports if household work is calculated as equivalent to those services performed by cooks, cleaners and nurses, it contributes upto half the gross national product in many countries.

Apart from outside work, women spend almost 10 to 12 hours per day doing the household chores including fetching of water and collecting fuel (Singharoy and Prava, 1989).

However, the women working outside the home, face many problems since they are not well equipped. Major immobilities of the women, in this regard, are in the fields of education and health.

Education is an important factor influencing economic status of women. In India the literacy rate for females is only 24.82 per cent (Gopalan, 1987). Rate of literacy among rural women is only 13.2 per cent as against 42.31 per cent in urban sector (UNICEF 1985).

As per a survey conducted by Ministry of Programme Implementation (1986), about three-fourths of the women in villages are illiterate. According to survey conducted by Tamil Nadu Corporation for Development of women (1986) female illiteracy in rural areas is 3 to 4 times higher than in urban areas. The study further revealed that 16.8 per cent of the respondents rejected the view that a girl should be educated at all and as many as 64.5 per cent disapproved higher education for girls According to Boserup (1987) illiteracy among women resulted in allotment of hard work with primitive equipment in households

as well as in the labour market and with very little training and in low wages.

According to Rajagopalan (1986) the female literacy level is on the rise in Tamil Nadu over the decades, though it is still low at 35.0 compared to the male literacy level of 58.3.

According to Sreenivasan (1980) high costs of schooling and limited job opportunities for the educated, in the country, had prevented many parents to invest for the higher education of girls. Grewal (1982) has reported that enrolment of girls at the elementary school stage is still behind that of boys. A study conducted by Singh et al,(1985) have revealed that school dropouts are extremely common in girls because of the help needed to look after younger siblings and/or assistance to the mothers concerned. According to Rajagopalan (1986) higher school dropout rate for girls in Tamil Nadu is because they are increasingly drawn out of the school system to undertake domestic work and also due to the prevalent belief in the rural areas that it will be difficult to find suitable bridegrooms for educated. Nair (1988) has reported that literacy rate in Kerala for women is 65.7 per cent, while as per all India pattern the literacy rate for women is only 24.82 per cent.

Rajula (1978) has observed that the low literacy percentage of Indian women contributed to the limited employment

opportunities. She has also reported that the lack of technical knowledge and skills, limit their participation to 10 per cent in the employment sector. Zachariah and Patel (1983) have showed that infant mortality and household expenditure were influenced by mother's education. Charylu and Reddy (1987) have reported that less education for women resulted in an inbuilt sex bias in occupational mobility.

Health status of the women working outside home is a major factor influencing their normal life pattern. Hussain (1988) has reported that heavy schedule of work of rural women leads to complete physical exhaustion and reduced working efficiency.

According to Sharma (1985) men dominates in the management and decision making of commercial and large scale agriculture, while women continue to be in the subsistence production with low technology and low returns because of low literacy level. The national policy on Education (1986) lay emphasis on the removal of disparities and to equalise educational opportunity by attending to the specific needs of women who have been denied equality so far.

Study conducted by Devadas et al (1975) among women doing manual work in building construction reveals that their food and

energy intake were found to be below the allowances recommended by ICMR. Satyanarayana et al (1979) have reported that the work efficiency of an individual varied inversely in relation to the degree of undernutrition or energy stress. Blieberg et al (1980) have reported that one of the reasons for the negative energy balance of some of the female agriculturists is the compulsion to spend long hours in heavy work in the fields during the rainy season. The energy intake of the women engaged in agriculture is reported to be seasonal, with a high intake and output in monsoon and harvest and a low intake and expenditure in summer (Waterlow et al, 1985).

According to Satyanarayana et al (1979) habitual physical activity was consistently associated with higher work capacity per unit weight for all ages and all nutritional groups. He has also reported that reduced work output in a group of industrial workers was due to early malnutrition. Another study conducted by Satyanarayana et al (1980) further reveals that reduced work performance was more likely due to their current and persistent undernutrition than a consequence of early childhood malnutrition. Wheeler and Tan (1983) are of the view that the nutritional status of an individual has a direct and identifiable effect on his or her productivity at work. Rahmathullah (1983) has described that severe anaemia decreases

maximal and near-maximal work capacity and correction of anaemia has been shown to increase work capacity.

A study conducted by Vijayalakshmi and Jayanthi (1986) indicates that iron supplementation conserves energy and hence increases work output suggesting that anaemia decreases productivity and supplementation with iron improves work output. Findings of Hussain (1988) has indicated that good health and nutrition prevent infirmity and absenteeism owing to disease, enhance resistance and increase ability for sustained work.

Maternal morbidity, frequent births, heavy household work, and lack of opportunities, contribute to the low health profile of women and girls in the 40 to 50 per cent of the population below the poverty line (Rajagopalan, 1986). Malnutrition among rural women is a major health problem faced by the country today. According to Charyulu and Reddy (1987) lack of knowledge, lack of facilities, lack of access to free and better health facilities and poverty are the major causative factors responsible for the occurrence of malnutrition. Anaemia, gastrointestinal ailments, respiratory diseases, malnutrition, tuberculosis, parasitic infestation and malaria are reported to be common nutritional and health disorders prevalent among women in our country (Kishwar, 1988). Employed

women have more serious implications for their health (Ghosh, 1989) Narangwal population study demonstrated the negative outcome of the poorer nutritional status of females (Chatterjee, 1989).

Mencher and Saradamoni (1982) have reported that pregnant/lactating women often lose weight during peak work (low food) seasons and infants may be summarily weaned at such times (Bagichi and Umesh, 1985) have reported that strenuous work load both outside and inside their home puts a great strain on malnourished women during their pregnancy period. It is reported that 15 to 20 per cent of all maternal deaths are due to high level of anaemia amongst pregnant women (Ghosh, 1989). According to Gupta (1989) early marriage, low nutritional levels and unplanned and repeated pregnancies may cause serious health problems to women.

Data on Indian women's heights and weights show that between 12 and 33 per cent of 20 to 24 year old women in the different states surveyed had height below 145 cm (Gopalan and Kaur (1989)). The survey further reveals that between 15 and 29 per cent had weights below 38 kg (Gopalan and Kaur, 1989).

Gupta (1971) has listed the environmental factors which might adversely affect the health, well being, efficiency and

productivity of women at work or in the community Chitnis, (1983) has reported that contractors exploit female labourers by payment of poorer wages and by evasion of legislation requiring their 'Protection' through such measures as the provision of maternity benefits and other facilities such as special latrines, bathrooms, suitable work hours, compulsory periods of rest, restriction on the kind and load of work that may be demanded. According to Eng (1983) women tend to have more leg ailments such as vericose veins, backache and back injuries than men since their work around the house as well as in the work spot involves a lot of bending, lifting and standing. Chakrabarty (1985) reported that in Kerala the women engaged in coir and cashew industry are suffering from dermatitis, skin infection, allergy and exposure to sulphur dioxide fumes is also encountered. Srivastava (1985) has reported that women workers in our country face drudgery in all walks of life.

Study conducted Mukhopadhyaya (1987) among working women in India reveals that occupational hazards relating to monotonous working conditions in unsanitary environments laden with dust and toxic chemicals in occupations such as coir making, stone breaking, handloom industries affects the health of women workers. A study conducted by Gowda and Indira (1987) reveals that agarbathi industry is an area where the workers are

exposed to continuous health hazards like pulmonary tuberculosis, pharyngitis, allergic reactions, lung diseases, skin diseases like contact dermatitis and anosmia. Kishwar (1988) conducted a study among women working in chillie industry in Ahamedabad and reveals that most of the women complains of pains and aches in their arms and suffer from constant sneezing and running noses while some reported constant exaustion and spells of dizziness which is the result of general ill health and anaemia. Nair (1988) reveals in a study that female workers lacked a rest room, drinking water and toilet facilities in work areas. The ardous task of rice planting by hand, performed exclusively by women poses a health hazard to undernourished pregnant women and their unborn (Batliwala, 1988). According to Kishwar (1988) the daily work load of a working class villages women in Pakistan involves prolonged drudgery, often around 16 hours daily. Heavy physical activity among pregnant women from Jat and Ramdasia communities has been reported to have led to higher prenatal deaths (Gopalan and Kaur, 1989).

MATERIALS AND METHODS

MATERIALS AND METHODS

A study was conducted to assess the food consumption and energy expenditure pattern of self employed women in unorganised sector in Trivandrum. These women were engaged in "stone breaking work" from morning till evening. Daily energy requirement of the women, their energy expenditure pattern, nutritional status and identification of nutritional disorders prevalent were the major aspects studied. The knowledge and attitude of these women regarding food and health were also assessed.

Area of the study

The area selected for the study was Muttakkad, Poomkulam, Azhakulam and Vellar villages located under the National Extension Service (N.E.S.) Blocks in Trivandrum city. These areas were selected mainly because the major occupation of the women residing in these areas were stone breaking.

Selection of samples

150 households were selected for this study from the 4 villages and in all these households the major occupation of the women were stone breaking.

Conduct of the study

The study was conducted in the following lines :

1) Assessment of socio-economic background of the families

I. Stone breaking in general

a) Women engaged in stone breaking

b) A woman working with her children

and personal characteristics of the women engaged in "stone breaking" in 150 households

2) Assessment of dietary habits of the 150 households

3) Assessment of the attitude of the women towards their occupation

4) Assessment of the knowledge of the women engaged in stone breaking, regarding food and health

Following aspects were determined in a sub sample of 15 women:

i) Assessment of the food consumption pattern of the women in relation to energy expenditure

ii) Assessment of the nutritional status of the women to locate nutritional disorders prevalent

iii) The energy requirements of the women by monitoring the work schedule for one week and by computing energy consumed for daily activity

Data needed for the study was collected through

1) Socio-economic and dietary survey

Questionnaire method was used to elicit information on the socio-economic and dietary habits of 150 households selected for the study

c) Mother and infant at the work site

The questionnaire developed for the study was intended to collect information about the family background, family size, age, educational status, occupation and monthly income of family members, details of family income and income from stone breaking, food habits of the respondent, family, details regarding house and other facilities available in the premises.

Information regarding the monthly expenditure pattern, frequency of purchase, use of foods, methods of preparation and preservation of foods, meal pattern of both the respondent and the family were also collected through the questionnaire. Details regarding the respondents such as age of marriage, number of pregnancies, type of delivery and health status of their children were also collected. The questionnaire developed is presented in Appendix I. Data were collected by the interview method.

2) Food weighment survey

Food weighment method was used to elicit the information on the actual food consumed by 15 women selected randomly as sub sample from 150 households surveyed.

A three day food weighment survey was conducted among 15 families (10 per cent of the surveyed samples). Visweswara Rao (1975) pointed out that any single day or 2 day weighment

II. Food weighment survey

a) Weighing raw food

b) Weighing cooked food

method would be as efficient a tool as that of 7 day. During weighment survey the investigator was present with the families throughout the period of weighment. All the rawfoods taken out for cooking were weighed and the total cooked weight of the food was recorded (Fig. IV and V). Raw equivalent for the food items consumed were then computed. The nutrients available from the food intake was computed using the food composition tables ICMR (1982). The questionnaire prepared for the weighment survey is presented in Appendix II(a) and (b).

3) Standard techniques for assessment of nutritional status of the women include

i) Anthropometric studies
ii) Clinical and
iii) Bio-chemical tests

1) Anthropometric studies

Anthropometric measurements used in the study were taken according to the techniques outlined by Jelliffee (1966).

Anthropometry has been accepted as an important tool for assessment of nutritional status (Vijayaraghavan, 1987).

Height

A fibre glass tape was fixed on the wall with cellophane

III. Anthropometric measurements of women

a) Height

b) Weight

tape. The mother was asked to stand erect without shoes with the kneels, buttocks, shoulders and occipit against the wall. The height was read off from the scale on the wall (Fig. VI).

Weight

The weight was measured using a beam balance (Fig. VII). Vandana Sen et al (1980) pointed out that weight/height^2 gives a fair estimate of the magnitude of the PCM.

ii) Clinical examination

According to Swaminathan (1986) clinical examination is the most important part of nutritional assessment, as we get direct information of signs and symptoms of dietary deficiencies prevalent among people. The presence of absence of clinical deficiency symptoms which is an index of nutritional status, was assessed by a qualified Physician (Fig. VIII). A schedule used for the survey is presented in Appendix III.

iii) Bio-chemical tests

Estimation of haemoglobin was done under bio-chemical studies. The method adopted was Cyanmetmoglobin method (Fig. IX). The details of the method are presented in Appendix IV.

4) Administration of scale to assess the knowledge of the women regarding food and health

IV. Clinical examination

V. Haemoglobin estimation

Information on health and nutrition were collected with the help of a suitably structured scale (Likert, 1932). A set of 50 statements on health and nutrition were prepared and these statements were circulated among experts and academic personnel. On the basis of their comments, 30 statements were selected. Similarly, from 15 statements prepared to measure the attitude of the women towards their jobs, 10 statements were selected.

Data was collected through personal contacts. The schedule is presented in Appendix V and VI.

The energy expenditure pattern of randomly selected women workers was determined by making use of a time motion schedule and monitoring their work schedule for one week (Appendix VII). The energy expended/day was then calculated by the method recommended by Swaminathan (1985) Appendix VIII. Actual energy consumption/day is computed from weighment survey and is compared with the energy expenditure.

RESULTS

RESULT

A study on "Food consumption and energy expenditure pattern of self employed women in unorganised sector" was conducted among 150 women engaged in "stone breaking". Socio-economic background of the families, personal characteristics of the women, and dietary habits of the households in general and with special reference to the women in the family were assessed. Assessment of food consumption pattern and nutritional status were done in a sub sample of 15 women. The energy requirements of the women were assessed by monitoring a time motion schedule for one week, and the actual energy consumption of the women were computed from weighment survey.

The results pertaining to the study is presented as follows:

1. Socio-economic background of the families
2. Dietary habits of the households
3. Personal characteristics of the women engaged in stone breaking
4. Assessing the attitude of the women towards their occupation
5. Assessing the knowledge and attitude of women regarding food and health

6. Nutritional status of the women engaged in stone breaking
7. Actual energy expenditure of the women engaged in stone breaking by monitoring a time motion schedule for one week

1. Socio-economic background of the families

Majority of the families surveyed were Hindus (88.7 per cent) while 11.3 per cent of the families (surveyed) were of Christian religion. Analysis of the caste distribution of the 150 families surveyed indicated that majority of the families were from the under privileged sections of the population viz., Scheduled Castes (52.7 per cent), Other Backward Communities (37.3 per cent) and Scheduled Tribes (8 per cent).

Majority of the families surveyed were nuclear families (90.7 per cent) while 9.3 per cent families were extended families having one or two relatives residing with them.

Majority (76.7 per cent) of the families were having more than four members. 20 per cent of the families surveyed were having three members each and 3.3 per cent of the families were families with two members.

Table 1 shows the educational status of the adult members of the family surveyed.

Table 1. Educational status of the adult members of the family surveyed

Educational level	Male members		Female members		Total	
	No.	Per cent	No.	Per cent	No.	Per cent
Illiterates	74	25.26	78	26.44	152	25.85
Lower Primary	56	19.11	74	25.09	130	22.11
Upper Primary	71	24.23	56	18.98	127	21.60
High School	80	27.30	71	24.07	151	25.68
College	12	4.10	16	5.42	28	4.76
Total	293	100.00	295	100.00	588	100.00

As indicated in the Table 1, 27.3 per cent of the male members had studied upto high school while 25.26 per cent of the males were illiterate. About 4.1 per cent of male members had received college education. In the case of females the percentage of women who were illiterates were found to be slightly higher (26.4 per cent). Similar trend was shown in the other groups where women were having high school level education (24 per cent). However compared to male members more women (5.42 per cent) were reported to have received college level education.

Occupational status of the families surveyed are presented in Table 2.

Table 2. Occupational status of the family members

Type of job	Male members		Female members		Total	
	No.	Per cent	No.	Per cent	No.	Per cent
Nil	20	13.70	22	10.48	42	11.80
Govt. Jobs	1	0.70	-	-	1	0.28
Agrl. Labourers	35	24.00	-	-	35	9.84
Loading	11	7.53	-	-	11	3.09
Mason	1	0.70	-	-	1	0.28
Fish vendor	2	1.38	-	-	2	0.56
Brick modeller	4	2.75	-	-	4	1.12
Stone breaking	68	46.58	188	89.52	256	71.91
Tree climbing	2	1.38	-	-	2	0.56
Private Mechanic	2	1.38	-	-	2	0.56
Total	146	100.00	210	100.00	356	100.00

Table 2 reveals that in many of the families male members (46.58 per cent) were engaged in stone breaking along with the female members of the family. Men in the remaining families were found to be engaged in agricultural operations

and labourers (24 per cent). However 13.7 per cent of the male members in the families surveyed were unemployed. All female members in the families surveyed were engaged in stone breaking. In the 150 families surveyed 188 females (89.52 per cent) were found to be engaged in the same occupation.

Table 3 presents the employment status of the family members.

Table 3. Employment status of the family members

No. of employed members in the family	No. of families	Per cent
One	27	18.0
Two	89	59.3
Three	31	20.7
Four	3	2.0
Total	150	100.0

Table 3 indicates the employment status of the family members in majority of the families (80 per cent) 2 to 3 family members were employed. In 18 per cent of the families only one member was employed, while in 2 per cent of the families, four members were employed.

Table 4 provides the total monthly income of the family.

Table 4. Monthly income of the families

Range (in Rs.)	Number	Per cent
Less than Rs.200	6	4.00
Rs.201-400	41	27.30
Rs.401-600	68	45.40
Rs.601-800	24	16.00
Rs.801-1000	6	4.00
Rs.1001-1200	5	3.30
Total	150	100.00

Majority of the families surveyed (45.4 per cent) were having an income of Rupees 401 to 600 and 27.3 per cent of the families were getting an income of Rs.201-400 and only 3.3 per cent of the families were getting above Rs.1000/-.

Table 5 presents the monthly income of the families from stone breaking.

Table 5. Monthly income of the families from stone breaking

Range (in Rs.)	Number of families	Per cent
Less than Rs.100	-	-
Rs.101-300	55	36.7
Rs.301-500	52	34.7
Rs.501-700	36	24.0
Rs.701-900	2	1.3
Rs.901-1100	3	2.0
More than Rs.1100	2	1.3
Total	150	100.0

As depicted in the Table, about 34.7 per cent of the families were earning an income ranging from Rs.301-500. While 24 per cent of them were earning between Rs.501-700 and 36.7 per cent of the families were getting only an amount of Rs.300 and below.

The income per day for a woman engaged in stone breaking will be decided by the quantity of stone broken by her during the work day since the wages are fixed on the basis of the weight or volume of stones broken.

Table 6 presents average monthly income of the families.

Table 6. Average monthly income of the families

Average monthly income of the families	: Rs.474-00
Average monthly income of the family from stone breaking alone	: Rs.398-00
Weightage for income from stone breaking	: 83.96 per cent

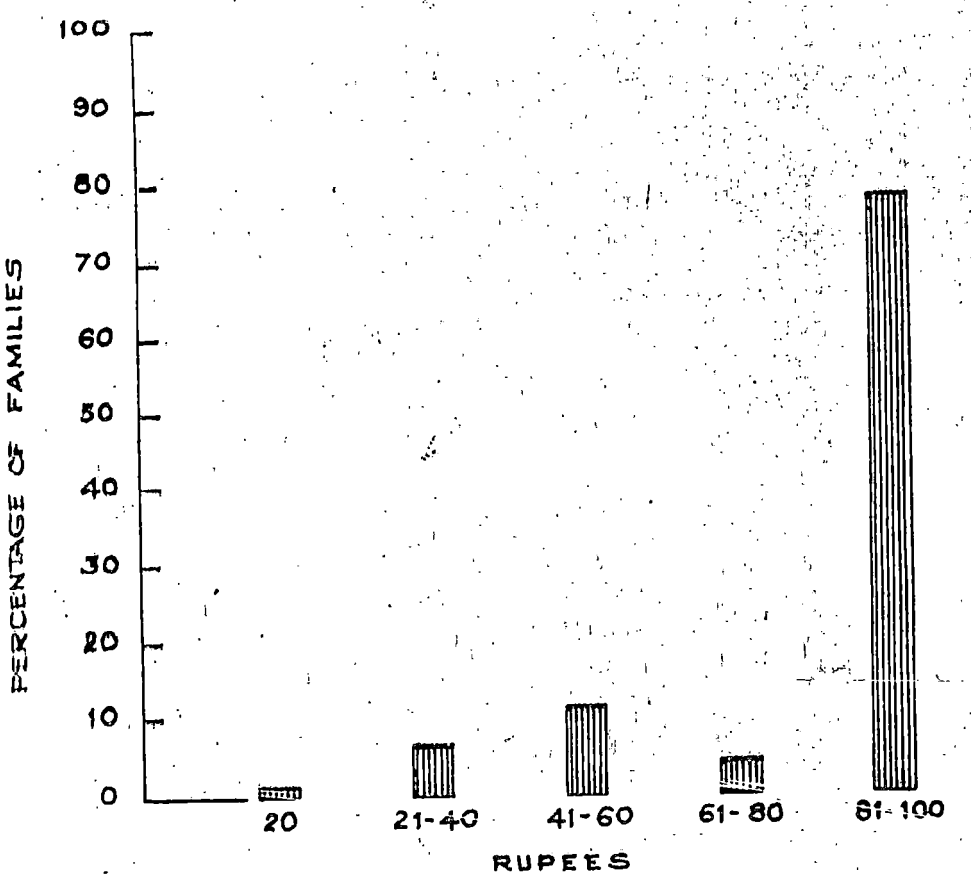
As shown in Table 6 the average weightage of the income from stone breaking was 83.96 per cent.

Table 7 presents the percentage of income of the families from stone breaking when compared to the total income of the family.

Table 7. Percentage of income of the family from stone breaking when compared to the total income of the family

Percentage of income	Details of the families	
	Number	Per cent
20	2	1.30
21-40	10	6.70
41-60	17	11.30
61-80	6	4.00
81-100	115	76.70
Total	150	100.00

FIG. II. PERCENTAGE OF INCOME OF THE FAMILY FROM STONE BREAKING WHEN COMPARED TO THE TOTAL INCOME OF THE FAMILY.



PERCENTAGE OF INCOME FROM STONE BREAKING

As revealed in the Table, the income of 76.7 per cent of the families surveyed were mainly from the occupation of stone breaking since this formed morethan 80 per cent of the family income.

Income of the women per day from stone breaking are presented in Table 8.

Table 8. Daily income of the women from stone breaking

Amount (Rs.) in range	Details of women	
	Number	Per cent
5 - 6	43	28.6
7 - 8	25	16.7
8 - 10	48	32.0
11 - 15	34	22.7
Total	150	100.0

As revealed in the Table, more than 50 per cent of the women, engaged in stone breaking were getting a reasonable income from this occupation.

In the present study 32 per cent of the women worked to earn Rs.8 to 10 per day and 22.7 per cent of the women were able to earn upto Rs.15/day. But 45.4 per cent of the women

were able to earn only upto Rs.5-8/day. Major reasons for these variations in the wages were that many of the women were to look after their children also at the work site and were incapable of working continuously due to this distraction and also due to illness or old age.

Monthly income of the family members from stone breaking are presented in Table 9.

Table 9. Monthly income of the family members from stone breaking

Income range	Details of women		Details of men	
	Number	Per cent	Number	Per cent
Rs.100	-	-	-	-
Rs.101-150	66	44.00	4	4.76
Rs.151-200	43	28.70	7	8.33
Rs.201-300	35	23.30	42	50.00
Rs.300	6	4.00	31	36.91
Total	150	100.00	84	100.00

As revealed in Table 9, women were contributing more for the family income from stone breaking.

Living conditions of the families surveyed were determined by the possession of house, type of house and other facilities available in the house.

Majority of the families (94.7 per cent) possessed their own house, while only 5.3 per cent of them were staying in rented houses. Most of the families (69.3 per cent) had two to three rooms in their houses, while 18 per cent of them had only one room. Only 12.7 per cent of the families were having four to five rooms in their houses.

Houses of 62 per cent of the families were well ventilated and 38 per cent of the families possessed houses which were not properly ventilated. Regarding the type of house, the houses of the majority of the families (74.7 per cent) were made up of bricks (83.4 per cent) of the families were having houses with thatched roof. Only 1.3 per cent of the families were having concrete building while 15.3 per cent of the families were having houses with tiled roof, 10.7 per cent of them were staying in huts made up of coconut leaves, 12 per cent of them were residing in mud huts.

Only 21.3 per cent of the families surveyed had latrines in their houses. Regarding drinking water facilities many of the families (40.7 per cent) were depending on wells available

Table 10. Monthly expenditure pattern of the families (in per cent)

Range of expenditure in percentage of income	Food		Clothing		Shelter		Travelling expense		Health		Education		Entertainment		Savings	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	60.0
0- 5	-	-	77	51.4	128	85.3	127	84.7	80	53.3	100	66.7	98	65.3	47	31.3
6-1Ø	-	-	71	47.3	22	14.7	23	15.3	60	40.0	38	25.3	52	34.7	13	8.7
1Ø-20	-	-	2	1.3	-	-	-	-	10	6.7	12	8.0	-	-	-	-
2Ø-30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3Ø-40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4Ø-50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5Ø-60	2	1.3	-	-	-	-	--	-	-	-	-	-	-	-	-	-
6Ø-70	49	32.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7Ø-89	40	26.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8Ø-90	59	39.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	150	100.0	150	100.0	150	100.0	150	100.0	150	100.0	150	100.0	150	100.0	150	100.0

in the neighbourhood. Many of the families bringing water from road side pipes (32 per cent), public well (9.3 per cent) and wells located far away from home (4.0 per cent). Only 14 per cent of the families were having own wells.

Dietary habits of the households

Dietary habits of the households will be generally depicted in the monthly expenditure pattern and such details collected are presented in Table 10.

As revealed in the Table 10, 66 per cent of the families spent 70 to 90 per cent of their income on food. The expenditure pattern for all other aspects like clothing, shelter, travelling, health, education and entertainment come only upto 10 per cent for almost all families. Majority of the families (60 per cent) had no savings. 40 per cent of the families saved upto 10 per cent of their income.

Table 11 presents the frequency of use of different food items by the families.

As indicated in the Table all the families surveyed were nonvegetarians cereals were found to be included as staple foods in the diets. Majority of the families (62 per cent) consumed pulses once in a week and 33.3 per cent of the

Table 11. Frequency of use of different food items

Items of food	Daily		Once in a week		Two times in a week		Three times in a week		Occasionally		Never		Total	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Cereals	150	100	-	-	-	-	-	-	-	-	-	-	150	100
Pulses	-	-	93	62	3	2	4	2.7	50	33.3	-	-	150	100
Elephant yam	2	1.3	107	71.3	-	-	-	-	41	27.3	-	-	150	100
Colocassia	3	2.0	102	68.0	-	-	-	-	45	30.0	-	-	150	100
Small onion	150	100	-	-	-	-	-	-	-	-	-	-	150	100
Savola	40	26.7	41	27.3	9	6	-	-	60	40.0	-	-	150	100
Potato	-	-	41	27.3	2	1.3	3	2.0	104	69.4	-	-	150	100
Tapioca	101	67.3	44	29.3	-	-	3	2.0	2	1.3	-	-	150	100
Sweet potato	-	-	-	-	-	-	-	-	150	100.0	-	-	150	100
Carrot	-	-	20	13.3	-	-	-	-	80	53.3	50	33.3	150	100
Beet root	-	-	98	65.3	-	-	2	1.3	50	33.3	-	-	150	100
Other vegetables	30	20	95	63.3	5	3.3	5	3.3	15	10.0	-	-	150	100
Leafy vegetables	4	2.7	48	32.0	4	2.7	8	5.3	86	57.3	-	-	150	100
Fruits	33	22	65	43.3	3	2.0	5	3.3	44	29.3	-	-	150	100
Milk and milk products	136	90.6	1	0.7	-	-	-	-	12	8.0	1	0.7	150	100
Meat	-	-	-	-	-	-	-	-	150	100.0	-	-	150	100
Fish	150	100	-	-	-	-	-	-	-	-	-	-	150	100
Eggs	8	5.3	12	8.0	5.3	-	-	-	130	86.7	-	-	150	100
Coconut	150	100	-	-	-	-	-	-	-	-	-	-	150	100
Oils	108	72	1	0.7	10	6.7	16	10.7	15	10.0	10.0	6.7	150	100
Sugar and Jaggery	150	100	-	-	-	-	-	-	-	-	-	-	150	100
Jam and squash	-	-	-	-	-	-	-	-	30	20.0	120	80.0	150	100
Pickles	-	-	-	-	-	-	-	-	43	28.7	107	71.3	150	100
Bakery items	14	9.3	50	33.3	-	-	-	-	86	57.3	-	-	150	100

families consumed pulses occasionally. 63.3 per cent of the families consumed vegetables once in week, while only 20 per cent of the families used these food articles daily. In the case of leafy vegetables only 32 per cent of the families utilised green leafy vegetables once in a week, majority (57.3 per cent) of the families consumed these food articles rarely. Regarding fruits 22 per cent of the families used fruits daily and 43.3 per cent of the families used fruits once in a week.

Majority of the families (90.7 per cent) consumed milk daily, but only in small quantity added to the tea purchased from tea shops. During work, majority of the women (60 per cent) were in the habit of taking tea daily once or more times as they had felt that tea had a stimulating effect for doing their work efficiently.

100 per cent of the families consumed fish daily, the major source of protein to them, and this might be due to easy availability and low cost of fish and above all this, the families were in the habit of consuming fish daily in this rural area. 86.7 per cent of the families used eggs occasionally, the poor consumption of this food might be due to high cost and non availability and ignorance about the nutritional significance of the eggs.

Most of the families consumed oils, sugar and jaggery daily though in small amounts. Jams and Squashes were used occasionally by only 20 per cent of the families and only during special occasions like marriages. 28.7 per cent of the families consumed pickles occasionally and most of them neither prepared nor consumed pickles in the daily diet.

Regarding roots and tubers only 27.3 per cent of the families utilised potato once in a week, while they consumed sweet potato and carrot rarely, 65.3 per cent of the families had shown preference to beet root since they were in the habit of using this food article weekly. But tapioca was consumed by most of the families (67.3 per cent) daily while 29.3 per cent consumed this food once in a week.

Majority of the families (94.7 per cent) were not interested in home production of food articles. Only 5.3 per cent of the families produced tapioca and coconuts from their small piece of land available around their houses and also owned cows and hens for milk and egg production. The foods thus produced were consumed by them.

Table 12 presents the culinary practices popular among the families surveyed.

Table 12. Popular culinary practices

Items of foodstuffs	Cut in big pieces		Cut after washing		Prepare without skinning		Cut and kept before cooking		Strain the water after cooking	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Other vegetables	50	33.3	132	88.0	Nil	-	150	100	Nil	-
Roots and tubers	150	100.0	-	-	-	-	-	-	150	100
Leafy vegetables	Nil	-	150	100.0	-	-	150	100	Nil	-
Fish	Nil	-	150	100.0	-	-	150	100	Nil	-
Meat	Nil	-	80	53.3	Nil	-	150	100	Nil	-

It is evident from the Table that in the case of vegetables most of the families were in the habit of cutting vegetables into small pieces and only 33.3 per cent of the families were in the habit of cutting into big pieces. Majority of the families, cut all the vegetables after washing except bananas and brinjal, which were cut and immersed in water before cooking. All the families were in the habit of washing leafy vegetables before cutting and did not strain water after cooking. Majority of the women were in the habit of cutting and keeping the vegetables ready before lighting the chulha since they thought that this practice helped to minimise cooking time.

Table 13 presents cooking practices popular among the families surveyed.

All the families were cooking cereals by straining method and cooking by absorption method was not popular, but majority of the families consumed the strained gruel. Hundred per cent of the families accepted absorption method for cooking pulses and leafy vegetables. Regarding other vegetables 24 per cent of the families cooked these food articles by absorption method, 76 per cent of the families prepared pulses as side dish. Among roots and tubers, tapioca was the most

Table 13. Popular cooking practices

Methods	Cereals		Pulses		Roots and tubers		Other vegetables		Leafy vegetables		Meat and fish		Egg	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Absorption	-	-	150	100	-	-	36	24	150	100	-	-	-	-
Boiling and straining	150	100	-	-	105	70	-	-	-	-	-	-	-	-
Straining and curries	-	-	-	-	45	30	-	-	-	-	-	-	-	-
Full boiling	-	-	-	-	-	-	-	-	-	-	-	-	126	84
Spicy side dishes through boiling and seasoning	-	-	-	-	-	-	114	76	-	-	138	92	-	-
Frying	-	-	-	-	-	-	-	-	-	-	12	8	24	16

common item and was used by straining after boiling. 30 per cent of the families made side dishes with roots and tubers. Meat and fish were generally cooked as side dish and only 8 per cent of them used frying method. Egg preparation like full boiled egg and omlette were consumed once in a while.

Preservation practices followed by the families are presented in Table 14.

Table 14. Popular preservation practices

Foods	Salting or pickling		Drying	
	No.	Per cent	No.	Per cent
Cereals	-	-	36	24
Mango green	48	32	-	-
Lime	39	26	-	-
Fish	-	-	15	10

The Table indicated that in general the families were not in the habit of preserving foods. About 32 per cent of the families and 26 per cent of the families were in the habit of preserving green mangoes and lime respectively by

salting and pickling. Only 10 per cent of the families preserved fish by drying method.

Table 15 presents daily meal pattern of the families.

Table 15. Daily meal pattern of the families

Combinations of food articles	Breakfast		Lunch		Evening		Dinner	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Rice, coconut, plantain fruit, tea	30	20	-	-	-	-	-	-
Rice, pulse, coconut, milk	25	16.7	27	18	-	-	-	-
Rice and fish	47	31.3	44	29.3	-	-	49	32.7
Rice and coconut	28	18.7	11	7.3	-	-	-	-
Rice, coconut and milk	15	10	-	-	-	-	-	-
Rice and vegetables	5	3.3	13	8.7	-	-	-	-
Rice, fish and vegetables	-	-	22	14.7	-	-	43	28.7
Tea	-	-	15	10.0	70	46.7	-	-
Rice, Fish and Tapioca	-	-	2	1.3	-	-	49	32.7
Rice, Fish, Tapioca, Vegetables	-	-	-	-	-	-	9	6.0
Nil	-	-	16	10.7	65	43.3	-	-
Tea without milk	-	-	-	-	15	10	-	-
Total	150	100	150	100	150	100	150	10 0

As revealed in the Table rice was the staple food of the whole families surveyed. Besides rice fish was another food article included in the diet, vegetables were also included daily by a small percentage of the families. Leafy vegetables were consumed very rarely. As depicted in the Table about 38.7 per cent of the families included tapioca daily along with fish. Such families rarely ate protective foods like meat, egg and fruits. Data presented in the Table further revealed that 20 per cent of the families included plantain fruits daily. Pulses namely black gram was purchased and used. Breakfast preparations were purchased from the tea shop available in the neighbourhood and these preparations were rarely prepared in their homes. Similarly food articles, like milk was consumed as tea which was also purchased from the shop and only a few families prepared tea in their homes.

Foods like dosa, appam, vada etc. were purchased from nearby shops. Children of 50 families were beneficiaries of ICDS programme and hence consumed their lunch at Anganwadi. For majority of the families dinner was the only meal which they prepared at home. The children were given adult foods and no special foods were prepared for them.

Table 16 presents the details relating to infant feeding practices.

Table 16. Infant feeding practices

Particulars	Number	Per cent
Breast milk only	33	22.0
Breast milk and cow's milk	42	28.0
Breast milk, biscuits and plantain	46	30.7
Breast milk and Ragi	18	12.0
Breast milk and commercially prepared infant foods	11	7.3
Total	150	100.0

22 per cent of the mothers fed their children with breast milk only, while 28 per cent of them gave cow's milk along with breast milk. Majority of the women (30.7 per cent) fed their children with biscuits and plantains.

Table 17 presents the diet during different physiological conditions.

Table 17. Foods given during different physiological conditions

Physiological conditions	Type of diet
Pre-School	All adult foods and these are available at Anganwadi
School going	All adult foods and those are available in school
Adolescents	All adult foods
Pregnancy	All foods if tolerated and fried foods
Lactation	The chief item rice and more amounts of fish, lehyam, jaggery etc.

No special foods were prepared for pre-schoolers, school children or adolescents. During pregnancy and lactation also these families were not in the habit of preparing special foods. Most of the families purchased and used fried foods from the shop during pregnancy. During

lactation they consumed more fish since the mothers thought that this might help them to secrete more milk.

Table 18 presents the foods prepared on special occasions.

Table 18. Foods prepared during special occasions

Occasions	Foods given	Method
Marriage	Rice, parippu, pappads, vegetable curries, curd etc. payasam with dhal-fruits	Frying and absorption
Onam	Rice, sambar, vegetable curries, pappads, pickles banana vattals and some times fried foods	Straining (Rice) absorption frying etc.
X'mas	Rice, fish, meat, vegetables curries, pickles, payasam with dhal or ada and fried foods	Absorption (vegetables) Frying
Birth day	Plain payasam with rice and jaggery	Absorption
'Sanjayanam' for death	Rice gruel	

During marriage and other local festivals pulses, vegetables, sweet preparations, fried foods and animal foods were additional food items consumed by the community. For death ceremonies simple preparations like rife gruel were prepared by all the families.

3. Personal characteristics of the women engaged in stone breaking

Personal characteristics of the women engaged in stone breaking were determined by assessing the age, health status of the women as well as their children awareness about the facilities available locally for maternal and child care, the daily chores of the women in general their job satisfaction and the influence of the occupation on other family members.

The second health status of the women were assessed by eliciting information on age at menarche, age at which they were married, details related to delivery and their own concept about health.

For 52 per cent of women, the age of menarche was between 12-13 years, for 26.7 per cent of the women it was between 13-15 years. About 21.3 per cent of women had delayed onset of menarche between 15-17 years of age.

Regarding the age of marriage 36.7 per cent of the women surveyed were married between the age 18 and 19. Very early marriage even at the age of 15 (8 per cent) or between 16 and 17 (18 per cent) were also common. 37.3 per cent of the women were married after 20.

With regard to child bearing 40.7 per cent of women had 2 pregnancies and 26.6 per cent had three, 14.7 per cent of the women surveyed became pregnant only once, while 18 per cent of the women studied had more than 3 pregnancies. Data related to the type of deliveries, had indicated that 95.3 per cent of the women had normal deliveries.

Only 10 per cent of the women were satisfied about their health status while 90 per cent of the women had health complaints.

Table 19 presents the height, weight profile of women surveyed.

Table 19. Height weight profile of women

Sl. No.	Height (cm)	No. of women	Percentage	Average weight (kg)
1	142	5	3.33	35.90
2	143	5	3.33	35.60
3	144	2	1.33	36.00
4	145	16	10.67	38.70
5	146	16	10.67	37.80
6	147	1	0.67	33.50
7	148	2	1.33	46.75
8	150	25	16.67	42.43
9	151	4	2.67	51.30
10	152	5	3.33	40.90
11	153	3	2.00	37.10
12	154	5	3.33	36.90
13	155	12	8.00	41.29
14	156	3	2.00	40.66
15	159	3	2.00	42.66
16	160	9	6.00	43.10
17	161	4	2.67	42.37
18	162	6	4.00	45.00
19	163	3	2.00	43.66
20	164	1	0.67	43.50
21	165	13	8.62	45.00
22	166	7	4.67	47.64

As revealed in Table 19 all except 2.67 per cent of women surveyed had their mean body weights below the weight of Indian reference woman. (Gopalan and Kaur, 1989).

Long hours of absence of the mother from home will positively affect the health status of the children and hence data related to the health condition of the children of these women were collected.

Table 20 furnished the general health status of the children.

Table 20. General health status of the children

Particulars	No.of women	No.of abortions they had	Total number of children born	Total number of children now alive		Total Number of children died	
				No.	Per cent	No.	Per cent
Women with one child	22	-	22	22	5.2	-	-
Two children	61	3	122	116	27.3	6	1.4
Three children	40	4	120	110	25.9	10	2.35
More than three	27	10	161	128	30.1	33	7.75
Total	150	17	425	376	88.5	49	11.50

As revealed in the Table 20 out of 425 children born in these families, 49 died due to ill health. These child deaths had occurred mainly in large families, due to external infections.

Table 21 reveals the causative factors responsible for the occurrence of infant death in the families surveyed.

Table 21. Causative factors responsible for infant death

Reasons	Details of children (now dead)	
	Number	Per cent
External infections	15	30.61
Complications during delivery including abortion	30	61.22
Accidents	4	8.17
Total number of children died in the families surveyed	49	100.00

As revealed in the Table 21 30.61 per cent of infant death were due to external infections and 61.22 per cent of infant deaths were due to complications during delivery 8.17 per cent of infant deaths were due to accidents.

External infections responsible for infant deaths were respiratory infections (29.4 per cent), fever (29.4 per cent), and dysentry (41.2 per cent).

55.3 per cent of the women were not satisfied about the present health status of their children. These mothers had reported that diseases such as dysentry (20.4 per cent) fever (36.1 per cent) health disorders (24 per cent) measles (13 per cent) and respiratory diseases (13.3 per cent) attack their children frequently.

Awareness of the women regarding the maternal and child care facilities locally available was verified and found that 48.7 per cent of the mothers had utilised the immunization facilities available in the local hospitals, while 51.3 per cent of the women surveyed were not aware of such facilities available in the hospital.

Similarly only 50.7 per cent of the women were utilising the child care facilities available in the neighbourhood. While 49.3 per cent of the women were indifferent and not enthusiastic in utilising such facilities.

64 per cent of the women had utilised the maternal care facilities available during pregnancy while 36 per cent did not utilise the services of health workers, majority of these women (83.3 per cent) went to the hospitals for delivery without any periodical medical check up. Only 16.7 per cent of the women had their delivery at home. This was mainly due to ignorance and financial reasons.

17.4 per cent of the women were unaware of the need for utilising the maternity care facilities locally available and 13.3 per cent of the women did not approach medical personnel since they had no complications during pregnancy. However among the women surveyed 5.3 per cent felt that the maternity care facilities locally available were too expensive.

Table 22 furnishes information on the extent of utilisation of local hospitals by these women.

Table 22. Extent of utilisation of local hospital

Hospitals	Details of family	
	Number	Per cent
Government Hospital	130	86.7
Private Hospitals	20	13.3
Consumed the medicine supplied from the hospital	148	98.7
Not consumed the medicine supplied from the hospital	2	1.3

As revealed in Table, 86.7 per cent of the families had taken treatment from government hospitals, while only 13.3 per cent of the families had approached the private

hospitals available in the neighbourhood. However 98.7 per cent of the families were in the habit of utilising the medicines supplied through these hospitals.

4. Assessing the attitude of women towards their occupation

The attitude of women towards their occupation was assessed by eliciting information on the daily chores of the women engaged in stone breaking, distribution of time spent for various activities, their job satisfaction and influence of their employment on other family members.

Majority of the families surveyed were staying in the neighbourhood of the work site and the distance the women had to travel daily to reach the work site are presented in Table 23.

Table 23. Distance travelled from house to work site

Distance travelled in Km to reach the work site	Details of women	
	Number	Per cent
Less than ¼ Km	39	26
¼ Km to ½ Km	51	34
½ Km to 1 Km	33	22
Greater than 1 Km	27	18

As revealed in Table 23, 26 per cent of the women had to travel less than ¼ Km to reach their work site while 34 per cent of the women travelled about ½ Km to reach the work site. The remaining women (40 per cent) were travelling more than ½ Km to reach the work site.

Table 24 presents the details related to the time taken by the women for travelling from house to work place.

Table 24. Time taken for travelling from home to work site

Time (minutes) taken for travelling	Details of women	
	Number	Per cent
5 - 10 minutes	100	66.7
10 - 15 ,,	26	17.3
15 - 30 ,,	14	9.3
Above 30 ,,	10	6.7
Total	150	100.0

As indicated in the Table 24, 66.7 per cent of the women were taking 5/ to 10 minutes for travelling from house to work site. Only 6.7 per cent of the women were taking more than 30 minutes for this purpose. The work site of many of the women were in the neighbourhood. Among these women only 5.3 per cent travelled by bus to reach the work site.

Table 25 presents the time spent per day by the women in work site.

Table 25. Time spent at work site

Time (in hours) spent in the work site/day	Details of women	
	Number	Per cent
5 - 6	23	15.3
6 - 7	27	18.0
7 - 8	71	47.4
8 - 9	29	19.3
Total	150	100.0

Majority of the women (60 per cent) started their work as early as 8 am and 52 per cent of the women completed their work around 4 pm while 28.7 per cent of the women worked until 5 pm. As revealed in Table 25, 66.7 per cent of women were engaged in stone breaking from 7 to 9 hours/day, while 33.3 per cent of the women worked for 5 to 7 hours/day.

Table 26 furnishes the total number of work days spent by the women in the work site.

Table 26. Total number of days per week spent in the work site

Number of days	Details of women	
	Number	Per cent
Less than 4	1	0.6
4 - 5	49	32.7
6 - 7	96	64.0
7	4	2.7
Total	150	100.0

As indicated in the Table, 64 per cent of the women worked 6 to 7 days in a week, while 2.7 per cent of the women worked all the days and only 0.6 per cent of the women had worked less than 4 days in a week.

Majority of the women (86 per cent) were availing one day rest per week while 14 per cent of women worked every day without taking rest. The reason as reported by the women for working continuously was that they were unable to meet their family expenditure without working all days in a week. Sundays or any days in a week were taken off to attend to the domestic chores at the household level. During such days, majority of the women (86 per cent) were in the habit of taking complete

Table 27. Details of lunch consumed by the women at the work site

Time of lunch	Duration of time after breakfast	Details of the women		Particulars	Details of women	
		Number	Per cent		Number	Per cent
2 pm	7 hours	144	96	1. Lunch at home	104	69.3
3 pm	8 hours	3	2	2. Lunch available in the nearby hotel or shops (puttu and banana, dosa and chutney, tapioca and fish, vad tea etc.	29	19.3
1 pm	6 hours	3	2	3. Packed lunch (rice and vegetables)	16	10.7
				4. Prepare foods while working (kanji and chutney)	1	0.7
Total		150	100		150	100.0

rest while 7.3 per cent of the women were engaged in household works. On such days women were reported to spend more time in the kitchen for preparing meals. Among the women surveyed 4 per cent of the women spent their rest day in visiting religious places. Very few women (2.7 per cent) were in the habit of spending the rest day for recreation and entertainment.

When enquired about the involvement of these women in income generating activities other than stone breaking it was found that 1.3 per cent of the women had other types of outside works such as working as part time maid servants and for this purpose on an average 3 hours were spent by these women.

Table 27 presents the details of lunch consumed by the women at work site.

As revealed in the Table 27, 96 per cent of them had taken their second meals for the day viz. lunch at work site after 7 hours gap after breakfast. The remaining 2 per cent of the women were found to have a larger gap of 8 hours while 2 per cent had a comparatively shorter gap of 6 hours.

As depicted in the Table 27 majority of (69.3 per cent) of women had taken their lunch from the home itself since

their houses are situated in the neighbourhood itself. 30 per cent of the women were depending on the hotels and shops available locally for lunch, only one family (0.6 per cent) was preparing lunch at the work site itself, the major items of which were kanji and chutney. 10.7 per cent of the women used to bring packed lunch to their work site and major items of the packed lunch were reported to be rice fish and vegetables (6 per cent) or rice and fish (4 per cent) or rice and vegetables (0.7 per cent).

5 As revealed in Table 27, 19.3 per cent of women purchased foods from nearby tea shops, these foods were mainly cereal based breakfast preparations (19.3 per cent) or snack items (0.7 per cent) or tapioca and fish (1.3 per cent).

Majority of the women (81.3 per cent) consumed soft drinks or beverages like tea (lime juice) in between their meals while doing the work. But 18.7 per cent of the women were not in the habit of taking such drinks except plain water mainly due to economic reasons.

Regarding rest after lunch only 19.3 per cent of the women used to take rest after lunch at the work site while 80.7 per cent of them were doing their work continuously except during the time spent for taking meals 10.7 per cent

of women had taken rest for 10 to 15 minutes, 4.7 per cent 5 - 10 minutes and 4 per cent for 15 - 30 minutes.

14.7 per cent of the women were refraining from work during pregnancy, while 85.3 per cent of the women were doing the same work during pregnancy period also.

Further details regarding their engagement in outside work during pregnancy are presented in Table 28.

Table 28. Engagement in outside work during pregnancy period

Period at which the women were engaged in work during pregnancy	Details of women	
	Number	Per cent
5 months	5	3.30
5-7 months	10	6.70
7-9 months	15	10.00
Upto delivery	98	65.30
Total	128	85.30

As indicated in Table 28 majority of the women (65.3 per cent) were engaged in work throughout pregnancy period.

Majority of the women (73.3 per cent) were engaged in stone breaking before the infant complete one year while 26.7 per cent of the women were not doing outside work for one year after delivery. The period at which the women started working after delivery are presented in Table 29.

Table 29. The period at which the women started working after delivery

Particulars	Details of women	
	Number	Per cent
0-3 months	20	13.30
3-5 months	45	30.00
5-6 months	28	18.70
7-8 months	17	11.30
Total	110	73.30

As depicted in the Table, 43.3 per cent of the women had started doing outside work even before completing six months after delivery.

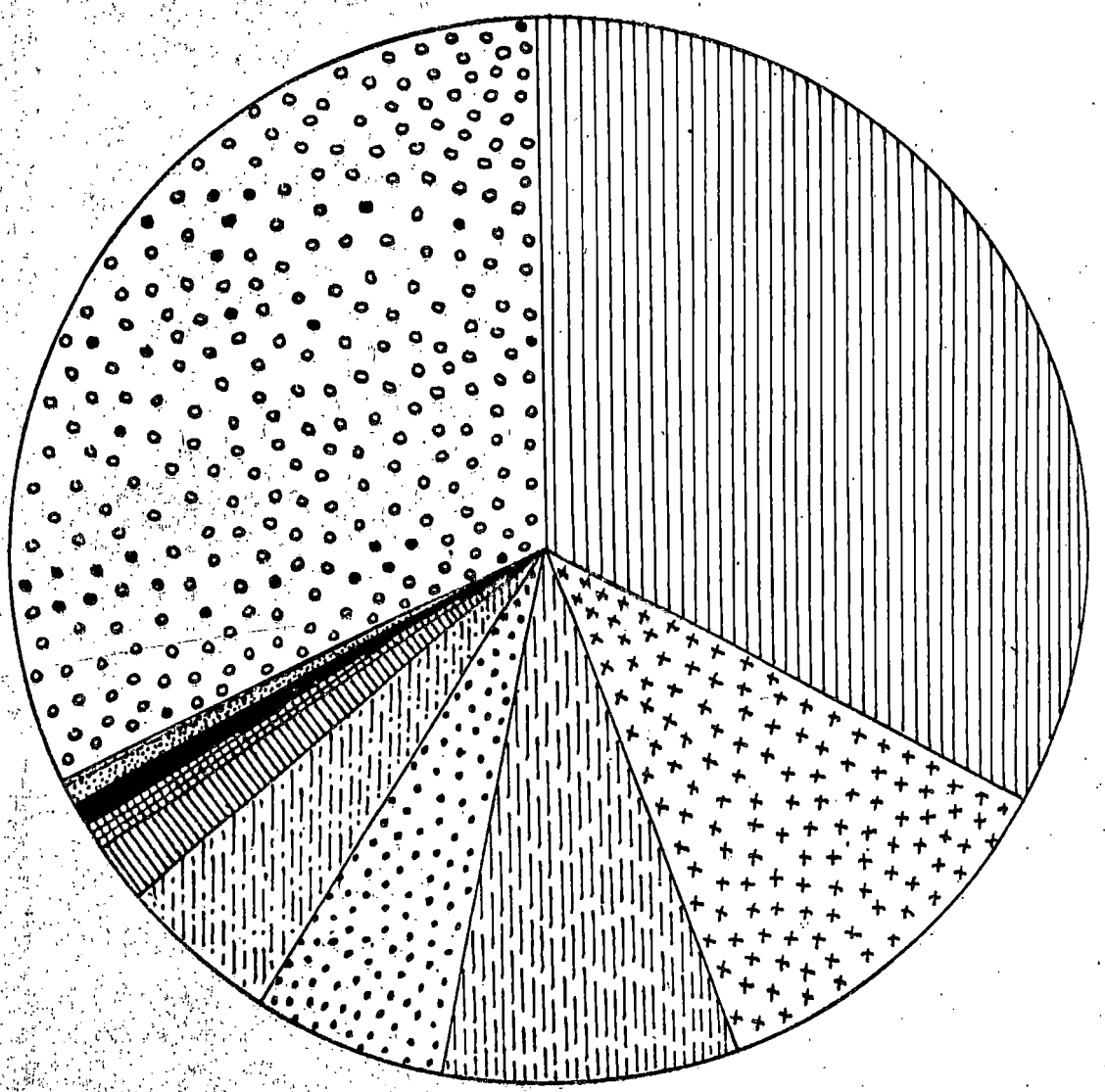
In certain occasions also the women were not engaging in stone breaking. 100 per cent of them did not work when

Table 30. Distribution of time spent for various activities

Activities	Average time spent		
	Hours	Minutes	Proportion of time in a day (percentage)
1. Child care	1	-	4.17
2. Marketing	2	-	8.33
3. Collecting water and fuel	1	30	5.42
4. Washing clothes & utensils	-	15	0.63
5. Cooking	3	-	12.50
6. Cleaning home & premises	-	15	0.63
7. Stone breaking	8	-	33.33
8. Personal care	-	30	1.25
9. Rest	-	15	0.63
Sleep	8	-	33.33
Total	24		100.00

(5.42 per cent) and for child care activities (4.17 per cent). Activities like personal care, cleaning the home and premises, washing clothes and utensils and also rest were generally

FIG. 1. PERCENTAGE OF TIME SPENT FOR VARIOUS ACTIVITIES.



SLEEP - 33·3 %

STONE BREAKING - 33·3 %

COOKING - 12·5 %

MARKETING - 8·33 %

COLLECTING WATER & FUEL - 5·42 %

CHILD CARE - 4·17 %

PERSONAL CARE - 1·25 %

WASHING CLOTHES & UTENSILS - 0·63 %

CLEANING HOME & PREMISES - 0·63 %

REST - 0·63 %

neglected by these women since they did not give much priority to these activities.

Major household activities are classified as 8 items and the women were classified into different groups.

Table 31 presents the total time spent for various household activities by the women

Table 31. Total time spent for various household works

Items of work	Time taken	Details of women	
		Number	Per cent
1. All the 8 activities	7 hrs 30 mts	33	22.00
2. 7 activities (except item No.1)	6 hrs 30 mts	51	34.00
3. 6 activities (except item nos. 1 and 2)	5 hrs 30 mts	32	21.30
4. 5 activities (except item nos. 1, 2 & 3)	4 hrs	18	12.00
5. 4 activities (except item nos. 1, 2, 3 & 4)	3 hrs	16	10.70
Total		150	100.00

On the basis of undertaking various activities only 22 per cent of the women surveyed were undertaking all the 8 items

of activities. 78 per cent of the women were neglecting the work related to child care activities, and 44 per cent of the women were neglecting the work related to marketing 10.7 per cent of women were neglecting the work related to personal care.

Table 32 furnishes the details of the household works attended rarely by the women because of their commitment to outside work.

Table 32. Household works attended rarely by the women

Items of household works	Details of women	
	Number	Per cent
Cleaning the house and premises	69	46
Child care	105	70
Washing clothes	93	62
Preparing every meals with variety	18	12

As depicted in Table 32, 70 per cent of the women were found to neglect their children because of lack of time. Women were also unable to attend to important household works like washing clothes regularly (62 per cent) and cleaning their house premises (46 per cent). Very few women (12 per cent) had reported that they were unable to attend to cooking meals also satisfactorily.

Table 33 presents the details of assistance given by other family members to attend to the domestic chores.

Table 33. Assistance available to the women from other family members

Details of family members	Details of women	
	Number	Per cent
Mother	6	4.0
Elder daughters	18	12.0
Sisters	2	1.3
No assistance	124	82.7
Total	150	100.0

As indicated in Table 33, 82.7 per cent of women were not getting any assistance to attend to various domestic chores. Only 12 per cent of the women were assisted by their elder female children and 4 per cent of the women by their mothers residing with them and 1.3 per cent of women were assisted by their sisters.

Table 34 presents the duration of time available for these women to take rest.

Table 34. Rest time available for women

Time in hours (range)	Details of women	
	Number	Per cent
5 - 6	22	14.7
7 - 8	96	64.0
9 - 10	32	21.3
Total	150	100.0

As revealed in the Table 34, 64 per cent of the women were getting 7 to 8 hours every day for rest only 14.7 per cent of them had 5 to 6 hours every day for this purpose, and invariably these women were found to engage themselves for all the 8 items of household chores mentioned under Table 30.

Mothers' employment outside the home negatively influence the welfare of other family members.

Table 35 presents the effect of mothers' employment on the educational status of elder female children in the family.

Table 35. Effect of mothers' employment on the educational status of elder female children in the family

Details	Number	Per cent
Families where the education of elder female children not affected	114	76
Families where the education of elder daughters were affected	36	24
Total	150	100

As revealed in the Table, the education of the elder female children in the 24 per cent of the families surveyed were affected. As revealed in Table 35 these children were not sent to school because of shouldering the household responsibility in the absence of the mother (15.3 per cent) or because of their involvement in the stone breaking as a family contract work (8.7 per cent). A major household responsibility entrusted to the elder female children were the responsibility of care of younger siblings.

Table 36. Involvement of the elder female children as a support to the family

Details	Number	Per cent
Involvement in domestic chores in the absence of mothers at home	23	15.3
Involvement in stone breaking work along with mothers being a family contract job	13	8.7
Total	36	24.0

Regarding care of infants 46.7 per cent of the women were able to entrust their infants to relatives or neighbours while the remaining women (53.3 per cent) were taking their infants to the work place.

Table 37 presents the details of child care activities undertaken by the members of the families in the absence of mothers at home.

Table 37. Pattern of child care adopted in the absence of mothers

Persons responsible for child activities	Details of the families	
	Number	Per cent
Families not affected	80	53.4
Elder relatives like mother	26	17.3
Elder daughters	30	20.0
Local creche	9	6.0
Neighbours	5	3.3
Total	150	100.0

In 20 per cent of the families younger children were looked after by the elder female children while in 17.3 per cent of the families the younger children were entrusted in the care of older relatives like grand-mothers. In 6 per cent of the families creche facilities locally available were utilised by the women for entrusting the young children and in 3.3 per cent of the families the younger children were entrusted with the women residing in the neighbourhood.

Job satisfaction of the women engaged in stone breaking as an occupation was verified.

The views of the women regarding their employment outside the home are presented in Table 38.

Table 38. Job satisfaction to women engaged in stone breaking

Particulars	Details of women	
	Number	Per cent
Having job satisfaction	43	28.7
Not having job satisfaction	107	71.3
Total	150	100.0

As depicted in Table 38, 71.3 per cent of the women did not get any job satisfaction from the job which was their major source of income.

Reasons given by these women for finding this job as an uninteresting work are presented in Table 39.

Table 39. Reasons for feeling unsatisfaction in the job of stone breaking

Reasons	Number	Per cent
Job caused various health hazards	31	20.7
Long absence from home created problems within the family	28	18.7
Reward for the job is not satisfactory	7	4.6
Unhappy about the negligence of the children	41	27.3
Total	107	71.3

As revealed in Table 39, negligence towards their children were the major reason for the women to dislike this job (27.3 per cent). 20.7 per cent of the women felt that their health was very much affected by this strenuous job while 18.7 per cent of the women were not able to find any satisfaction in this job. Since their long hours of absence from home had created serious family problems. 4.6 per cent of the women were not happy about the job since it was not economically very rewarding.

However the basic reasons for undertaking this job by the women are presented in Table 40.

Table 40. Reasons for undertaking stone breaking

Reasons	Details of the women	
	Number	Per cent
Main wage earner of the family	116	77.4
For supplementing the family income for the welfare of the family members	17	11.3
Not getting the support of the husband being unemployed dead or divorced	17	11.3
Total	150	100.0

As revealed in Table 40, 77.4 per cent of the women accepted this job since they were the main wage earner of the family. While 11.3 per cent of the women wanted to supplement the family income, 11.3 per cent of the women were reported to be the head of their families and hence they were forced to take up this occupation.

Assessment of food consumption pattern of women in relation to energy expenditure.

Food consumption pattern in relation to energy expenditure and nutritional status of the women were studied in detail in a sub sample of 15 women.

1) Food intake assessed by weighment method

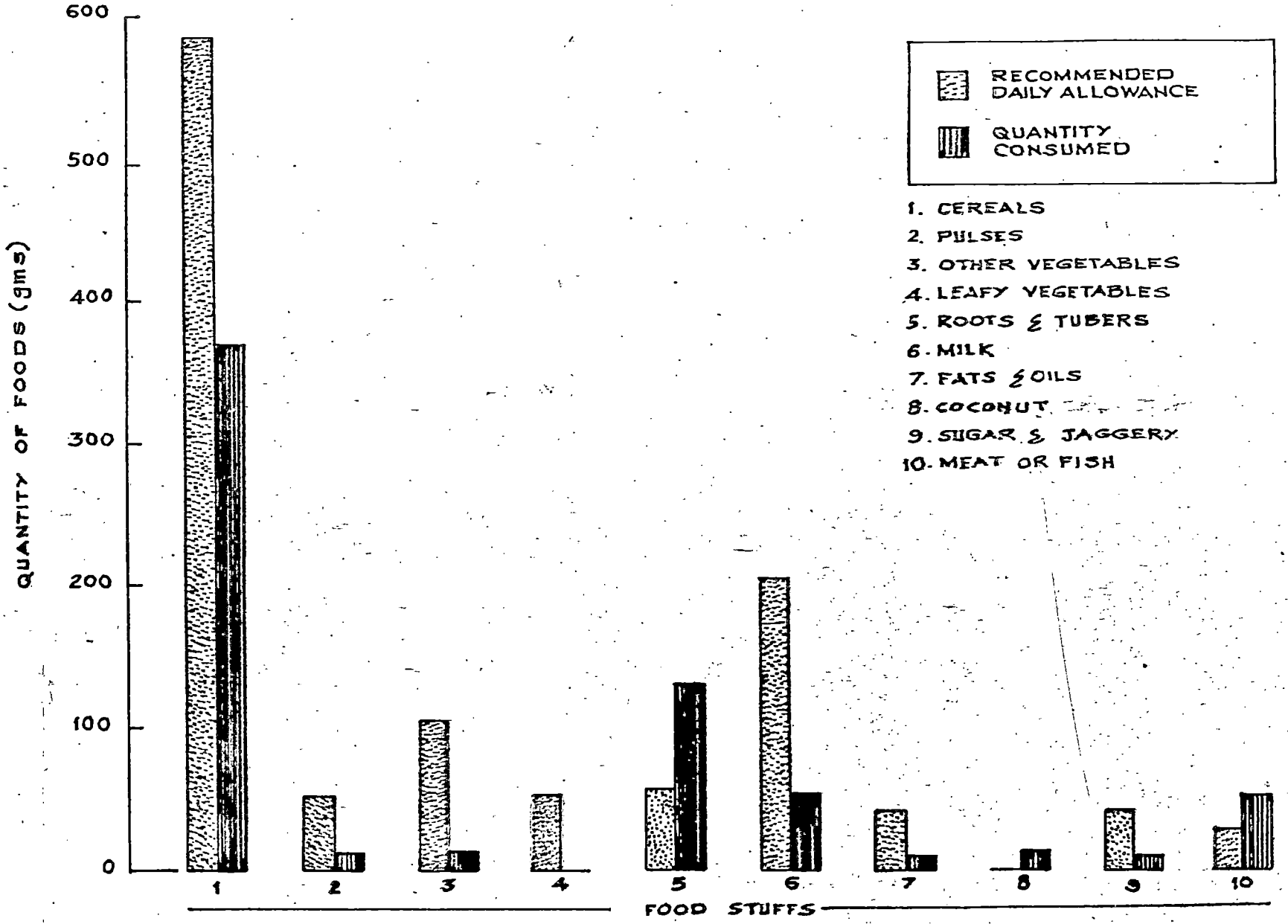
Dietary intake of the women were assessed by a 3 day weighment method. Comparison of their diets were made with the Recommended Daily Allowances (RDA) of ICMR (1984).

Table 41 presents the average quantity of foods consumed by the women in comparison with Recommended Daily Allowances (RDA).

Table 41. Average quantity of foods consumed by women. n = 15

Food groups	RDA (g)	Average quantity consumed (g)	Percentage of RDA met
Cereals	575	372	64.69
Pulses	50	10	20.00
Other vegetables	100	11	11.00
Green leafy vegetables	50	-	-
Roots and tubers	60	125	208.00
Milk	200	30	15.00
Fats and oils	40	5	12.50
Coconut	-	12	-
Sugar and jaggery	40	5	12.50
Meat or fish	30	53	176.67

FIG. III. AVERAGE FOOD CONSUMPTION OF WOMEN.



As shown in the Table average quantity of various food groups in the dietaries of the women were inadequate in all the foods except in roots and tubers and fish. The consumption of cereals was only 64.69 per cent of Recommended Daily Allowances and pulses 20 per cent of the Recommended Daily Allowance. Green leafy vegetables were not included in their daily diets. Food groups like fats and oils and sugar and jaggery were very little since only 12.5 per cent of Recommended/Daily Allowance for these food items were met. Roots and tubers and fish were included in excess amounts, when compared to Recommended Daily Allowance.

The average nutrient consumption was computed and compared with Recommended Daily Allowance and is presented in Table 42.

Table 42. Mean nutrient consumption of the women. n = 15

Nutrients	RDA	Nutrient intake	Percentage of RDA met
Protein (g)	45	41	91.00
Energy (kilo calories)	3000	1800	60.00
Calcium (mg)	400	594	148.50
Iron (mg)	32	21.1	65.90
Retinol (µg)	750	62.3	8.30
Thiamine (mg)	1.5	0.795	53.00
Riboflavin (mg)	1.8	0.582	32.30
Niacin (mg)	20	14.59	72.95
Vitamin C (mg)	40	34	85.00

As revealed in Table 42 all the nutrients were inadequate in the diets of the women, except calcium. 91 per cent of the proteins and 60 per cent of the energy requirement as per Recommended Daily Allowance were met from the diets of these women iron requirement was met by 65.9 per cent while all vitamins were found to be deficient in the diet, especially vitamin A (retinol) the requirement of which was met only by 8.33 per cent of Recommended Daily Allowance.

Table 43. Height profile of women. n = 15

Height (in range) (cm)	No. of women	Percentage
Less than 145	1	6.67
145 - 150	8	53.33
151 - 155	3	20.00
156 - 160	Nil	-
More than 160	3	20.00
Total	15	100

As revealed in the table majority of the women had their heights between 143 to 150 cm.

Table 44. Weight profile of women. n = 15

Weight (in range) (kg)	No. of women	Percentage
Less than 35.5	Nil	-
36 - 40.5	5	33.33
41 - 45.5	5	33.33
46 - 50.5	3	20.00
Above 50.5	2	13.34
Total	15	100.00

As depicted in the table only 13.34 percentage of women were found to have body weights above 50.5 kg.

Clinical Examination

Clinical examination is the most essential part of nutritional surveys to locate the nutritional deficiencies prevalent. In the present study, clinical assessment of the health status of the women were conducted by a qualified physician and the various clinical symptoms recorded are presented in Table 45.

Table 45 revealed that anaemia was the most common deficiency symptom among 73.3 per cent of the women. 66.7 per cent of the women were having tongue papillae atrophie and conjunctival xerosis/other eye lesions, which were the results of a diet deficient in iron and eye lesions may be

due to dust emitted during stone breaking. 46.67 per cent of the women were suffering from mottled enamel and thyroid enlargement was common among 20 per cent of the women, 13.3 per cent of the women were suffering from angular stomatitis. Teeth caries and costochondritis were seen in 13.3 per cent of the women.

Table 45. Prevalence of clinical signs of malnutrition. n = 15

Clinical symptoms	Number	Percentage
1. Tongue papillae atrophie	10	66.70
2. Anaemia	11	73.30
3. Taenia infection	1	6.67
4. Mottled enamel	7	46.67
5. Bronchial asthma	1	6.67
6. Conjunctival xerosis and other eye lesions	10	66.70
7. Angular stomatitis	2	13.30
8. Vertigo	1	6.67
9. Thyroid enlargement	3	20.00
10. Costochondritis	2	13.30
11. Teeth caries	2	13.30
12. Oesophagitis	1	6.67
13. Cheilosis	1	6.67
14. Corneal xerosis	1	6.67

Haemoglobin estimation

Haemoglobin level in blood is an important health indicator. Haemoglobin estimation were carried out in 15 women and the results are presented in Table 46.

Table 46. Haemoglobin levels of women (in percentage)

Haemoglobin levels gm/100 ml	Number	Percentage
8.5 - 9.5	8	53.3
9.6 - 10.5	3	20.0
10.6 - 11.5	1	6.7
11.6 - 12.5	2	13.3
12.6 - 13.5	1	6.7
	15	100.0

Table 46 shows that majority of the women were (53.3 per cent) having low level of haemoglobin (8.5 to 9.5 g/100 ml). Data on clinical examination also indicated that a large majority of the women manifested symptoms of anaemia.

Assessing the knowledge of the women on food and health

Knowledge of the women on food and health were assessed administering a scale prepared specifically for the purpose.

The statements included in the scale were mainly related to child nutrition, food consumption pattern followed during illness, physiological conditions and during different

physical activity, foods given during special conditions, general knowledge about nutrition and also about the environmental sanitation.

Table 47 presents the response of the women towards statements pertaining to child nutrition. Number of women who had answered correctly to each statement was worked out and presented.

Table 47. Statements pertaining to child nutrition

Particulars	Details of women	
	Number	Per cent
1. Pulses should be included in the daily diet of the children	87	58.0
2. Children should not consume fruits daily	90	60.0
3. Children can be given amla and guava instead of apple and orange	110	73.3
4. Meat and fish may be the cause of indigestion in children	80	53.3
5. Fat contains the nutrients for growth	85	56.7

As depicted in Table the women were not aware of the nutritional significance of food articles.

Table 43 presents the response of the women towards statements related to maternal nutrition.

Table 43. Statements related to maternal nutrition

Particulars	Details of women	
	Number	Per cent
1. Lactating mothers must be provided with special foods	150	100.0
2. The amount of food provided to a pregnant mother will be equal to that of a normal woman	90	60.0
3. Mother's ill health might cause unhealthiness to the child	150	100.0
4. Hard working is not good during pregnancy	150	100.0
5. Consumption of fruits and leafy vegetables daily will prevent constipation	85	56.7
6. Volume of breast milk produced will be reduced as a result of ill health of the mother	75	50.0
7. Anaemia during pregnancy is due to the deficiency of nutrients	135	90.0
8. The consumption of milk, egg and groundnuts during pregnancy led to the enlargement of fetus and difficult delivery	75	50.0
9. It is not advisable to avoid nursing during the period of menarche	150	100.0

As detailed in Table, many of the women were not aware of the inclusion of protective foods in the diets of the children (27 to 47 per cent) and in the diets during special conditions (10 to 43 per cent).

Table 49 presents the response of the women towards statements related to food and health.

Table 49. Statements related to food and health

Particulars	Details of women	
	Number	Per cent
1. Illness increases the nutritional requirements of a person	89	59.3
2. It is good to decrease the amount of foods during fever	76	50.7
3. Water consumption must be reduced during vomiting and diarrhoea in children	150	100.0
4. Without immunising the children it is useless to give nutritious foods alone	75	50.0
5. Open defaecation increases worm infestation	150	100.0

As indicated in the Table 49 statements related to food and health were answered correctly by 50 to 59 per cent of the women. However all the women were aware of the

importance of oral rehydration therapy during vomiting and diarrhoea and disadvantages of open defaecation.

Table 50 presents the response of the women towards statements related to work efficiency in general.

Table 50. Statements related to work efficiency in general

Particulars	Details of women	
	Number	Per cent
1. It is better to do this work during pregnancy and lactation	80	53.30
2. As the stone breaking is a hard work it is not good for health	150	100.00
3. Old age do not reduce the work efficiency	150	100.00
4. Repeated attacks of external infections reduce the work efficiency	150	100.00
5. This work can be done by the people of any age	150	100.00
6. The women can work as efficiently as the men working in the same field	150	100.00

As indicated in the Table, 90 per cent of the women were found to have correct information about work efficiency in general. Table 51 presents the response of the women towards statements depicting relationship between food and work.

Table 51. Statements depicting the relationship between food and work

Particulars	Details of women	
	Number	Per cent
1. The consumption of cereals and pulses help to do this work for a long time	150	100
2. Frequent consumption of foods help to do this work efficiently	150	100
3. In addition to the household works, stone breaking requires more food than that of a normal woman	150	100
4. There is no relationship between the food consumed and work efficiency	150	100
5. The consumption of fruits and vegetables increases the work efficiency	90	50

As depicted in the Table all the women surveyed were fully aware of the significance of frequent consumption, and inclusion of cereals and pulses.

Maximum scores available for a respondent if all the thirty statements are answered and average scores obtained by the 150 women when the scale was administered are presented in Table 52.

Table 52. Maximum and average scores obtained for the 30 statements on food and health

Aspects	Maximum score to be obtained	Average score Obtained	Percentage
Statements on health and nutrition	150	98.36	65.58

As revealed in the Table on an average the women were able to obtain only 65.58 per cent of maximum score.

The neutral score for the thirty statements was 75. Number of the women who had obtained more than 75 and who had obtained the maximum score of 150 are presented in Table 53.

Table 53. Details of the women who had secured above neutral score and who had secured maximum score

Particulars	Details of women	
	Number	Per cent
Below neutral score	0	0
Above neutral score	150	100
Maximum score	0	0

The Table shows that all the women got above neutral score and maximum score of 150 was not obtained by any of the women surveyed.

Table 54 presents the details related to the effect of age on retention of knowledge among the women surveyed since age is reported to have a positive effect on the retention of knowledge.

Table 54. Effect of age on the level of knowledge of the women

Age in ranges (Years)	No. of women	Mean score
21 - 30	47	103.36
31 - 40	67	100.20
41 - 50	35	88.94
51 - 60	1	90.00

As depicted in Table 54 as the age increased, the level of knowledge was found to decrease, in otherwise there is a reciprocal relationship between age and level of knowledge.

Table 55 presents the effect of education on the level of knowledge among the women surveyed.

Table 55. Effect of education on the level of knowledge among the women surveyed

Education level	Total number of women	Average score
Illiterate	65	86.32
Lower primary	39	94.97
Upper primary	28	114.75
High school	14	126.35
College	4	126.75

As depicted in the Table the women who were illiterate had detailed lowest scores. As the education level of the women increased there was a proportionate increase in the score obtained for each group.

The Table 56 presents the effect of income on the level of knowledge among the women surveyed.

Table 56. Effect of income on retention of knowledge among women surveyed

Monthly income in Rupees	Total number of women	Mean score
150 - 350	42	96.60
351 - 550	67	97.82
551 - 750	30	102.00
751 - 1000	9	98.70
1001 - 1200	2	97.00

Table shows that there was no direct relationship between the level of knowledge of the women and the income level of their families.

Attitude of the women engaged in stone breaking towards their occupation

The attitude of the women towards the job was assessed by administering a 5 point scale specifically prepared for this.

Table 57 presents the general response of the women to all the statements prepared to measure the attitude of the women towards stone breaking.

As revealed in the Table all the women were found to prefer this job as a solution to unemployment problem and as an opportunity to be in a better atmosphere with the women residing in the neighbourhood. Table also revealed that all the women considered this job as a hinderance to attend to their children properly. 86.7 per cent of the women had positive reactions to the job since through working with the family they were able to inculcate the 'habit of saving' in children. 83.8 per cent of the women had a negative approach to the job since the dual job to the women as a home maker and wage earner affected her household works. However 73.3 per cent of the women welcomed this job since

Table 57. Response of women to the statements on attitude towards stone breaking

Statements on attitude towards job	No. of women answered correctly	Percentage
1. Stone breaking as an occupation is a good solution for the unemployment problem among rural women	150	100.0
2. Women accept this job being an income generating activity	110	73.3
3. Working along with the family enhances the 'habit of saving' in children	130	86.7
4. This work outside the house negatively influence other household chores	125	83.3
5. The work being done as a group provides a better environment to women since they get an opportunity to share their sorrows and happiness with others	150	100.0
6. Doing this work the child care activities of the mother are neglected	150	100.0
7. The women are able to spend their free hour profitably	115	76.7
8. This work increases dependency of the women	90	60.0
9. There is no need for special training to increase the production potential	75	50.0
10. Frequent consumption of energy drinks as major meal during work hours do not increase the work efficiency	85	56.7

as reported by them in the absence of other sources of income, it is a best solution to their economic problem. 76.7 per cent of the women appreciated this work positively since their time were spent in a useful way. But only 56.7 per cent of the women were aware of the nutritional disadvantage they had for being away from home for a long time.

Details of the maximum and total scores obtained for the statements on attitude towards 'stone breaking'job' are presented in Table 58.

Table 58. Maximum and average scores obtained for the statements on attitude

Aspects	Maximum score	Average score obtained	Percentage of maximum score
Statements on attitude	50	33.12	66.24

Neutral score for the ten statements was calculated as 25 and details are presented in Table 59.

Table 59. Percentage of the women who obtained scores above neutral score for the statements on attitude

Particulars	Details of women	
	Number	Per cent
Above neutral score	150	100
Below neutral score	0	0
Maximum score	0	0

From the Table it is understood that 100 per cent of the women obtained scores above neutral score and the women had a positive attitude towards the job.

Table 60 presents the effect of age on the attitude of women towards the job. Since age of an individual may generally influence their attitude towards the job in which they are engaged.

Table 60. Effect of age on the attitude of women towards the job

Age in range	Number of women	Mean score
21 - 30	47	33.7
31 - 40	67	33.5
41 - 50	35	31.5
51 - 60	1	30.0

As revealed from the Table attitude towards job was found to decrease reciprocally as the age had increased.

Table 61 reveals the effect of education on the attitude towards job.

Table 61. Effect of education on attitude towards the job

Education level	Total no. of women	Average score
Illiterate	65	31.18
Lower primary	39	32.79
Upper primary	28	35.14
High school	14	36.85
College	4	39.50

As depicted in the Table 61, women who had higher education had obtained highest scores while illiterates had gained lowest scores.

Table 62 presents the effect of income on attitude towards the job.

Table 62. Effect of income on attitude towards the job

Monthly income in Rupees	Total number of women	Mean score
150 - 350	42	32.80
351 - 500	67	33.01
501 - 750	30	33.40
751 - 1000	9	33.20
1001 - 1200	2	37.00

As shown in the Table there was no relationship between the income level of the families and the attitude of women towards the job.

Energy expenditure of 15 women were calculated on the basis of time spent for various physical activities and sleep

and total energy expenditure worked out as recommended by Swaminathan (1985) (Appendix VIII).

Table 63 depicits the mean energy expenditure of women for various activities.

Table 63. Mean energy expenditure of women for various physical activities

Particulars	Mean Time spent Hours	Minutes	*Energy expended (kilo calories)
1. Sleep	7	35	329
2. Light and moderate activities	9	25	1051
3. Heavy work (stone breaking)	8	—	1703
Total			3083

* Calculation (Swaminathan, 1985)

As revealed in the Table average energy expenditure of the women were found to be 3083 kilo calories.

Table 64 depicts the relationship between the energy intake and energy expenditure of the women.

Table 64. Energy intake and expenditure of the women.

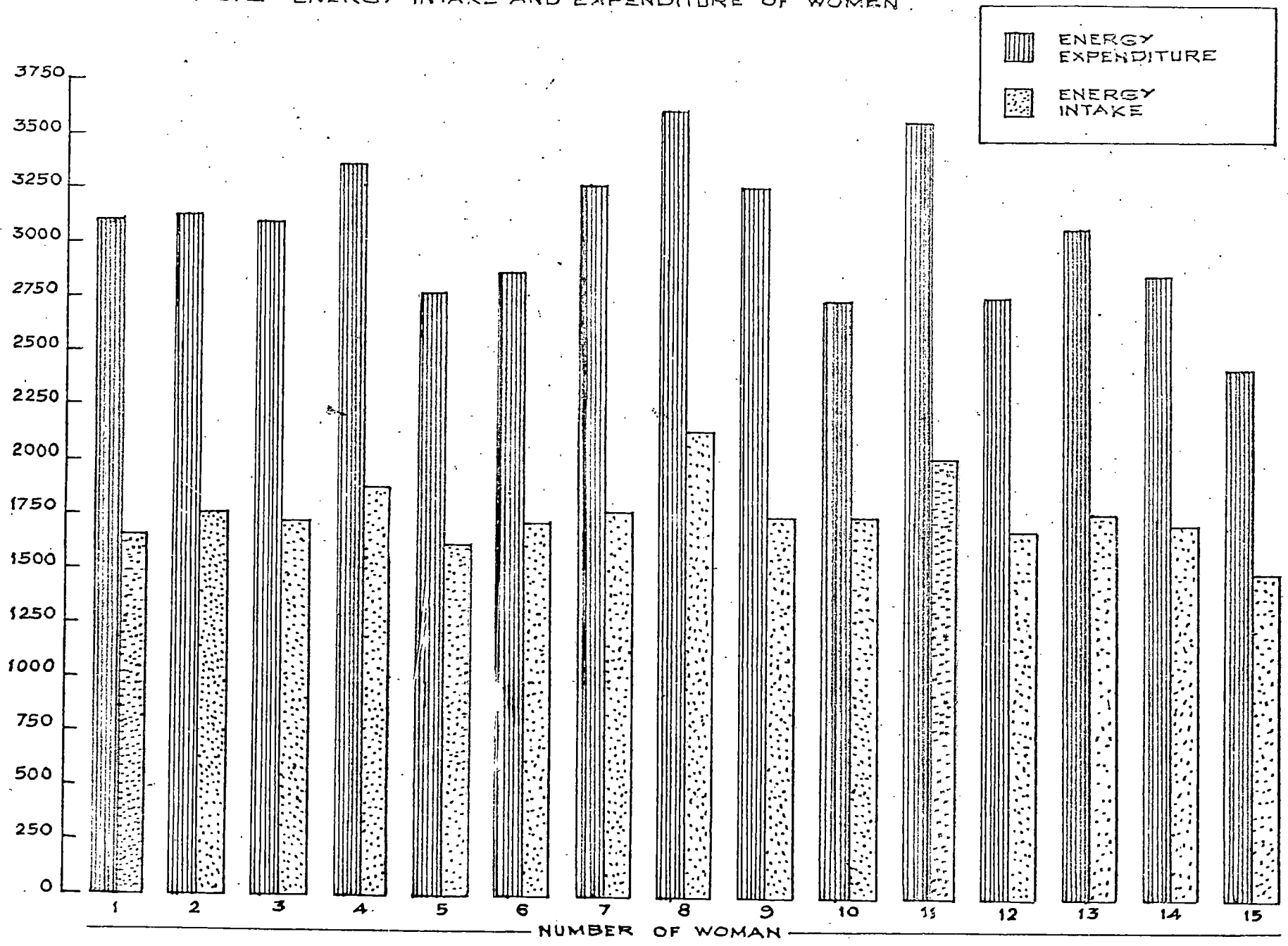
n = 15

Sl. No.	Energy intake (kilo calories)	*Energy expenditure (kilo calories)	Deficit (kilo calories)
1.	1674	3075	1401
2.	1760	3099	1339
3.	1717	3099	1382
4.	1897	3384	1487
5.	1893	2813	1020
6.	1736	2873	1137
7.	1784	3314	1529
8.	2165	3648	1483
9.	1779	3338	1559
10.	1737	2772	1035
11.	2091	3616	1525
12.	1698	2846	1148
13.	1833	3075	1242
14.	1708	2882	1174
15.	1528	2457	929
Mean	1800	3088	1292

*Calculation (Swaminathan, 1985)

As revealed in the Table the diet of the women were deficient in calories and inadequate to meet the individual

FIG. IV ENERGY INTAKE AND EXPENDITURE OF WOMEN



energy requirements. On an average the mean energy intake was only 1800 kilo calories against the recommended allowance of 3000 kilo calories for a hard working woman. The energy expenditure pattern also showed a deficit of calories in all the cases. The total expenditure being higher than the intake. On an average the deficit in calories between intake and expenditure was found to be 1292 kilo calories.

DISCUSSION

DISCUSSION

Results of the study on "Food consumption and energy expenditure pattern of self employed women in unorganised sector" was discussed mainly on the basis of food consumption pattern and the nutritional status of the women.

The assessment of the socio-economic background of the families had indicated that majority of the families (98 per cent) were from under privileged section of population namely scheduled castes, scheduled tribes and other backward communities. Many of the families (90.7 per cent) surveyed were of nuclear type and (38 per cent) were of smaller size with minimum 4 members. In the families surveyed male as well as female members were found to have moderate education.

The female members of all the 150 families surveyed were found to be engaged in the occupation outside home mainly stone breaking and in 49.3 per cent of the families this occupation was taken up as a family contract work.

In each family surveyed on an average two adult members were employed. Average monthly income for most of the families surveyed (61.4 per cent) were between Rs.400-800. For majority of the families (76.7 per cent) 81-100 per cent of the family income was from stone breaking and this indicated the significance

of this occupation as a major income generating activity for the families. The facilities available in and around their houses where they stayed were found to be far from satisfactory since many of the houses were small thatched huts with 1-3 rooms without adequate light and ventillation facilities.

Many of the houses did not have latrines (78.7 per cent) and drinking water facilities (44.7 per cent). However 94.7 per cent of the families were possessing their own houses.

The income available for the families was mainly used for meeting their food expenditure, neglecting other important aspects like clothing, health and education of the children. Only in 5.3 per cent of the families the food purchase was supplemented with home production of food articles like tapioca and coconut.

Analysis of the frequency of various food items used by these families indicated that the staple food for all the families were mainly cereals supplemented with fish. Protective foods like pulses and vegetables were used daily by very few families (20 per cent). Fruits, green leafy vegetables and eggs were consumed very rarely by many of the families surveyed. However the culinary and cooking practices and preservation practices followed by the families were satisfactory from the scientific point of view.

An analysis of the daily meal pattern of the families surveyed indicated that rice, tapioca and fish were common ingredients in the meals which were rarely supplemented with vegetables, green leafy vegetables and animal foods.

An assessment of the infant feeding practices of the families surveyed had indicated that children were mainly fed on mother's milk which was supplemented with cow's milk, ragi or fruits as and when required. Commercially prepared infant foods were not popular among these families probably because of their cost.

Information available on foods given during special conditions namely pre-school, school age, adolescence, pregnancy and lactation had revealed that no special care was given to the family members during these periods.

Information on foods prepared during special occasions like marriages, birth days, and other family functions revealed that the meals during such occasions had more variety with sweet preparations. Among certain communities preparations with animal foods were dominating the meals during such occasions. But for death ceremonies simple preparation like rice gruel was the major item of the meal for all the families.

An analysis of the health status of the women engaged in stone breaking was carried out. The age of menarche for 78.7 per cent of the women were found to be normal, while the remaining 21.3 per cent had a delayed onset, which indicated early childhood malnutrition. 36.7 per cent of the women were reported to have early marriage.

Among the women surveyed only 30 per cent of the women had more than 3 children and 95.3 per cent were reported to have normal deliveries.

An analysis of the average weight and height profile of the women had indicated that 90 per cent of the women surveyed were not maintaining normal weights as recommended for Indian reference women (Gopalan and Kaur, 1989).

Out of 425 children born in the 150 families surveyed, 49 child deaths were recorded mainly in large families due to external infections.

According to the views of the women, children of 55.3 per cent of the women were not keeping good health and children were reported to be constantly attacked by diseases like dysentry, respiratory infections and fever.

86.7 per cent of the women surveyed were utilising the

medical facilities available in the nearby government hospitals, while the remaining women were utilising the facilities in local private hospitals. Majority of women (98.7 per cent) were in the habit of following the directions of medical personnel.

The immunisation facilities available in these hospitals for the benefit of children were fully utilised by 48.7 per cent of the women while 51.3 per cent of the women were not aware of such facilities. Similarly child care facilities available in the the localities mainly anganwadies, balwadies and private creches were utilised by 50.7 per cent of the women while 49.3 per cent were not enthusiastic in utilising such facilities.

64 per cent of women surveyed were utilising the maternal care facilities available locally and remaining women were not utilising such facilities since as reported by them they did not have any particular health complications (13.3 per cent), or the facilities available were expensive (5.3 per cent). 17.4 per cent of the women were unaware of the need for the medical care.

Majority (66.7 per cent) of the women engaged in stone breaking were found to stay in the neighbourhood and 5 to 10 minutes were taken for reaching the work site from home. Only 5.3 per cent of the women travelled by bus to reach the work site.

An analysis of the total time spent by the women at the work site in a day were found to be 7 to 9 hours and in a week 5 to 7 days were spent in this occupation by 64 per cent of the women. Only 27 per cent of the women were working continuously without taking one day break since they were unable to meet their family expenditure without working all days in a week. During the rest days women were reported to spend more time in the kitchen for preparing meals and also visiting religious and recreation centres.

Among the women surveyed, 69.3 per cent of the women were found to return home for luch while the remaining were found to depend on packed meals (10.7 per cent) and the adjacent tea shops (19.3 per cent). The packed meals as well as the meals from the teashops were found to be cereal based preparations. The women who were not returning home for lunch, were found to take rest after lunch in the work site itself before resuming the work. Among the women surveyed 81.3 per cent of the women were spending money for purchasing soft drinks, beverages etc. during work hours.

Many of the women surveyed had found this occupation as a feasible solution for their economic problems and hence even during physiological conditions like pregnancy and lactation

more than 85 per cent of the women preferred to be engaged in this occupation and only 26.7 per cent of the women were not doing this work for one year after delivery.

According to the views of the women surveyed their employment outside the home had negatively influenced the welfare of their family members. In 24 per cent of the families the education of the elder daughters were affected because of household responsibilities in the absence of mothers or because of their involvement in stone breaking as a family contract work. The employment outside home has negatively affected the child care activities in 53 per cent of the families. While in the remaining families the children were looked after by elder relatives (17.3 per cent), elder daughters (20 per cent) or by neighbours (3.3 per cent) while 6 per cent of the women were in the habit of leaving their children in the creches locally available.

The women as revealed in data were undertaking this job with great sacrifice on their part and on the part of their family members. Among women surveyed 28.7 per cent were having job satisfaction while the remaining had a feeling that this job causes various health hazards.

Long absence from home created serious problems within

the family for 18.7 per cent of the women. Many of the women surveyed were unhappy since the reward from job was not satisfactory (4.6 per cent) and since they were neglecting their children (27.3 per cent). However 88.7 per cent of the women were engaged in this job purely because of economic advantages and the remaining women had undertaken this job since they did not have any other support, to run the family.

An analysis of the household works taken up by these women indicated that they were mainly engaged in the work of 2 persons. Average time spent by the women in stone breaking were found to be 8 hours in a day while another 8 hours were spent for doing various domestic chores. Among the various domestic chores cooking was the major activity which consumed 20 per cent of their time at home. Besides cooking other major domestic activity in which the women were engaged were marketing (12.4 per cent) collecting water and fuel (8.1 per cent) and child care activities (6.2 per cent). Activities like personal care, cleaning the home and premises washing clothes and utensils were generally neglected by these women.

82.7 per cent of the women surveyed were not getting any assistance from other family members to attend to the various domestic chores and average time spent by these women in rest in a day was 7 to 8 per cent.

Knowledge of the women on food and health was assessed and was mainly related to child nutrition, food consumption pattern followed during physiological conditions like pregnancy, lactation and illness and while, doing physical activity. This was to find out their rate of exposure to such scientific informations and also to monitor the rate of application in daily life.

The women were found to be fully aware of the significance of food adequacy during hard work; even though they were unaware of the importance of better nutrition during infancy and during their own physiological conditions. This clearly reflected on their approach to allocation of time for doing various household activities and the priorities fixed by them for undertaking the same. The women in general were found to be fully aware of the economic advantages of being employed outside the home even though they had to face a number of occupational hazards. The time allocation for working outside in a day by the women indicated that 49.8 percentage of their working hours were spent outside their home neglecting the important works at the household level. Another notable point in this respect was that these women even though they were able to supplement the family income as wage earners, they were completely disregarding their personal health and personal requirements. This was well reflected in the time allocated for personal care and, data available

from the anthropometry, clinical and biochemical studies also supported this point. Among these women, young and moderately educated ones were found to have better appreciation to the modern concepts related to health and nutrition.

General attitude of the women towards this occupation as an employment outside the home was positive since this job was preferred by all the women as a solution to their unemployment problem. Many of the women considered this work as an opportunity to be in a better atmosphere with the women of their own age. However the women had a negative approach towards this job since it enhanced their domestic responsibilities and was a hindrance to attend to many important household activities like child care. Their dependence on other family members was also increased because of their long absence from the home and this was also responsible to have a negative approach towards this job.

Among the 150 women selected for the study 15 women who were very co-operative and enthusiastic for the study were selected and attempts were made to measure the nutritional status using standard techniques.

Actual food intake pattern of these women assessed through weighment studies indicated that their diets were

inadequate in all the food articles except roots and tubers and fish, essentially required for a balanced diet as per ICMR norms (1984). Insufficient consumption of food articles by these women had resulted in under availability of major nutrients like calories, proteins, minerals and vitamins since on an average the requirement of calories was meeting only 60 per cent of recommended allowances while protein was met around 91 per cent. Their diets were also found to be deficient in iron (65.9 per cent), retinol (8.3 per cent), thiamine (53 per cent), riboflavin (32.3 per cent), niacin (72.95 per cent) and vitamin C (85 per cent). This low intake of nutrients from dietaries was also reported in a study conducted by National Nutrition Monitoring Bureau (NNMB) (1984) among urban low income groups in Trivandrum, only protein was found to meet the Recommend Daily Allowance (RDA). The prolonged consumption of inadequate amount of foods generally resulted in low health status of the individual and in this present context this is reflected in anthropometrical status, about 97.33 per cent of the women were having low body weights when compared to Indian reference women.

The results of the clinical examination also supports that the prolonged under nutrition resulted in the occurrence

of various nutritional disorders like anaemia (73.3 per cent), mottled enamel (46.67 per cent), conjunctival xerosis (66.7 per cent), tongue papillae atrophie (66.7 per cent) and costochondritis, angular stomatitis and teeth caries (13.3 per cent) each.

The heamoglobin level which is an important health indicator is also found to be subnormal in the case of 53.3 per cent of these women.

Energy requirements of the women placed in the particular situation of doing dual job of a housewife and wage earner was assessed by monitoring her work schedule continuously for one week. The activities undertaken by her were classified into sedentary, moderate and heavy (Swaminathan, 1985). On the basis of this, energy consumed for each activity was computed. The average energy expenditure of these women were found to be considerably very high and in the range of 2457 to 3648 kilo calories.

Energy intake of these women were calculated from the data, collected through food weighment method and their energy consumption was compared with the energy expended for various activities for a day by these women. The comparisons indicated

that in almost all the cases the calorie intake was insufficient when compared to their energy requirement. On an average the energy intake was met only upto 60 per cent of Recommended Daily Allowance (RDA). When the energy intake was compared to energy expenditure there was a deficit of calories in all the cases, the total energy expenditure being higher than the intake.

90 per cent of the women complained that their health was affected much because of their work and because of these reasons 14.7 per cent of women were refraining from this work during physiological conditions like pregnancy. However among the women who were engaged in work during pregnancy majority of the women were engaged in this work outside home until the terminal stage of pregnancy and 73.3 per cent of women were returning to work, 3 months after delivery.

Influence of age on the knowledge of the women was determined and correlation study of the variables indicated that age had a negative significant correlation with the knowledge of the women regarding food and health (-0.3517) and education had a significant correlation with the knowledge of the women regarding food and health (0.8733). Income level of the families were found to have no effect on the knowledge

level of the women (0.0183). Regarding the attitude of an individual towards their work, age has a negative correlation with the attitude of women since as the age increased the level of favourable attitude towards work decreased (-0.2366). Educational level of the women had a significant effect on the attitude of women towards work (0.7071). However income was found to have no correlation with this attitude (0.0734).

SUMMARY

SUMMARY

The study entitled "Food consumption and energy expenditure pattern of self employed women in unorganised sector" was conducted among 150 women engaged in stone breaking on contract basis in the rural areas of Trivandrum. This study revealed the socio-economic and food consumption pattern of the families, with special reference to the women in the family, and their personal characteristics. The actual food intake and the energy expended for various activities were determined in 15 women engaged in this work. The nutritional status, attitude, and knowledge of these women on health and nutrition and attitude towards their job were also assessed.

The socio-economic survey revealed that majority of the families represented the underprivileged population viz. Scheduled Caste (SC) and Other Backward Communities (OBC). Majority of the families were nuclear type families having more than 4 members and with a monthly income ranged from ₹.400/- to ₹.600/-. The families were found to earn about ₹.100/- to ₹.300/month from stone breaking alone.

Monthly expenditure pattern of the families indicated that the expenditure on food alone ranged from 1.3 to 39.2 per cent of the monthly income.

All the families were habitual non vegetarians and they were following a daily purchasing pattern of materials required for meals. Rice, roots and tubers (mainly tapioca) and fish were the major food articles daily purchased along with coconut, these food articles were found to be the major ingredients in their daily meal pattern. 5.3 per cent of the families were having home production of food article.

Major items in the daily work schedule of the women was that they were engaged in stone breaking for about 3 hours/day. Due to economic reasons, physiological conditions like pregnancy was neglected and the women were engaged in the work outside home during this vulnerable period. The difficulties imposed on these home makers due to the dual role were improper care of the family, inability to cope with the household work and lack of time for care of children. Most of the women took their children to the work site. Time spent for various activities viz. for personal care, child care, and leisure was not adequate.

During physiological conditions such as infancy, pre school age, adolescence, pregnancy and lactation, no special foods were prepared and given to the vulnerable members of the family, child feeding practices followed by the families showed

that most of the mothers breastfed their their babies for a period of 1 to 2 years. Breast milk was generally supplemented with cow's milk.

An assessment of the actual food intake of the women by weighment method revealed that except proteins all other nutrients were found to be inadequate. The energy requirements for every day activities, when compared with the energy obtained through food intake, indicated that all the women had a negative energy balance.

An assessment of the health and nutritional status of the women revealed that most of them were having low body weights and were suffering from nutritional disorders especially anaemia with a very low level of haemoglobin (8.5 to 9.5 g/100 ml).

Knowledge of these women on the importance of health and nutrition in daily life was found to be satisfactory. But they were not aware of the significance of good nutrition during various physiological conditions. Statistical treatment of data indicated that age had a negative significant correlation and education had a positive significant correlation with the knowledge of the women regarding food and health.

Attitude of the women towards this occupation was found

to be positive since this was considered to be a solution to their unemployment problem and economic difficulties eventhough it curtailed them from household responsibilities especially child care. Statistical analysis revealed that age has a negative correlation and educational level of the women had a significant positive correlation with the attitude of women towards this occupation.

REFERENCE

REFERENCES

Achaya, M. and Bennet, L. (1987). Women and subsistence sector economic participation and household decision making in Nepal, Washington DC, World Bank working paper No. 526, Seeds, 6 P 1-2

* Agarwal, B. (1983). Rural women and the high yielding rice technology in India, Paper presented at the conference on women in Rice Farming 26-30. IRRI, Los Banos, Phillippines.

Arunachalam, J. (1985). A case study of the working women's forum UNICEF productivity in the informal sector, Seminar Proceedings PP 180-183.

Azad, N. (1986). Empowering women workers, The W.W.F. Expt. in Indian cities, UNICEF, working women forum women's development section, Regional office for south central Asia, New Delhi Pp 2-3.

Bagchi, K. and Umesh, K. (1985). Effect of income generation of rural women on health and nutritional status of their offspring Swarth Hind, 29 (2): 53-54.

Batliwala, S (1988). Field of rice health hazards of women and unborn children, Manushi, 43: 28-29.

Basu, S (1979). Role of women in Rural Economic Development Yojana 23 (21): 24-25.

Batra, V.P. (1982). Work participation of rural women, Yojana, 26 (8): 36-37.

Bhatt, E.R. (1985). Productivity in the Informal Sector, Seminar Proceedings UNICEF, P-10.

Bhatt, E. (1988). They run the family and an industry too, Social Welfare, 35(6): 8-9.

*Bidinger, P. Nag, B. and Babu, P. (1986). Factors affecting intrafamily food distribution in a South Indian Village, A report to the Ford Foundation, mimeo.

Binswanger, H.P. and Rosenzweig, M.R. (1985). Women in rice farming systems, Network, Country profile on India PP 6-11.

Bleiberg, Famy, M., Brun, T.A. and Goihman, S. (1980). Duration of activities and energy expenditure of female farmers in dry and rainy seasons in upper Volta British Journal of Nutrition (43): 71.

Boserup, E. (1987). Women's role in economic development. Rural Development Abstracts, 10 (4): 222-223.

*Census of India (1981).

Chatterjee, M. (1989). Socio-economic and socio-cultural influences on women's nutritional status and roles, women and nutrition in India, Special Publication Series 5: 296-300.

Charyulu, U.V.N., Reddy, G.N. (1987). Rural women decision making, public participation and other basic needs, Indian Journal of social work, XLVII(2): 407-408.

Chen, M. (1984). Developing non-craft employment of women in Bangladesh Seeds (7): 4-6.

Chakrabarty, S. (1985). Rural women's claim to priority, A policy debate selected documents from International and Indian Archives, Centre for development studies. 5-3.

Chaudary, P.K. (1988). Employed women in India, Social Welfare, 35(2): 19-20.

Chitnis, S. (1983). Women and Development not by constitutional gaurantees or legal provisions alone. The Indian Journal of Social Work, XLIII (4): 401-417.

Dandekar, K. (1975). Has the proportion of women in Indias' population been declining. Economic and political weekly 10: 13-19.

Daswani, M. (1987). Indian Journal of Social Work. Special Issue, Department of Publications, Tata Institute of Social Sciences, XLVIII 273-280.

Das Gupta (1987). Selective discrimination against female children in rural Punjab, India population and development review 13: 77-100.

Das, D., Dhanoa, J. and Cowan, B. (1982). Letting them live, Future Develoement Perspectives on children III quarter 36-37.

Devadas, R.P. Anuradha, V. Rani, A.J. (1975). Energy intake and expenditure of selected manual labourers, Indian Journal of Nutrition and Dietetics (12) : 278-279.

Eng, K.H. (1983). New hazards to working women State and society, quarterly journal. First quarter Indian Institute for Regional Development Studies, Pullarikunnu, 70-72.

Extract from a Commission Report (1988). The status of women in Pakistan Manushi, 44: 3-4.

Ghosh, S. (1987). Women's role in health and development Health for the millions, 13 (1 and 2): 2-7.

Ghosh, D.K, (1989), IRDP and rural women, an assessment, Kurukshetra, 37(10): 32-33.

Giriappa, S. (1988), decision roles by women in different rural and semi-urban activities, Journal of Rural Development, 7(3): 433-434.

Gopalan, C. Kaur, S. (1989). Women and nutrition in India, Nutrition foundation of India, special publication series 5: 296.

Gopalan, S. (1987). Why are women lagging behind, Kurukshetra, 36 (3): 30-31.

Gowda, S. and Indira, R. (1987). Women workers in Agarbathi Industry - A study, The Indian Journal of Social Work, XLVIII (3): 248-255.

Grewal, S. (1982). Women and literacy, Swarth Hind, 26(11): 260.

Gulati, L. (1978). Profile of a female agricultural labourer, Economic and Political Weekly 13: 12-14.

Gulati, L. (1984). Profiles in female poverty, A study of five working women in Kerala, women in rice farming systems, 14-15.

Gulati, N.D. and Mencher, J.P. (1984). "Women in the unorganised sector with special reference to Kerala", centre for development studies, working paper No. 172.

Gupta, A. (1989). Mitigating sufferings of rural women, Kurukshetra, 37(10): 7-9.

Gupta, R. and Gupta, B.K. (1987). Women and her role Yojana, 31 (18): 28-29.

Gupta, M.N. (1971). Occupational and environmental hygiene, Swarth Hind. 15 (9): 255-256.

Hussain, A.M. (1988). Health, Agriculture and Rural Development, Agricultural Information Development Bulletin. 10(4): 21-23.

ICMR (1982). Gopalan, C. Ramasastri, B.V. and Balasubramanian, S.C. In nutritive value of Indian Foods. NIN ICMR, Hyderabad, 60-100.

ICMR (1984). Recommended dietary intakes for Indians NIN Hyderabad. P-58.

Jain, D. (1980). Poverty and unemployment, Yojana, 24(16): 6-7.

Jellifee, D.B. (1966). The assessment of the nutritional status of the community. World Health Organisation, Geneva. 63-69.

Jose, A.M. (1989). Role of women in rural development, Kurukshetra, 37(10): 14-15.

Kaur, A. (1989). Rural women, Kurukshetra, 37(10): 3-5.

Kishwar, M. (1988). The burning falls to our share, Manushi, 47: 29-31.

*Kumar, S.C. (1978). Role of the household economy in child nutrition at low incomes occasional paper No. 95, Department of Agricultutal Economics, Cornell University Ithaca, New York.

Likert, R. (1932). A technique for measurement of attitudes Arch Psychology: 140.

Marie, T.F. (1976). Rural health problems in developing countries, Community Development Journal 1(1): 38-39.

Mankekar, K. (1980). Women working against odds, Yojana, 24(16): 13-14.

Mazumdar, V. (1975). Women in Agriculture Indian Farming, Nov. 5-10.

Mencher, J. and Saradamoni, K. (1982). Feet and dirty hands, Rice production and female agricultural labour, Economic and Political weekly 17(32): 17-18.

Mencher, J.P. (1983). "Landless women agricultural labourers in India" paper presented at the conference on women in rice farming, women in rice farming systems, country profile in India: 15.

Mies, M. (1985). "Indian women in subsistence and agricultural labour" World employment programme research working paper, International Labour Office, Geneva, Women in rice farming systems, Network, Country Profile on India: 2.

*Ministry of Programme Implementation (1986) Women in Tamil Nadu, A Profile, Tamil Nadu Corporation for development of women: 1-12.

*Mohiuddin, A. (1985). Appropriate technologies for rural women with reference to Indian experiences, NIRD paper presented at Asian Institure of Technology: 2.

Mukhopadhayaya (1987), Women and Health, Health for the millions, 13 (1&2): 1-2.

National Policy on Education (1986). Ministry of human resource development, Government of India.

Nair, R.G. (1988). Women in unorganised sector, Social Welfare: 35(2): 5.

Nair, H. (1988). A day in the life of Nagamma, Manushi: 48: 29.

Nair, B.S. (1988). Women in Kerala, Social Welfare. 35(7): 3.

Nair, R.G. (1990). Women workers demand a better deal, Yojana, 34(4): 19-20.

NNMB (1984), Average intake of foodstuffs in urban low income group, Report on urban population, NIN, ICMR. 19-27.

Patnaik and Debi, S. (1987). Women and Agriculture, Nutrition Abstracts and reviews. 10(2): 113.

Patil, R.H. (1985). Imput support to Informal sector, Productivity in the informal sector, seminar proceedings: 142.

Pyson, I., Moore, M. (1983). On kinship structure, female autonomy and demographics behaviour in India population and development review. 9: 35-60.

Rajagopalan (1986). Women in Tamil Nadu, A Profile, The Tamil Nadu Corporation for development of women, Madras: 1-12.

Rajula, A.K. (1978). Women Entrepreneurs Yojana: 22 (13): 19.

Rani, J.T. and Rajaiah (1988). Female population, literacy and employment - some observations, The Indian Journal of Social Work. XLIX(3): 247-250.

Rahmathullah, V. (1983). Anaemia and productivity among tea plantation workers in South India, Symposium on 'Nutritional anaemia and its prevention', Nutrition Society of India: 23-26.

Rao, A. (1987) - Dilemma of a working woman, Health for the millions, XIII (1 and 2): 1.

Rao, V.K. (1975). Diet surveys by weighment method - a comparison of reference periods, The Indian Journal of Nutrition. 12(1): 9-15.

Report of Tamil Nadu Corporation for development of women (1986). Women in Tamil Nadu, A Profile: 3.

*Rosenzweig, M. (1980). Household and non-household activities of youths, Issues of modelling data and estimation strategies, International Labour Organisation, Geneva.

Samuel, J.M. and Erappa, S. (1986). State and Society, quarterly journal of the Indian Institute for regional development studies, Third quarter: 15.

Sarojini, T.K. (1989). Equality for women what we need doing Yojana, 33 (3): 28-29.

Satyanarayana, K., Narasinga Rao and Srikantia, S.G. (1979). Nutrition and work output. The Indian Journal of Nutrition and Dietetics. 16: 170.

Satyanarayana, K., Naidu, A.N., Chatterjee, B. and Narasinga Rao, B.S. (1980) Work output in undernourished adolescents effect of early malnutrition, Nutrition reviews, 38(4): 143-145.

Sharma, K. (1985). Women and Development, Gender concerns, Centre for devpt. studies, occasional paper No.2.

Shah, R.M. (1985). Productivity in the informal sector, Seminar Proceedings, UNICEF: 54.

Singh, M. and Rao, P. (1985). Transfering technology to farm women - Trials and tribulations, NIRD, Paper presented at Asian Institute of Technology: 125-126.

Singh, B.N. (1989). Women work force, Problems and Prospects, Yojana, 33(4): 15-17.

Singh, K.P. (1972). Career and family women's two roles Indian Journal of Social Work, 33: 277-281.

Singharoy, K.D. and Prava (1989). Self employment for rural women Yojana, 33(9): 24-25.

Singh, A.K., Sharma, T.S. and Singh, D.K. (1988). Participation of rural women in Agriculture in the hills of Utter Pradesh, Journel of Rural Development, 7(3): 289-297.

Srivastava, J.C. (1985). Application of Science and Technology to eliminate drudgery among rural women - Paper presented in the seminar on appropriate technology for rural women in N.I.R.D. Hyderabad: 3-5.

Sreenivasan (1990). The invisible women, Yojana, 24(13): 13-14.

Swaminathan, M. (1985). Normal height and weight for Indian females. Essentials of food and nutrition, an advanced text book II, Fundamental aspects, The Bangalore Printing and Publishing Co.: 645.

Swaminathan, M. (1985). Energy value of foods and energy requirements, Essentials of food and nutrition, an advanced text book; I, Fundamental aspects, The Bangalore Printing and Publishing Co.: 145-179.

Swaminathan, M. (1986). Principles of Nutrition and Dietetics, The Bangalore Printing and Publishing Co. 339.

Thyagarajan, N. Gocindarajan, M. and Rejnini, P.K. (1978). Women and employment, The Indian Journal of Home Science, Association of India: 12(3): 101.

UNICEF (1985). Indian Informal sector: 90-100.

UNICEF (1985). The state of the World's women. Swasth Hind XXIX (12): 293-194.

Vandanasen, Purohit, B.K. and Janin, T.P. (1980). Weight/Height^2 ratio in assessment of PCM, Indian Paediattics, 17(2): 135.

Vijayalekshmi, P. and Jayanthi, N (1986). Anaemia and work output Indian Journal of Nutrition and Dietetics, 23(1)P 279.

Vijayaraghavan, K. (1987). Anthropometry for assessment of nutritional status, Indian Journal of Paediatrics, 54(4): 511-520.

Waterlow, J.C., James, W.P.T. and Olson, R.E. (1985). The food intake and energy expenditure of ten farmers - A study Human nutrition, clinical nutrition. 39C: 7.

Wheeler, E.F. and Tan, S.P. (1983). From concept to practice food behaviour of chineese immigrants in London. Ecology of food and nutrition. 13: 51-57.

Zachariah, K.C. and Patel, S. (1983). Trends and determinants of infant and child moratality in Kerala, Discussion paper No. 82.

*Original not seen

APPENDICES

APPENDIX - I

KERALA AGRICULTURAL UNIVERSITY

DEPARTMENT OF HOME SCIENCE

VELLAYANI

Schedule to assess the socio-economic status and food consumption pattern of the selected families with special reference to stone breaking women in Trivandrum district.

1. Name :
2. Name of the house :
3. Ward No. :
4. Place :
5. Head of the family :
6. Address :
7. Caste :
8. Religion :
9. Type of family :
   a) Nuclear family
   b) Joint family
   c) Small family (upto 4 members)
   d) Big family (5 to 10 members)
   e) Very big family (Morethan 15 members)

10. Details about the family members

No.	Relationship with the head of the family	Age	Sex	Education	Occupation	Monthly income

11. Monthly income of the family :

    1) Income from job :

    2) Income from stone breaking :

    3) Income from own land :

    4) Income from Agriculture :

    5) Income from other items :

    6) Income from business/interest :

    Total income :

12. Food habit of the family :

13. Food habit of the stone breaking women :

14. Housing and other facilities available :

a) No. of rooms in your home : One/Two to six/morethan six

b) Isn't ventilated : Yes/No

c) Type of wall : Mud/bricks/etc.
Thatched hut/tiled house/
Terraced building/white washed

d) Whether there is latrine in your house : Yes/No

e) The source of drinking water : Own well/Public well/Nearest pond/River/Pipe in your house/ Road pipe

15. Monthly expenditure pattern

No.	Items	Expenditure Rs.	Ps.
1.	Food		
2.	Clothing		
3.	Shelter		
4.	Transport		
5.	Education		
6.	House rent		
7.	Health		
8.	Savings		
9.	Entertainments		
10.	Other expenses		

16. Expenditure for food

Items	Purchased daily		Weekly		Monthly		Occasionally		Reasons for the purchase
	Qty.	Cost	Qty.	Cost	Qty.	Cost	Qty.	Cost	
Cereals									
Pulses									
Root and tubers									
Leafy vegetables									
Other vegetables									
Fruits									
Milk and milk products									
Eggs									
Meat and fish									
Fats and oils									
Spices and condiments									
Others									

17. Home production : Yes/No

If yes, give the following details

Frequency of use of foods

Foods	Daily	Once in a week	Twice in a week	Thrice in a week	Occa-sionally	Never	Reason for accep-ting this method
Cereals							
Pulses							
Roots and tubers							
Other vegetables							
Leafy vegetables							
Fruits							
Milk and milk products							
Meat and Fish							
Egg							
Nuts and oil seeds							
Sugar and jaggery							
Jam and squash							
Pickles							
Spices and condiments							

18. Frequency of use of different food materials

Foods	Frequency of use of food stuffs						
	Daily	Once in a week	Twice in a week	Thrice in a week	Occasio-nally	Never	Reason for accep-ting this method
Cereals							
Pulses							
Roots and tubers							
Elephant Yam							
Colocasia							
Onion							
Savola							
Potato							
Tapioca							
Sweet potato							
Carrot							
Beet root							
Other vegetables							
Leafy vegetables							
Fruits							
Milk and milk products							
Meat and fish							
Egg							
Nuts							
Oils							
Sugar and jaggery							
Jam and squash							
Pickles							
Bakery products							

19. Preparation of foods for cooking

Foods	Vegetables	Roots and tubers	Leafy vegetables	Fish	Meat	Reasons
1. Cutting in big pieces						
2. Cutting after washing						
3. Cutting and kept for a long time before cooking						
4. Cooking without removing the skin						
5. Straining the water after cooking						

20. Different methods of cooking

Foods	Boiling		Steaming	Frying	Others
	Absorption	Straining			

21. Preservation of foods

Methods and Medium of preservation				Drying	Reason for accepting this method
Items	Salt	Sugar	Vinegar		
Cereals					
Pulses					
Leafy vegetables					
Other vegetables					
Fruits					
Milk					
Fish					
Meat					
Others					

22. Meal pattern of the family

Menu	Preparation	Ingredients
Breakfast		
Lunch		
Tea		
Dinner		

23. Meal pattern of the respondent

Menu	Preparation	Ingredients

24. Meal pattern during special conditions

Foods	Breakfast	Lunch	Dinner
Infancy			
Pre-school period			
School going period			
Adolescent			
Pregnancy			
Lactation			

25. Preparations on special occasions

Occasions	Special preparation	Significance
Birth		
Marriage		
Death		
Local festivals		
Religious functions		
Others		

26. Health of the woman labourer

Age of menarche (year)

Age of marriage (year)

How many times do you have

pregnancy : Once/twice/more than twice

Type of delivery : Normal/Caesarian/Any other

No. of children alive :

Is any child dead : Yes/No

Reason for death : Disease/Accident

If disease, give the following details:

Disease - Period of disease - Details of the treatment

Present Health Status of

of the children : Yes/No

Whether the child is suffering from any kind of disease? : Dysentry/Fever/Deficiency disease/Others

27. 1. Why do you engaged in stone breaking, state reasons? Economic/Poverty/For the welfare/Husband is not working/ Any other of the family

2. During illness do you go to Hospital? : Govt. Hospital/Private hospital/Medicines from Medical shop/Medicines locally available/Don't have the habit of using medicines

If not go, give the reasons :

3. Do you consume the medicines prescribed by the Doctor : Yes/No

4. Which is the nearest Government hospital?

5. Has the ANM visited your house: Yes/No

Have you met ANM during delivery: Yes/No

6. Do you immunise your child : Yes/No

Explain the frequency of taking triple vaccination

Has received immunisation without interruption: Yes/No

7. Is there a nursery near your house? Yes/No

Do you send your child to nursery? Yes/No

8. During pregnancy do you meet the Doctor : Yes/No

If no, state the reasons for not visiting the Doctor?

If yes, do you consume the medicines

and food as prescribed by the Doctor? : Yes/No

28. Problems faced by the housewife as she is engaged in stone breaking

1. Does the elder daughter go to school? : Yes/No

If no, state the reasons?

As you are engaged in this work : Yes/No

If yes, she is doing which kind of work?

2. Who looks after the small kid?

3. Are you satisfied with this work? : Yes/No

If no, explain the reasons.

As you have no health to do work/Problems prevailing in the home/As you have received less salary/As you can't look after your children

4. Do you think that your health is diminishing since you are doing this work : Yes/No

If yes, which is the solution adopted

5. Have you received protection from others during pregnancy? : Yes/No

6. Do you engage in this work during pregnancy: Yes/No

If yes, upto which month?

7. Do you engage in this work during lactation?

   If no, state the reasons

8. After delivery from which month do you engage in this work

9. From which month do you start work during lactation

10. Have your child received care: Yes/No

11. In your absence who feeds the baby

12. Do you feel that you can't do the household works?

    If yes, which kind of works are to be avoided?

29. Energy utilisation

The distance you have to travel from your home to the work site (in km)

How much time have you taken to reach the site (in minutes)

Means of transport for your journey

1) By walking 2) By Bus 3) Any other

30. Details of the family members, who are engaged in stone breaking

Family members	Time of starting	Time of closing	Total hours	Days/week
Mother				
Father				
Children				
1.				
2.				
3.				

Do you have off day in a week? Yes/No

If yes, how you spent that day with your family members?

For Cinema/Had gone to relatives home/take rest/Any other

Will you get any help from other family members in your household works?

Mother/Elder sister/Younger sister/Others

How much time have you spent for this per day?

31. Are you doing any other works along with the stone breaking?

If yes, explain the daily routine of work

Family members	Time taken	Time for rest	Total hours taken
Mother			
Father			
Children			
1.			
2.			
3.			

32. Details of outside works

Family members	Per day	Per week	Per month
Mother			
Father			
Children			
1.			
2.			
3.			

33. Income from stone breaking

Family members	Per day	Per week	Per month
Mother			
Father			
Children			
1.			
2.			
3.			

34. Daily routine of the stone breaking woman

At what time you go to bed

Time of waking up

The household works done before going to work site

Type of work	Time taken

At what time you start for work from the home

The time of reaching

Have you taken soft drinks during work: Yes/No

Have you taken rest after lunch: Yes/No

The time of rest

The time of lunch

Do you prepare foods while doing work: Yes/No

Do you bring food packets to the work site: Yes/No

If yes, describe the items of foods

Have you brought and consume any other foods than this?

The time of return to home

The time of reaching the home

The type of works doing after reaching the home

The type of works	Time taken

Whether whole members of the family are doing outside works: Yes/No

<u>Do you engage in work during the following situations</u>

1. During pregnancy upto which month you are engaged in work: 6 months/8 months/9 months/ upto delivery

2. The period of taking rest after delivery : 1 month/2 months/ 3 months

3. From which month onwards you are engaged in work : 1 month/2 months/ 3 months/4 months/Other

4. Have you bring your child to the work site : Yes/No

5. Who is looking after your child at home : Mother/Sister/Elder daughter/Others

6. Do you work on special occasions : Yes/No

Have you interested in doing this work : Yes/No

If yes,

As the expenditure of the family is increased : Yes/No

As your husband is unemployed : Yes/No

For the education of the children : Yes/No

For the welfare of the family members : Yes/No

<u>Do you engage in work during the following occasions</u>

1. If you have a guest : Yes/No

2. If a family member is suffering from illness : Yes/No

3. You are not doing work during pregnancy : Yes/No

4. You are not doing work just after delivery : Yes/No

APPENDIX - II (a)

FAMILY DIET SURVEY - ONE DAY WEIGHMENT

Family No. : Name of the Head of the family Date:

Village : District State:

Age and sex composition of those who have partaken the meal

Age	Adult	12-21	9-12	7-9	5-7	3-5	1-3	Below 1	Guest (ages)
M									
F									

Cereals

1. Rice
2. Wheatflour
3. Ragi
4. Maida
5. Rava
6. Others

Pulses

7. Bengal gram
8. Black gram
9. Red gram
10. Soya bean

11. Green gram

12. Others

13. Leafy vegetables

14. Other vegetables

Roots and tubers

15. Carrot

16. Onion big

17. Beetroot

18. Tapioca

19. Potato

20. Sweet potato

21. Yam

22. Others

Nuts and oil seeds

23. Cashewnut

24. Coconut dry

25. Coconut fresh

26. Ground nut

27. Others

28. Spices and condiments

Fruits

29. Amla

30. Apple

31. Banana ripe

32. Lime and orange

33. Mango, ripe

34. Melon, water

35. Papaya, ripe

36. Tomato, ripe

37. Others

Fish

38. Fish, fresh

39. Fish, dry

Other fresh foods

40. Meat

41. Chicken

42. Liver, goat

43. Egg, hen

Milk and milk products

44. Milk, Curds, Butter milk

45. Skimmed milk, liquid

46. Cheese

Fats and oils

47. Butter

48. Ghee

49. Hydrogerated oil

50. Cooking oil

Other food stuff

51. Biscuit, sweet

52. Biscuit, salt

53. Bread, white

54. Sugar

55. Jaggery

56. Papad

57. Sago

58. Toddy

59. Farex

60. Amul

APPENDIX - II(b)

FAMILY AND INDIVIDUAL FOOD CONSUMPTION SURVEY WEIGHMENT METHOD

Name of the investigator :
Name of the Head of the family :
Name of the subject :
Age of the subject :

Serial No. :
Address :
Date :

FOOD CONSUMPTION

Name of the meal	Menu	Weight of total raw ingredients used by the family (g)	Weight of total cooked food consumed by the family (g)	Amount of cooked food consumed by the family (g)	Raw equivalents used by the individuals (g)
1	2	3	4	5	6
Breakfast					
Lunch					
Tea					
Dinner					
Others					

APPENDIX - III

KERALA AGRICULTURAL UNIVERSITY

Clinical Examination

Hair sparse	01*	Tongue papillae atrophie	20
Discoloured	02*	Papillae hypertrophic	21
Easily plucked	03*	Pellagra	22
Moon face	04*	Craz. Pavement dermatosis	23
Parotid enlargement	05	Pigmentation at kwickles/ fingers/toes	24
Oedema	06	Phrynoderma	25
Emaciation	07	Koilonychia	26
Marasmus	08	Gums-spongy bleeding	27
Conjuctival zerosis	09	Granrotapes	28
Bitot's spot	10	Ephiphyseal Enlargement	29
Corneal Zerosis/ Kerotomalacia	11	Beading of ribs	30
Corneal capacity	12	Knowckknee/bowlegs	31
Night blindness	13	Trontae-parietal boosing	32
Photophobia	14	Teeth caries	
Anaemia	15	Teeth Mottled enamel	33
Nasolabial dyssebacia	16	Enlargement of spleen	34
Angular stomatitis	17	Enlargement of liver	35
Chelosis	18	Soft -	
Red & raw	19	Firm -	
		hard -	
		Thyroid enlargement	36
		Others	37

* for children below 5 years

APPENDIX - IV

Haemoglobin cyanmethaemoglobin method

Principle

Haemoglobin is converted into cyanmethaemoglobin by the addition of potassium cyanide and ferricyanide. The colour of cyanmethaemoglobin is read in a photoelectric calorimeter at 540 m a standard solution since cyanide has the maximum affinity for haemoglobin, this method estimates the total haemoglobin.

Reagent

Drabkin's solution dissolve 0.05 g of potassium cyanide, 0.2 g of potassium ferricyanide and 1 g of sodiumbicarbonate in 1 litre distilled water.

Procedure

20 ml of blood are measured accurately from ahaemoglobin pipette and delivered on to a Whatman No.1 filter paper disc. The filter paper is air dried labelled and can be stored upto one week. The portion of filter paper containing the blood is cut and dipped on 5 ml Drabkins solution taken in a test tube wait for 30 minutes and mix the contents on a vertex mixture and take the readings.

Construction of standard curve

If the blood drawn from the subject contain haemoglobin 15 g/dl after estimation then prepare these reference standards as follows:

1. Reference standard A

4 ml blood in 100 ml Drabkins reagent contain haemoglobin 15 g/dl.

2. Reference standard B

300 ml of reference standard + 200 ml of Drabkins reagent contain haemoglobin concentration of 10 g/dl.

3. Reference standard C

200 ml of reference standard A and 300 ml of Drabkins reagent contain a haemoglobin concentration of 7.5 g/dl. Thus we have these reference standards at three levels of haemoglobin concentration. Use 5 ml from each standard whenever haemoglobin estimations are done.

APPENDIX - V

KERALA AGRICULTURAL UNIVERSITY

DEPARTMENT OF HOME SCIENCE

Schedule to test the knowledge of stone breaking women regarding food and health

1. Name of the respondent :

2. Address :

No.	Statements	Strongly agreed	Agreed	Strongly disagreed	Disagreed	Undecided
1	2	3	4	5	6	7
1.	Pulses should be included in the daily diet of the children					
2.	Children should not consume fruits daily					
3.	Children can be given amla and guava instead of apple and orange					
4.	Meat and fish may be the cause of indigestion in children					
5.	Without immunising the children it is useless to give nutritious foods alone					
6.	Fat contains the nutrients for growth					
7.	Illness increases the nutritional requirements of a person					

1	2	3	4	5	6	7

8. It is good to decrease the amount of food during fever

9. Open defaecation increases worm infestation

10. Water consumption must be reduced during vomiting and diarrhoea in children

11. Lactating mothers must be provided with special foods

12. The amount of food provided to a pregnant mother will be equal to that of a normal woman

13. Mother's ill health might cause unhealthiness to the child

14. Hard working is not good during pregnancy

15. Consumption of fruits and leafy vegetables daily will prevent constipation

16. Volume of breast milk produced will be reduced as a result of ill health of the mother

17. Anaemia during pregnancy is due to the deficiency of nutrients

18. The consumption of milk, egg and groundnuts during pregnancy led to the enlargement of the fetus and difficult delivery

1	2	3	4	5	6	7
19.	It is not advisable to avoid nursing during the period of menarche					
20.	It is better to do this work during pregnancy and lactation					
21.	The consumption of cereals and pulses help to do this work for a long time					
22.	As the stone breaking is a hard work it is not good for health					
23.	Frequent consumption of foods help to do this work efficiently					
24.	Old age do not reduce the work efficiency					
25.	Repeated attacks of external infections reduce the work efficiency					
26.	The women can work as efficiently as the men working in the same field					
27.	In addition to the household works stone breaking requires more food than that of a normal woman					
28.	There is no relationship between the food consumed and the work efficiency					
29.	This work can be done by the people of any age					
30.	The consumption of fruits and vegetables increases the work efficiency					

APPENDIX - VI

KERALA AGRICULTURAL UNIVERSITY

Department of Home Science

Vellayani

Schedule to assess the attitude of women towards the stone breaking job

1. Name of the respondent
2. Address

No.	Statements	Strongly agreed	Agreed	Strongly disagreed	Disagreed	Undecided
1	2	3	4	5	6	7
1.	Stone breaking as an occupation is a good solution for the unemployment problem among rural women					
2.	Women accept this job being an income generating activity					
3.	Working along with the family enhances the 'habit of saving' in children					
4.	This work outside the house negatively influence other household chores					

1	2	3	4	5	6	7
5.	The work being done as a group provides a better environment to women since they get an opportunity to share their sorrows and happiness with others					
6.	Doing this work the child care activities of the mother are neglected					
7.	The women are able to spend their free hours profitably					
8.	This work increases dependency of the women					
9.	There is no need for special training to increase the production potential					
10.	Frequent consumption of energy drinks as major meal during work hours not increase the work efficiency					

APPENDIX - VII

KERALA AGRICULTURAL UNIVERSITY

DEPARTMENT OF HOME SCIENCE

A questionnaire to elicit the time utilization pattern of stone breaking women

Sl. No.

1. Name of the housewife :
2. Age :
3. Marital status :
4. Type of family :
5. Size of the family :
6. Number of adult women in the family :
7. Number of areas of land held by the family :
8. Time utilization pattern of the housewife :

Activities	Time spent in minutes

APPENDIX - VIII(1)

8 hours 5 minutes in bed at BMR	= 31.6x1.36x8.05	= 347.38 kilo calories	
Cooking (3 hours)	= 43.5x1.7x3 hrs.	= 221.35	,,
Cleaning in and around house	= 43.5x1.4x15 mts.	= 15.22	,,
Marketing	= 43.5x4x2 hrs.	= 348.00	,,
Walking	= 43.5x4x10 mts.	= 29.00	,,
Personal activities	= 43.5x3x15 mts.	= 32.63	,,
Care of young children	= 43.5x1.7x30 mts.	= 36.98	,,
Collecting water and fuel	= 43.5x4x1.45 mts.	= 304.50	,,
Stone breaking	= 43.5x5x8 hrs.	= 1740.00	,,
		Total expenditure	= 3075-
		Intake	= 1674
		Deficit	= 1401 kilo calories

APPENDIX - VIII(2)

7 hours 15 minutes in bed at BMR	=	31.6x1.36x7 hrs. 15 mts.	= 311.54 kilo calories
Cooking (3 hours)	=	43x1.7x3 hrs.	= 219.3 ,,
Cleaning in and around the house	=	43x1.4x30 mts.	= 30.1 ,,
Marketing	=	43x4x2 hrs.	= 344 ,,
Walking	=	43x4x30 mts.	= 86.0 ,,
Personal activities	=	43x3x15 mts.	= 32.25 ,,
Care of young children	=	43x1.7x45 mts.	= 54.83 ,,
Collecting water	=	43x4x1.45 mts.	= 301 ,,
Stone breaking	=	43x5x8 hrs.	= 1720.00 ,,
		Total expenditure	= 3099
		Intake	= 1760
		Deficit	= 1339 kilo calories

APPENDIX - VIII(3)

8 hours in bed at BMR	=	31.6x1.36x8	=	343.81 kilo calories
Cooking	=	45x1.7x3 hrs. 30 mts		267.75 ,,
Cleaning in and around the house	=	45x1.4x15 mts.	=	15.75 ,,
Washing utensils	=	45x1.3x15 mts.	=	14.63 ,,
Marketing	=	45x4x2 hrs.	=	360 ,,
Walking	=	45x4x15 mts.	=	45 ,,
Personal activities	=	45x3x15 mts.	=	33.75 ,,
Care of young children	=	45x1.7x30 mts.	=	38.25 ,,
Collecting water and fuel	=	45x4x1 hr.	=	180.0 ,,
Stone breaking	=	45x5x8 hrs.	=	1900 ,,
		Total expenditure	=	3099-
		Intake	=	1717
		Deficit	=	1382 kilo calories

APPENDIX - VIII(4)

7 hours 15 minutes in bed at BMR	= 31.6x1.36x7 hrs. 15 mts.	= 311.54 kilo calories	
Cooking	= 47x1.7x3 hrs.	= 239.7	,,
Cleaning in and around the house	= 47x1.4x20 mts.	= 21.9	,,
Washing utensils	= 47x1.3x10 mts.	= 10.18	,,
Marketing	= 47x4x2 hrs. 30 mts.	= 470	,,
Walking	= 47x4x15 mts.	= 47	,,
Personal activities	= 47x3x15 mts.	= 35.25	,,
Care of young children	= 47x1.7x30 mts.	= 39.95	,,
Collecting water	= 47x4x1 hr. 45 mts.	= 329	,,
Stone breaking	= 47x5x8 hrs.	= 1880	,,
	Total expenditure	= 3384	
	Intake	= 1997	
	Deficit	= 1487 kilo calories	

APPENDIX - VIII(5)

7 hours 15 minutes in bed at BMR	=	31.6x1.36x7 hrs. 15 mts.	= 311.54 kilo calories
Cooking	=	39x1.7x3 hrs. 15 mts.	= 215.47 ,,
Cleaning in and around the house	=	39x1.4x30 mts.	= 27.3 ,,
Washing utensils	=	39x1.3x15 mts.	= 12.67 ,,
Marketing	=	39x4x2 hrs.	= 312 ,,
Walking	=	39x4x15 mts.	= 39 ,,
Personal activities	=	39x3x15 mts.	= 29.25 ,,
Care of young children	=	39x1.7x30 mts.	= 33.15 ,,
Collecting water and fuel	=	39x4x1 hr. 45 mts.	= 273 ,,
Stone breaking	=	39x5x8 hrs.	= 1560 ,,
		Total expenditure	= 2813
		Intake	= 1893
		Deficit	= 1020 kilo calories

APPENDIX - VIII(6)

7 hours 15 minutes in bed at BMR	=	31.6x1.36x7 hrs. 15 mts.	= 311.54 kilo calories
Cooking	=	40x1.7x3 hrs.	= 204 ,,
Cleaning in and around the house	=	40x1.4x30 mts.	= 28 ,,
Washing utensils	=	40x1.3x15 mts.	= 13 ,,
Marketing	=	40x4x2 hrs.	= 320 ,,
Walking	=	40x4x15 mts.	= 40 ,,
Personal activities	=	40x3x10 mts.	= 20 ,,
Care of young children	=	40x1.7x50 mts.	= 56.66 ,,
Collecting water and fuel	=	40x4x1 hr. 45 mts.	= 230 ,,
Stone breaking	=	40x5x8 hrs.	= 1600 ,,
		Total expenditure	= 2873
		Intake	= 1736
		Deficit	= 1137 kilo calories

APPENDIX - VIII(7)

8 hours in bed at BMR	= 31.6x1.36x8	= 343.81 kilo calories	
Cooking	= 47x1.7x2 hrs. 30 mts.	= 199.75	,,
Cleaning in and around the house	= 47x1.4x30 mts.	= 32.9	,,
Washing utensils	= 47x1.3x15 mts.	= 15.28	,,
Marketing	= 47x4x2 hrs.	= 376	,,
Walking	= 47x4x15 mts.	= 47	,,
Personal activities	= 47x3x10 mts.	= 23.5	,,
Care of young children	= 47x1.7x50 mts.	= 66.38	,,
Collecting water and fuel	= 47x4x1 hr. 30 mts.	= 329	,,
Stone breaking	= 47x5x8 hrs.	= 1800	,,
	Total expenditure	= 3314 -	
	Intake	= 1784	
	Deficit	= 1529 kilo calories	

APPENDIX - VIII(B)

7 hours 15 minutes in bed at BMR	= 31.6x1.36x7 hrs. 15 mts.	= 311.54 kilo calories	
Cooking	= 51.5x1.7x3 hrs.	= 262.65	,,
Cleaning in around the house	= 51.5x1.4x15 mts.	= 18.02	,,
Washing utensils	= 51.5x1.3x15 mts.	= 16.74	,,
Marketing	= 51.5x4x2 hrs. 15 mts.	= 463.5	,,
Walking	= 51.5x4x15 mts.	= 51.5	,,
Personal activities	= 51.5x3x15 mts.	= 38.63	,,
Care of young children	= 51.5x1.7x45 mts.	= 65.66	,,
Collecting water and fuel	= 51.5x4x1 hr. 45 mts.	= 360.5	,,
Stone breaking	= 51.5x5x8 hrs.	= 2060	,,
	Total expenditure	= 3643 -	
	Intake	= 2165	
	Deficit	= 1483 kilo calories	

APPENDIX - VIII(9)

7 hours 15 minutes in bed at BMR	= 31.6x1.36x7 hrs. 15 mts.	= 311.54 kilo calories	
Cooking	= 47x1.7x2 hrs. 45 mts.	= 219.73	,,
Cleaning in and around the house	= 47x1.4x30 mts.	= 32.9	,,
Marketing	= 47x4x2 hrs. 30 mts.	= 423	,,
Walking	= 47x4x15 mts.	= 47	,,
Personal activities	= 47x3x15 mts.	= 35.25	,,
Care of young children	= 47x1.7x45 mts.	= 59.93	,,
Collecting water and fuel	= 47x4x1 hr. 45 mts.	= 329	,,
Stone breaking	= 47x5x8 hrs.	= 1880	,,
	Total expenditure	= 3338 -	
	Intake	= 1779	
	Deficit	= 1559 kilo calories	

APPENDIX - VIII(10)

7 hours 15 minutes in bed at BMR	=	31.6x1.36x7 hrs. 15 mts.	= 311.54 kilo calories
Cooking	=	36.5x1.7x3 hrs.	= 186.15 ,,
Cleaning in and around the house	=	36.5x1.4x30 mts.	= 25.55 ,,
Washing utensils	=	36.5x1.3x15 mts.	= 11.86 ,,
Marketing	=	36.5x4x1 hr. 45 mts.	= 292 ,,
Walking	=	36.5x4x15 mts.	= 73.0 ,,
Personal activities	=	36.5x3x1 hr.	= 109.5 ,,
Care of young children	=	36.5x1.7x30 mts.	= 46.54 ,,
Collecting water and fuel	=	36.5x4x1 hr. 30 mts.	= 255.5 ,,
Stone breaking	=	36.5x5x8 hrs.	= 1460 ,,
		Total expenditure	= 2772 -
		Intake	= 1737
		Deficit	= 1035 kilo calories

APPENDIX - VIII(11)

7 hours 15 minutes in bed at BMR	=	31.6x1.36x7 hrs. 15 mts.	= 311.54 kilo calories
Cooking	=	51x1.7x3 hrs.	= 260.1 ,,
Cleaning in and around the house	=	51x1.4x15 mts.	= 17.85 ,,
Washing utensils	=	51x1.3x15 mts.	= 16.58 ,,
Marketing	=	51x4x2 hrs. 15 mts.	= 459 ,,
Walking	=	51x4x15 mts.	= 51 ,,
Personal activities	=	51x3x15 mts.	= 38.25 ,,
Care of young children	=	51x1.7x45 mts.	= 65.02 ,,
Collecting water and fuel	=	51x4x1 hr. 45 mts.	= 357 ,,
Stone breaking	=	51x5x8 hrs.	= 2040 ,,
		Total expenditure	= 3616 -
		Intake	= 2091
		Deficit	= 1525 kilo calories

APPENDIX - VIII(12)

8 hours in bed at BMR	=	31.6x1.36x8 hrs.	= 343.8 kilo calories
Cooking	=	39x1.7x3 hrs.	= 198.9 ,,
Cleaning in and around the house	=	39x1.4x30 mts.	= 27.3 ,,
Washing utensils	=	39x1.3x15 mts.	= 12.68 ,,
Marketing	=	39x4x1 hr. 45 mts.	= 312 ,,
Walking	=	39x4x15 mts.	= 39 ,,
Personal activities	=	39x3x15 mts.	= 29.25 ,,
Care of young children	=	39x1.7x30 mts.	= 49.73 ,,
Collecting water and fuel	=	39x4x1 hr. 30 mts.	= 273 ,,
Stone breaking	=	39x5x8 hrs.	= 1560 ,,
		Total expenditure	= 2846 -
		Intake	= 1698
		Deficit	= 1148 kilo calories

APPENDIX - VIII(13)

8 hours 15 minutes in bed at BMR	=	31.6x1.36x8 hrs. 15 mts.	= 354.55 kilo calories
Cooking	=	45.5x1.7x3 hrs.	= 232.05 ,,
Cleaning in and around the house	=	45.5x1.4x15 mts.	= 15.93 ,,
Washing utensils	=	45.5x1.3x15 mts.	= 14.78 ,,
Marketing	=	45.5x4x2 hrs. 15 mts.	= 409.5 ,,
Walking	=	45.5x4x15 mts.	= 45.5 ,,
Personal activities	=	45.5x3x15 mts.	= 34.13 ,,
Care of young children	=	45.5x1.7x45 mts.	= 58.01 ,,
Collecting water and fuel	=	45.5x4x1 hr. 45 mts.	= 318.5 ,,
Stone breaking	=	45.5x5x7 hrs.	= 1592.5 ,,
		Total expenditure	= 3075 -
		Intake	= 1833
		Deficit	= 1242 kilo calories

APPENDIX - VIII(14)

7 hours in bed at BMR	=	31.6x1.36x7	= 300.8 kilo calories
Cooking	=	40.5x1.7x3 hrs. 15 mts.	= 223.76 ,,
Cleaning in and around the house	=	40.5x1.4x30 mts.	= 28.35 ,,
Washing utensils	=	40.5x1.3x15 mts.	= 13.16 ,,
Marketing	=	40.5x4x2 hrs. 15 mts.	= 364.5 ,,
Walking	=	40.5x4x15 mts.	= 40.5 ,,
Personal activities	=	40.5x3x30 mts.	= 60.75 ,,
Care of young children	=	40.5x1.7x1 hr.	= 68.85 ,,
Collecting water and fuel	=	40.5x4x1 hr.	= 162 ,,
Stone breaking	=	40.5x5x8 hrs.	= 1620 ,,
		Total expenditure	= 2882 -
		Intake	= 1708
		Deficit	= 1174 kilo calories

APPENDIX - VIII(15)

8 hours 15 minutes in bed at BMR	=	31.6x1.36x8 hrs. 15 mts.	= 354.55 kilo calories
Cooking	=	35.5x1.7x3 hrs.	= 181.05 ,,
Cleaning in and around the house	=	35.5x1.4x15 mts.	= 12.43 ,,
Washing utensils	=	35.5x1.3x15 mts.	= 11.54 ,,
Marketing	=	35.5x4x2 hrs.	= 284 ,,
Walking	=	35.5x4x15 mts.	= 35.5 ,,
Personal activities	=	35.5x3x15 mts.	= 26.63 ,,
Care of young children	=	35.5x1.7x1 hr.	= 60.35 ,,
Collecting water and fuel	=	35.5x4x1 hr. 45 mts.	= 248.5 ,,
Stone breaking	=	35.5x5x7 hrs.	= 1242.5 ,,
		Total expenditure	= 2457 -
		Intake	= 1528
		Deficit	= 929 kilo calories

FOOD CONSUMPTION AND ENERGY EXPENDITURE PATTERN OF SELF EMPLOYED WOMEN IN UNORGANISED SECTOR

BY

A. S. SUJATHA

ABSTRACT OF A THESIS

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT

FOR THE DEGREE OF

MASTER OF SCIENCE IN FOOD SCIENCE AND NUTRITION

FACULTY OF AGRICULTURE

KERALA AGRICULTURAL UNIVERSITY

DEPARTMENT OF HOME SCIENCE

COLLEGE OF AGRICULTURE

VELLAYANI, TRIVANDRUM

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ABSTRACT

A study on the "Food consumption and energy expenditure pattern of self employed women in unorganised sector" was conducted to assess the socio-economic and food consumption and energy expenditure pattern of the women engaged in stone breaking.

150 household surveyed were representing scheduled caste and other backward communities. The families were of nuclear type with four members in the family.

Rice, tapioca, fish and coconut were found to be the major ingredients in their daily meal pattern. No special foods were provided during physiological conditions.

On an average they engaged in stone breaking for about 8 hours/day and for 5 to 6 days in a week. Time spent for various activities viz. for personal care, child care and leisure was not adequate. The difficulties imposed on these home makers due to the dual role were improper care of the family, inability to cope with the household work and lack of time for child care. Due to economic reasons they engaged in stone breaking even during pregnancy till term and after delivery most of them took their children to the work site.

Their actual food and nutrient intake was found to be unsatisfactory which was reflected in their low body weights and prevalance of many nutritional disorders especially anaemia. All the women were found to have a negative energy balance.

Knowledge of these women on health and nutrition was found to be satisfactory and statistical analysis indicated that age had a negative significant correlation and education had a positive significant correlation with the knowledge of the women regarding food and health.

Attitude of the women towards this occupation was found to be positive since this was considered to be a solution to the unemployment problem. Statistical treatment of the data revealed that age has a negative correlation and educational level of the women had a significant positive correlation with the attitude of women towards this work.