

# **IMPACT OF AGRICULTURAL WORK ON HEALTH AND NUTRITIONAL STATUS OF FARM AND NON-FARM WOMEN – A COMPARATIVE STUDY**

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## SUMMARY AND CONCLUSION

### Summary

This chapter discusses the findings of the present study and uses them as basis for the formulation of a number of conclusions and recommendations. The chapter begins with a brief summary of the context, objectives and methodologies used in the study work followed by the process of data collection and measurement modules of the data construct. Like most research studies, the present investigation has its limitations which are also discussed. Several recommendations are also outlined for further research in this direction.

During the last decade and a half, alongside the economic growth and reduction in poverty, Odisha has achieved good progress in most of the aspects of food security. The state has not only achieved surplus production and on an average, improvement in the calorie consumption<sup>7</sup>. The nutritional indicators have also improved in the state during the last decade and a half. These improvements have taken place despite occurrence of shocks such as high food inflation and natural disasters such as floods, cyclones and droughts. Between NFHS-3 and NFHS-4, anemia among pregnant women has declined by 21 percentage points and that among even pregnant women has declined by about 10 percentage points. The Body Mass Index (BMI) has also improved among both men and women. The percentage of women with low BMI ( $<18.5\text{kg/m}^2$ ) has declined by about 15 percentage points and the same among men by 16 percentage points.

But, to achieve a hunger free India, the state still needs to go a long way. The issue of food and nutrition security is multi-dimensional and contributing factors could be multi-fold. An analysis of the sources of calorie, protein and fat among the bottom 30% of the MPCE classes suggests that the poor households still derive a major share of their calories from cereals. This is indicative of the fact that the food consumption basket of the poorest class is limited and include very little of the diversified food commodities such as egg, meat, fish, milk, etc. However, household access to food is only necessary but not a sufficient condition to achieve nutritional security among the population, especially women and children. The translation of food intake into physical and mental growth depends on the rate of assimilation of food into the body which in turn is dependent on a number of intermittent factors such as morbidity profile of individuals, availability of health facilities, safe drinking water and sanitation, health and hygienic practices, etc for adults as well,

Poor nutrition of women is one of the most damaging outcomes of gender inequality. It undermines their health, stunts their opportunity for education and employment and impedes progress towards gender equality and empowerment of women. In rural India in agriculture and allied activities as much as 59.5% of total labour force is women. Women have extensive workloads with dual responsibility for farm and household production. Women's contribution to agriculture whether it be subsistence farming or commercial agriculture when measured in terms of numbers of tasks performed and time spent is greater than men. Women's work is getting harder and more time consuming due to ecological degradation and changing agricultural technology and practices. Women contribute considerably (84%)

to household income through farm and non-farm activities as well as through work as landless agricultural labourers. Despite such significant contribution of women in agrarian community they have, always been neglected. In rural India 76% of women who work are agricultural workers (IIPS and ORC Macro 2000). Responsibility of farm and family if not supported by proper nutrient intake for the energy expended, can lead to a deterioration of women's health (Sarmistha Basu, 2007). Majority of women go through life in a state of nutritional stress, they are anaemic and malnourished. Girls and women face nutritional discrimination within the family, eating last and least. Poor maternal health diminishes women's strength and efficiency in household and child care spheres and adversely affects their productive capacity.

A little attention has been given on the nutritional and health status of farm and non-farm women of the study area. Further women should not be considered solely with respect to productive and reproductive roles. Adequate nutrition is a human right for all. Students of Health Care Provision and Women's Autonomy have pointed out that women in rural community may be particularly disadvantaged. They are subjected to different health stresses from economic, domestic and agricultural works. However, it is not clear that what are those factors and by what mechanism these result in differences in nutritional status. The present study set out to assess women's workload and investigate the nutritional status of women in rural Odisha with following objectives.

- (1) To identify the social, economic and environmental factors that explains the health status of farm and non-farm women.
- (2) To find out the work schedule of rural farm and non-farm women from their daily activity profile.

- (3) To assess their food consumption pattern and compare the energy expenditure with calorie intake and of rural farm and non-farm women.
- (4) To compare their food intake with recommended dietary allowances and identify the gap.
- (5) To compare the health and nutritional status of farm and non-farm women from farm and nonfarm sector.
- (6) To develop strategy for appropriate interventions to enhance their capacity and ability as efficient home Manager.

Socio-economic and environmental factor play an important role on the food consumption. The dietary habit of the individuals varies according to socio-economic factors, regional customs, traditions and also on the food production system. Accurate information on food consumption of people, through application of appropriate methodology is often needed not only for assessing the nutritional status of the people but also for elucidating the relationship of nutrients intake with deficiency and degenerating disease. An understanding of nutrient gaps would help in planning diets to overcome diet related morbidities in the agrarian community. No realistic policies on food production, procurement and distribution can be formulated without thorough knowledge of food habit of the people. Further women are subjected to different health stresses from economic, domestic and agricultural work. So it is crucial to assess the workload of worrier. No such studies were undertaken in the past with reference to nutritional status of women of agrarian community of the state. The present study is a maiden attempt which will definitely suggest some positive outcome for improvement of health status of women in rural areas.

Stratified two stage random sampling method was adopted for the selection of the sample respondents of the study area. 150 women from farm and 150 women from non-farm sector with all total 300 women are selected for this study.

The workload of women has been assessed from their daily activity profile. The activity profile usually considers all type of work i.e. productive, reproductive and community related services. It identifies how much time spent on each activity, how often this-work is done. It also identifies whether the work is done at home or elsewhere and how far these places are from the household.

Total energy expenditure was calculated through factorial method that combined the time allocated to habitual activities and energy cost of these activities. On account of different body size and composition the total energy cost of the individuals was calculated as multiple of Basal Metabolic Rate (BMR). The amount of energy required to carry on the involuntary work of the body is known as Basal Metabolic Rate (BMR). BMR was calculated by using Harris-Benedict equation. For female it is -

$$655.5 + (9.56 \times \text{body weight}) + (1.85 \times \text{Height}) - (1.68 \times \text{Age}).$$

Physical Activity Level (PAL) was found out by using the standard energy expenditure for activities as per FAO standard in multiples of BMR. Together with BMR with PAL the total energy expenditure was found out by multiplying BMR x PAL. (James and Schofield, 1990).

The Body Mass Index (MBI) is the widely used indicator for assessment of the nutritional status of individuals.

This is the World Health Organization's (WHO) recommended body weight based on BMI values for adults. It is used for both men and women, age 18 or older.

Category	BMI range - kg/m <sup>2</sup>
Severe Thinness	< 16
Moderate Thinness	16 - 17
Mild Thinness	17 - 18.5
Normal	18.5 - 25
Overweight	25 - 30
Obese Class I	30 - 35
Obese Class II	35 - 40
Obese Class III	> 40

Dietary enquires are made mainly of two types, one which focuses on qualitative aspects of the foods, i.e what kinds of foods are eaten and the other the amount of food intake in quantitative terms i.e how much food is eaten. In quantitative enquiry exact amount of food consumed in terms of gram or litres are assessed with their nutrient contents estimated. Comparison of nutrient intakes with Recommended Dietary Allowance (RDA) provides a measure of adequacy of food / nutrients consumption.

Dietary investigation of the subject has been conducted by 24 hour recall method. The consumed food will be listed under different food groups like cereals, pulses, vegetables, fruits meat & fish, nuts & oil seeds, sugar and jaggery. The nutrient intake will be calculated using food consumption tables

of ICMR. The results can be interpreted through frequency distribution, mean, median, range and mean $\pm$ SD for socio-economic variables of dietary intake (food groups and various nutrients). Statistical Analysis will also be performed by paired 't' test and  $P < 0.05$  and  $0.01$  will be considered to be statistically important.

Biochemical investigation represents the most objective assessment of nutritional status of an individual, frequently throwing light on the subclinical status. Measurement of haemoglobin concentration is important for screening for anaemia. The Sahli method measures acid haematin. A sample of 0.02 ml of whole blood, taken with an automatic standardized manual pipette, is mixed with a small quantity of 0.1 mol/litre HCl. After 3 minutes, 0.1 mol/litre HCl is added drop by drop and mixed, until the colour of the solution matches the colour of two identical standards placed to the left and right of the dilution tube. Haemoglobin concentration is then read from the graduated scale on the dilution tube. Measurement of Haemoglobin was classified as follows:

#### **Hb Estimation (Sahli's Method)**

Normal (13.5-14 mg%)	1
Mild (8-10 mg%)	2
Moderate (6-8 mg%)	3
Severe (Below 6 mg%)	4



In the field of behavioural research, scaling of the responses obtained through the served questionnaires attains paramount importance because it converts the human feelings into numerical. To ensure maximum objectivity of the study, a number of standard scales developed by different experts have been used with great care to fit into the present investigation. Different profiles comprising of various questions to address aspects pertaining to drivers are as follows:

The socio-economic profile comprising the variables with assigned scores for quantification are age of the respondents (upto 25 years, 25-35 year, 35-45 years and above 45 years), level of education (illiterate, ability to sign, primary, upto eighth standard, upto higher secondary and above higher secondary), occupation (agriculture, agriculture + livestock, service, entrepreneur, cultivation, daily labour and household activity), income (uptoRs. 10,000/-, Rs. 10,000/- - Rs. 15,000/-, Rs. 15,000/- - Rs. 20,000/- and above Rs. 20,000/-), family size (up to 5 members and 6 and above members), land holding (marginal farmer (upto 1 hectare), small farmer (1-2 hectare), medium farmer (2-4 hectare) and big farmer (above 4 hectare)). The material possessed is an open ended question where one can mention more than one options out of the five specified as radio/ TV/ DVD player, two / four wheeler, farm implements, milch cattle and goat/ sheep/ poultry/ bullock.

The general hygiene profile comprising the variables in the questionnaire are types of roof of house (thatched, tiled, asbestos and R.C.C.), wall of house (mud, mud & wood, mud & bamboo, semi pucca and pucca), types of floor of house (kacha, semi pucca and pucca), bathing place, washing material, place for storage of drinking water, type of vessels used for

cooking (mitti, iron, steel and aluminium), materials used for cooking (dry leaves and wood; charcoal; kerosene stove; electric heater and cooking gas), wiping of house, taking bath, purifying drinking water and using pressure cooker.

The daily activity profile comprising the variables in the questionnaire with open ended variables comprising the quantification are sleeping, personal care, eating, cooking, non-mechanised agriculture work, collecting water/wood, domestic chores, walking without load, light leisure activities, sitting (office work, selling produce, tending soap), standing, carrying light loads, commuting to work on bus and general household work.

The daily dietary profile comprising the variables in the questionnaire with open ended questions are cereals, pulses, green leafy vegetables, other vegetables, roots & tubers, fruits, fish, meat, chicken, egg, milk, fat & oil, sugar, jiggery and spices. Their corresponding rates for protein, fat, carbohydrate, calorie, calcium, phosphorus, iron, calcium, thiamin, riboflavin, niacin and vitamin-c are estimated.

The nutritional status profile comprising the variables in the questionnaire with both open and closed ended questions on beneficiaries of nutritional programmes, satisfaction with the programmes, anthropometric assessment (age, height, weight, mid upper arm circumference, BMI, BMR and TEE) and Hb estimation.

The health status profile comprising the variables in the questionnaire are illness in last fortnight, commonly found diseases in locality, place of treatment during illness, preference for treatment, nearest health facility,

availability of health services, time of using health services, causes of illness, existence of PHC in village and age at marriage are presented.

Survey is made through interview schedule which is framed in reference to inferences drawn from pilot study. On the basis of the variables selected, statements are framed under each variable with the experiences gained during pilot study, consultation with experts and referring related literatures. In the course of development of the interview schedule, many proposed statements are discarded, new statement added after judging each item with their possible linkage with objectives set forth in the study. The pertinent questions are taken into consideration whereas questions having less validity and reliability are dropped. Repeated verification and proper measures are sufficiently taken care to avoid vague and ambiguous responses that may distort the information flow.

The data has been collected with the help of specially designed interview schedule as per the activities of the study. The collected data were analysed through descriptive statistics such as frequency distribution, percentage, mean, standard deviation, paired t-test, student's t-test, analysis of variance, correlation, multiple regression etc. to establish the results statistically.

- Majority of the farm (68.0%), non-farm (64.7%) and in total (66.3%) of the respondents are within 35 years of age. Hence, comparatively younger women have shared their opinion.
- Education-wise classification shows that majority of the farm (64.6%), non-farm (51.4%) and in total (58.0%) of the respondents have read upto 8<sup>th</sup> class. Hence, respondents are basically low educated.

- Majority of the farm women (84.7%) have occupation agriculture and allied activities whereas majority of non-farm women (67.3%) remain busy with household work. Hence, respondents are committed to their occupation as anticipated.
- From income-wise distribution, it may be inferred that 67.3% of farm women have income below Rs. 15,000 with non-farm women are in a better position with 52.7% have income below Rs. 20,000.
- Maximum of farm women (63.3%) and non-farm women (57.3%) hail from families with less than 5 members. In the pooled data, similar trend is also observed (60.3%). More specifically, majority of respondents are from small families.
- In farming, non-farming and pooled sample, maximum has been obtained as 67.3%, 51.3% and 59.3% respectively. The frequency of respondents decreases as the land holding increases.
- It is observed that 46.67% of the farm women keep goat/ sheep as an alternative income. In contrast, the non-farm women possess TV/Radio in majority (90.67%) for their entertainment basically.
- As regards house structures, majority of both farm and non-farm women have tiled roof with pucca floor and all wipe houses regularly. Further, majority of farm women have mud wall and non-farm women (59.3%) have semi-pucca wall.
- In consideration of bath place, majority of farm women take bath in public pond/ well/ tube well whereas majority of non-farm women take bath in private pond/ well/ tube well.
- Majority of farm women (51.3%) use tube well as source of drinking water without purification and majority of non-farm women (44.7%)

use well with purification before use. Both store drinking water in covered container.

- Majority of farm use aluminium utensils for cooking by burning dry leaves without pressure cooker. But majority of non-farm women use aluminium utensils for cooking with kerosene and pressure cooker.
- Almost equal time and energy is spent by both the farm and non-farm women towards sleeping, sitting and commuting to work.
- The farm women spend more time and energy towards non-mechanised agricultural work and collecting water / wood than non-farm women. Non-farm women spend more time and energy towards personal care, eating, cooking, domestic cores, walking without load, light leisure activities and standing than farm women.
- Almost equal time and energy is spent towards different activities considered in work schedule by farm and non-farm women of all age groups.
- Almost equal time and energy is spent towards different activities considered in work schedule by farm women of all income groups.
- Average time spent by non-farm women of all income groups towards sleeping, eating, cooking, collecting water / wood, light leisure activities, sitting, standing / carrying light loads, commuting to work and general household work are almost equal.
- Non-farm women of below Rs. 10,000 income group spend less time towards personal care, non-mechanised agricultural work, domestic cores and walking without load in comparison to others. Also, time spent towards these activities varies with the income.

- Farm and non-farm women of both below and above 5 family members spent almost equal time and energy towards sleeping, personal care, eating, cooking, non-mechanised agricultural work, collecting water / wood, domestic cores, walking without load, light leisure activities, sitting, standing and commuting to work.
- There are no variations in average time spent and energy expenditure towards different activities considered in work schedule by farm and non-farm women of all land holding groups.
- The farm women consume more cereals, roots and tubers and chicken than non-farm women whereas non-farm women consume more pulses, green leafy vegetables, other vegetables, fruits, fish, egg, milk and milk products, fat and oil and sugar than farm women. But both the classes consume almost equal quantity of meat, jiggery and condiments.
- Diets of farm women contain more carbohydrate, calorie and niacin than non-farm women. Further, diets of non-farm women contain more protein, fat, calcium, phosphorus, iron, carotene, thiamin, riboflavin and Vitamin\_C than farm women.
- Average volumes of consumption of cereals, pulses, green leafy vegetables, other vegetables, fish, meat, chicken, egg, milk & milk products, fat and oil and sugar by farm and non-farm women of all age groups are almost similar.
- Average volumes of protein, fat, carbohydrates, calorie, calcium, phosphorus, iron, carotene, thiamin, riboflavin, niacin and Vitamin\_C intake by farm and non-farm women of each age group are almost similar.

- Average quantities of consumption of cereals, pulses, green leafy vegetables, other vegetables, roots and tubers, meat, chicken, egg, fat and oil by both farm as well as non-farm women of each income group are almost similar.
- The intake of fruits by farm women in above 20,000 income group is more than rest. Further, consumption of fish and milk products by both farm and non-farm women of income groups upto 15,000 is less than other income groups. Consumption of sugar and condiments by farm women in above 20,000 income group is more than others.
- In case of farm women of each income group, average volumes of intake of carbohydrate and carotene are almost similar. The intake of protein, fat, calorie, calcium, phosphorus, iron, thiamin, riboflavin, niacin and Vitamin\_C by farm women of various income groups may be different. More specifically, farm women having income upto Rs. 15,000 intake more less protein, fat, calorie, calcium, phosphorus, iron, thiamin, riboflavin, niacin and Vitamin\_C than those of income more than Rs. 15,000/- Further, the intake of protein, fat, calorie, calcium, phosphorus, iron, thiamin, carbohydrate, carotene, riboflavin, niacin and Vitamin\_C by non-farm women remains similar in all income groups.
- The average consumption of cereals, pulses, green leafy vegetables, other vegetables, roots and tubers, fruits, fish, meat, chicken,
- egg, milk & milk products, fat and oil, sugar and condiments are almost same by farm and non-farm women of each family size groups.
- The average intake of protein, fat, carbohydrate, calorie, calcium, phosphorus, iron, carotene, thiamin, riboflavin, niacin and Vitamin-C

by farm and non-farm women of each family size groups are almost similar.

- The average consumption of cereals, pulses, green leafy vegetables, other vegetables, roots and tubers, fruits, fish, meat, chicken, egg, milk & milk products, fat and oil, sugar and condiments are almost same by farm and non-farm women of each farmer groups.
- The average intake of protein, fat, carbohydrate, calorie, calcium, phosphorus, iron, carotene, thiamin, riboflavin, niacin and Vitamin-C by farm and non-farm women of each farmer groups are almost similar.
- Farm women consume more cereals, roots and tubers than recommended by ICMR. They consume less pulses; green leafy and other vegetables; fruits; fish-meat; milk & its products; sugar; fat and oil than ICMR recommendations.
- Farm women intake more calorie, thiamin, niacin, vitamin-C than ICMR stipulations. They intake less protein, calcium, iron, carotene and riboflavin than ICMR recommendations.
- Non-farm women consume more cereals, roots and tubers, and sugar than recommended by ICMR. They consume less pulses; green leafy and other vegetables; fruits; fish-meat; milk & its products; sugar; fat and oil than ICMR recommendations.
- Non-farm women intake more thiamin, niacin, vitamin-C than ICMR stipulations. They intake less protein, calorie, calcium, iron, carotene and riboflavin than ICMR recommendations.



- Few severe thin (0.7%) and overweight (5.3%) are observed in Non-farm women whereas no such farm women are present. On the other hand majority of farm women (98.6%) are between normal and mild thin.
- There is no significant difference in weight (Kg) and height (m) of both farm and non-farm women.
- BMI and BMR of farm women are significantly less than those of non-farm women.
- PAL and TEE of farm women are significantly more than those of non-farm women,
- There is significant difference in BMR, PAL and TEE in respect of BMI ranges.
- There is no significant difference in BMR, PAL and TEE in respect of BMI assessments.
- Both the classes suffer mainly from malaria / fever and cough, cold and influenza.
- Majority of farm women rely on local baidya and non-farm women on hospital for treatment.
- Majority of both farm and non-farm women opine that Anganwadi centre is the nearest available health facility in and around village in absence of Primary Health Centre (PHC) nearby.
- Majority of farm use health services soon after they fall ill whereas non-farm women use health services after seriously ill. Both are of impression that water pollution is the major cause of illness.

## **Conclusion and Suggestions**

The findings of the study revealed that the majority of the subjects belonged to low income category. But the socio economic condition of farm women was found to be inferior compared to their non farm counterparts. The adequate availability of food in terms of quantity as well as quality, which depends on socioeconomic status, food practices, cultural traditions and allocation of food in the household. Family income is perhaps the single most important factor in determining the quality of food and nutritional status. What is eaten by the family is solely dependent on the income of the household. Income was found to be the major constraint restricting the adequate access to food which is evident from the present study that majority of subjects belonging to farm families showed lower consumption of protective foods on a daily diet. The food consumption behavior of on farm respondents though better than the farm women respondents was also inadequate to meet the ICMR recommendation. Low income families tend to either purchase less nutritious cheap food items will certainly not meet the nutritional requirement of the household particularly the vulnerable groups in which women are included. Nutritional requirement increases during pregnancy and lactation period. Therefore women from low income families are more likely to have poor anthropometric measurements, poor dietary intake and poor haemoglobin status. Moreover, women from poor and low income families are more likely to have emotional problems, face both financial and non financial barriers to adequate food and have limited care from their parent since much of their time is focused on earning income for the family. Therefore socioeconomic status of women to specifically income, have an adverse effect on anthropometric measurements, dietary intake and

nutritional status of women in farm family. Hence welfare programs have to be implemented in such a way that at least one woman in a family should acquire the capacity to earn which enables the families to have adequate access to right amount of food for maintaining health.

It is imperative to a shift in thinking and policy practice regarding gender dimensions of nutrition and the full realization of women's right to food. The findings of the study has proposed a systematic approach to identify and prioritize policy interventions to improve nutrition of rural women and girls, with special attention to the most disadvantaged. It contributes a shift in thinking about women's economic empowerment by introducing a new emphasis on empowerment in the sphere of nutrition. It is hoped this emphasis will help researchers and policy-makers alike to pay greater attention to the fact that 'economic empowerment' in the narrow sense of participating in income generating activities and greater decision-making on productive resources does not necessarily translate into better nutrition and health for the women concerned. Thus, there is a need to consider a broader set of factors and constraints when designing and implementing programs and policies aimed at gender equality.. This is especially relevant in the field of agriculture and nutrition, where advocacy for women's empowerment continues to be largely predicated on instrumental as it has payoffs in terms of children's welfare and agricultural productivity.

Food is the source of nutrients which are required for maintenance, repair, growth and development of body. Low intake of nutrients is a major cause of poor nutritional status. Regular and proper quality intake of nutritious diet is the need of the day in rural areas. When anthropometric

measurements of rural women were compared with WHO reference values found to be less than reference values.. Haemoglobin level of women were also compared with reference values given by World Health Organisation. 64.41% of the respondents were found to be anaemic.

According to our findings about nutritional status of rural farm and non farm women we feel utter need of nutritional education among them at their every developmental stage. We have to make them aware about nutritious balanced diet. For nutritional balance diet they can rely on food which are easily available and locally grown and can include maximum seasonal fruits and vegetables which they can afford. Therefore it is necessary to give them knowledge about food particularly rich in iron such as green leafy vegetable, bajra, raagi, drumsticks, whole pulses and papaya, guava, amla which are rich in ascorbic acid. Proper nutrition can be attributed to a relatively more egalitarian society with equitable distribution of food based on needs and increase literacy rate and consequent awareness about importance of health hygiene and sanitation. The under nutrition also appears to be mainly due to inadequate access to health care. Some respondents has the highest dietary intake of nutrients but this high intake does not lead to a better nutritional status perhaps due to inequitable distribution of food within the family. Poor access to health care might be another factor that aggravates under-nutrition. The high rate of under-nutrition among women of lower socioeconomic class could have severe health implications in the long run.

It was also revealed from the study that farm women spent 5.33 hours in the farm. Therefore the average BMI of farm women was found to be 19.61 and it was 21.44 in case of non farm women.

The study revealed significant difference in energy consumption and total energy expenditure. The mean total energy expenditure (2842.32) is more than energy consumption (2213.69). Hence, the total energy expenditure of farm women is significantly more than their energy consumption. Hence, the total energy expenditure of non-farm women is also more than their energy consumption. To sum up, the total energy expenditure is significantly more than energy consumption in case of both farm and non-farm women. But the deficiency of energy intake is acute in case of farm women which if not addressed may lead to serious health implication. The increased work load of farm women, lack of support and care might be the reason for high prevalence of energy deficiency compared with their non farm counterparts. Another possible reason might be the seasonal difference of workload. The present study was done in the early kharif season when the workload on farm women was at its peak. Thus as a result low diversified, low intake of food and heavy workload in the crop field result in the high prevalence of energy deficiency in case of farm women. Poor diet, frequent acute and chronic infections, repeated pregnancies, prolonged lactation and a heavy burden of work may all contribute to serious physiological depletion and malnutrition. Improvement in work efficiency and output require adequate diet, sufficient not only in calories but also protein, minerals and vitamins which must be made.

Good nutritional status for women farmers promotes good health outcomes and thus improves performance in work. For sustainable agriculture, the issue of nutritional health status of women engaged in agriculture has to be addressed. This research provides information on nutritional health status of women farmers in Jagatsinghpur District. The results from this research also provides information on the nutritional situation and status of women farmers to planners, policy makers and agricultural researchers for them to understand the link between women's productive farm work and their nutritional status and consequently be in a position to introduce technologies which will empower women farmers to have alternative sources of income, minimizing their work load and time they spend in the field, reduce labour input and increase productivity without affecting their nutritional status. The results will also be useful in planning nutritional health programmes to women farmers through District Agricultural Development Plans. Furthermore, the study addresses the Millennium Development Goals (MDGs) the goal number three of ensuring gender equity and women empowerment (United Nations (UN),(2004).

- ❑ Agriculture and rural economic activities are essential for growth, poverty reduction and food security especially for the poorer farm families in Odisha. Households should be educated on the nutritional implication of food items which are missing from their diet. Enhancing rural non-farm employment should be the cornerstone of any poverty alleviation.
- ❑ To protect the health of the farm women nutrition education is required regarding the role of nutrition; importance of balanced diet

etc. The nutrition status can be improved leading to food security, through improved 'nutrition supportive' decisions and behavior or measures such as mandatory fortification of some carefully chosen foods consumed by a large majority of the population to deliver much needed micronutrients

- ❑ There is a need to make aware of these facts to the policy makers/ Government. The policy makers should provide agricultural workers the support policies in terms of the remunerative minimum support prices of the different crops grown should be fixed on the basis of cost of production and consumer price indices in a manner that these farmers are able to meet their basic needs of food, shelter, clothing, education, healthcare and clean environment in a respectable manner.
- ❑ To raise the level of income and productivity of the marginal and small farmers, it is essential that adequate and timely supply of modern inputs like HYVs of seeds, fertilizers, pesticides, assured irrigation water and credit should be ensured to them. Cropping intensity should be increased by increasing irrigated area. Promotion of self help groups, helps to make the farm women economically independent and socially sound. Nutritional garden and allied activities like Dairy, Poultry, Goatery not only helps to improve nutrition for women it also supplements the family income. Women should be encouraged for all these enterprises and their Knowledge and skill should be strengthened through training, technology demonstration and awareness programmes

- ❑ The welfare schemes initiated by the government for the farmers need to be implemented in their true spirit with zeal by the block and district level officers, allowing no laxity in their efforts to make such schemes successful. Such steps taken on priority basis can help to lessen the economic and other problems of the farmers.

Similar studies can be undertaken as future research work for understanding and improving the plight of rural women

- ❑ To study the seasonal variation in agricultural workload of women and their nutritional requirement.
- ❑ Assessment of effectiveness of agricultural enterprises in improving socioeconomic condition of rural women
- ❑ Assessment of role of technical support for capacity building of farm women
- ❑ Scope of Non-farm based employment opportunities in rural areas for improving livelihood of rural women.

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