
"A CROSS-SECTIONAL STUDY OF MORBIDITY PATTERN,
HEALTH SEEKING BEHAVIOUR AND EXPENDITURE
PATTERN OF AGRICULTURAL WORKERS RESIDING IN
RURAL FIELD PRACTICE AREA, VANTAMURI, BELGAUM"

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ENDORSEMENT

This is to certify that the dissertation entitled
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LIST OF ABBREVIATIONS USED

ANM	-	Auxillary Nurse Midwifery
APL	-	Above Poverty Line
AWW	-	Anganwadi worker
AYUSH	-	Ayurveda, Yoga, Unani, Siddha and Homoeopathy
BMI	-	Body Mass Index
BPL	-	Below Poverty Line
CSO	-	Central Statistical Organization
FRCH	-	Foundation for Research in Community Health
GDP	-	Gross domestic product
ILO	-	International Labour Organization
JNC VII	-	Joint National Committee on Prevention, Diagnosis, Detection, Evaluation and Treatment of High Blood Pressure (7 th Report, 2006)
NCAER	-	National Council of Applied Economic Research
NIHAE	-	National Institute of Health Administration and Education
NRHM	-	National Rural Health Mission
NSSO	-	National Sample Survey Organization
PHC	-	Primary Health Centre
SES	-	Socio Economic Status
TB	-	Tuberculosis
WHO	-	World Health Organization

ABSTRACT

Introduction

72% of Indian population lives in rural area, where their main occupation is agriculture. Agriculture workers do not have trade unions and have no access to occupational health services.

Research Question

What are the morbidities, health seeking behaviour and expenditure pattern of agricultural workers?

Aims and objectives

1. To know morbidity pattern in agricultural workers.
2. To know health seeking behaviour and expenditure pattern of agricultural workers.

Materials and method

A cross sectional study was done in 2009 among 400 agricultural workers of age 16 to 60 years residing at Bhutaramanahatti Sub-Centre (Vantamuri PHC), Belgaum District using predesigned and pretested questionnaire. Statistical analysis was done by using percentages and chi square test.

Results

62% of agricultural workers suffered from morbidities associated with oral cavity followed by morbidities associated with musculoskeletal system (21.7%) and respiratory system (19%). 48.75% opted Government doctors and

28% private doctors as first priority health care providers for their illness. 37.75% preferred private or AYUSH practitioners and 18.25% opted Government doctors in case illness was not cured or not satisfied with treatment given by first health care provider. The per capita expenditure pattern per episode of illness was Rs. 173.80 (US \$ 3.86), 39% borrowed money for their illness and the average amount of money borrowed was Rs. 127.11 per episode (US \$ 2.82). The per capita loss of working days for each episode was 4.2. None of the agricultural workers had any form of insurance or not a member of any self help group. 98% had no access to toilet facility. Increasing age, gender and poor educational status were significantly associated with morbidities of oral cavity, musculoskeletal system, respiratory system, anaemia and animal bites. Increasing age was also significantly associated with higher expenditure pattern.

Conclusion

Agricultural workers had a multitude of health problems. Morbidities among agricultural workers mainly associated with oral cavity, most of them sought treatment from Government doctor for their illness. Per capita loss of working days for each episode was 4.2.

Keywords

Agricultural workers; Expenditure pattern; Health seeking behaviour; Morbidity pattern;

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INTRODUCTION

The literature linking health to labour productivity is built on the concepts of household production theory developed by Becker (1965). In Becker's framework, households are treated also as producers of "commodities" instead of solely consumers of goods and services. This framework was extended by Grossman (1972, 1999) to analyze the demand for health. In Grossman's model, health is viewed as a durable capital stock that yields an output of healthy time. Individuals are endowed with an initial amount of this stock that depreciates over time and can be increased by investment. By investing in health, households expect to increase the stock of available healthy time, which will increase the amount of time available for earning income or for producing consumption goods. Extending traditional agricultural household models, Pitt and Rosenzweig (1986) developed a framework that allows the evaluation of the impact of change in health on productivity, labour supply, and overall farmer income. Pitt and Rosenzweig's extension involves incorporation of a health variable into the utility function and introduction of an explicit production technology for health.¹

India lives in its 600,000 villages. Nearly 72% of Indian community lives in rural area, where their main occupation is agriculture. Indian agriculture accounts for 25% of total gross domestic product (GDP) on which 75% of country's population depends on. Agricultural workers do not have trade unions and have no access to occupational health services.² Occupational health in the agricultural sector is a new concept.

These agricultural workers have a multitude of health problems, a fact which is often forgotten because of misconception that occupational health is mainly concerned with industry and industrialized countries. These health problems of workers in agriculture may be accidents (machine injuries, snake and insect bites), toxic hazards (chemical exposures and insecticide poisoning), physical hazards (extreme conditions, solar radiation), respiratory problems (farmer's lung, occupational asthma).³

A study of women farmers in mixed cropping systems found that the vast majority suffered from intense muscular fatigue, heat exhaustion, and skin disorders, forcing them to take days off from attending to crops.⁴ Poor health will result in a loss of days worked or in reduced worker capacity, which, when family and hired labour are not perfect substitutes or when there are liquidity constraints, is likely to reduce output.⁵ For example, prolonged exposure to pesticides could cause cardiopulmonary problems, neurological and hematological symptoms, and adverse dermal effects, which could significantly hamper farmers' work capacity in the field and reduce their management and supervision abilities.⁶

As pointed by the World Bank (2007), illness and death from HIV/AIDS, malaria, tuberculosis and other diseases reduce agricultural productivity through the loss of labour, knowledge of productive adults and assets to cope with illness.⁷

The lack of coordination of policy making between agriculture and health undermines efforts to overcome ill health among the rural poor and gives short

shrift to agriculture's role in alleviating many of the world's most serious health problems.⁸

Morbidity has been defined by World Health Organization (WHO) as any departure, subjective or objective, from a state of physiological well being. The term is used equivalent to such terms as sickness, illness, disability etc. The WHO Expert Committee on Health Statistics noted in its sixth report that morbidity could be measured in terms of three units that is persons who were ill, illness (period or spell of illness) that these persons experienced and duration (days, weeks etc) of these illnesses.⁹

Health seeking behaviour in terms of illness behaviour refers to those activities undertaken by individuals in response to symptom experience. Health seeking behaviour is influenced by a large number of factors apart from knowledge and awareness. This behaviour among different populations, particularly in the rural communities, is a complex outcome of many factors operating at individual, family and community level including their bio-social profile, their past experiences with the health services, influences at the community level, availability of alternative health care providers including indigenous practitioners and last but not the least, their perceptions regarding efficiency and quality of the services. Belief systems prevalent in the communities that is how people conceptualize the etiology of health problems and how symptoms are perceived is an important factor in deciding the first step of treatment seeking.¹⁰

Health status in India is remarkable for its myriad contradictions and where the health situation in some states compares with the best of developing countries, the majority is bracketed with worst in the world. Health system in our country is bogged down with a number of chronic maladies like inappropriate budgetary allocation and a 'top-down' hierarchy with multiple levels of operation which have led to compromise in effectiveness and quality of the services. Although considerable progress has definitely been made in last few decades for expansion of the public health infrastructure, but then mere existence or increasing the availability of services does not increase their utilization.¹¹

Few studies have reported about health seeking behaviours of agricultural workers towards their illness and their health expenditure pattern. In view of this, the present study was undertaken to assess health expenditure pattern of agricultural workers for their illnesses and to explore morbidity pattern among the agricultural workers.

OBJECTIVES

The objectives of the present study were;

1. To know morbidity pattern in agricultural workers.
2. To know health seeking behaviour and expenditure pattern of agricultural workers.

REVIEW OF LITERATURE

In most developing countries, the rural and informal sectors constitute the bulk of the population. Agriculture in India has a long history dating back to ten thousand years. Today India ranks second worldwide in farm output. Agriculture and allied sectors like forestry and logging accounted for 16.6% of the GDP in 2007, employed 52% of the total workforce and despite a steady decline of its share in the GDP, is still the largest economic sector and plays a significant role in the overall socio-economic development of India.¹² Agriculture in India is the means of livelihood of almost two thirds of the work force in the country. It has always been India's most important economic sector.¹³

A farmer is a person, engaged in agriculture, who raises living organisms for food or raw materials, generally including livestock husbandry and growing crops such as produce and grain. A farmer might own the farmed land or might work as a labourer on land owned by others; but in advanced economies, a farmer is usually a farm owner, while employees of the farm are agricultural workers, farm workers, farmhands, etc.¹⁴

Agriculture produces food fundamental for human health. It therefore seems obvious that agriculture, food, and health are related. Agriculture affects whether people have enough food to eat, whether it is of sufficient nutritional value, and whether it is safe, all of which affect human health. But it is not so simple: history has taught that there are different ways of looking at the relationships between agriculture, food and health. Agricultural connections to food and health are mediated by the natural environment, human culture and

technological change. The challenge today of how to achieve equitable food production that delivers optimum nutrition for health requires an ever better understanding of the interplay between agriculture and environment, culture and technical capacity, and how it has changed over time.¹⁵

There have been a number of waves of change in food supply. Arguably, the most significant was the gradual process of developing settled agriculture. Around 10,000 years ago, rather than going out for food and relying on what was there, humans began to produce food near to where they lived. This neolithic revolution emerged from a process of experimentation with seed planting, the domestication of livestock, and the development of tools over preceding millennia.¹⁶

Morbidity Pattern

Subsequent technical advances in farming consolidated the first great transition from hunting-gathering to domestic food production, enabling both a cultural transition from social systems based upon family structures (tribe/clan) to towns and villages and a dietary transition from local food to a different range of foods traded beyond local bioregions. Further revolutions in biology, society and technology changed what people ate; what was grown; how it was grown, processed, and transported; and where, why and how it was cooked and consumed.¹⁷

The waves of change in agricultural policy and practice have increased the world's capacity to feed its people through increased output, more types of food, and less dependency on seasonality. In the 1980s changes in agricultural

and food systems led to the growth of new food safety problems in both rich and developing economies, such as the rise of *Campylobacter*. Contamination of foods with pesticide residues is another unintended consequence of changes in agricultural practices. Ironically, food for export may achieve higher standards than food for home markets, suggesting that dual frameworks operate.¹⁷

Food borne illnesses stem from a wide variety of microbiological and chemical hazards, many of which are introduced during agricultural production. Microbiological contaminants include bacteria, viruses and parasites, while chemical contaminants include natural toxicants such as mycotoxins and environmental hazards such as mercury. The ingestion of certain pesticides and antibiotics accumulated in food is also thought to pose health risks. The safety of genetically modified foods has been subject to much debate since they may contain allergens or toxins not found in conventional foods, although this has yet to be shown.¹⁶

Health and injury outcomes among agricultural workers

Health outcomes associated with these hazards range from relatively simple conditions like heat exhaustion to complex diseases like cancer. Exact data on levels of exposure and associated disease prevalence (or health effects) in the developing world are limited. Pesticide-related illnesses, for example, go largely underreported, though it is estimated that 2 to 5 million people every year suffer acute poisonings and that 40,000 die each year. Millions of injuries are known to occur, with at least 170,000 of these being fatal for agricultural workers

each year. Unsafe equipment and conditions, inadequate training and limited availability and use of personal protective equipment all contribute.¹⁷

Health and injury burden depend on the type of farming activity, the type of worker, and the geographic location. Research in India suggests that agricultural workers using powered machinery are most at risk from fatal accidents, but that injuries are actually more common in less mechanized villages, probably owing to lower adherence to safety standards. Basic hazards like sharp tools and snake bites can also cause debilitating wounds and fatalities. Different forms of animal husbandry expose workers to different zoonotic diseases. In Malaysia, an outbreak of Nipah virus in 1998 disproportionately affected pig farmers. Workers with dairy cows and sheep in parts of Asia, Africa, and Latin America are at high risk from brucellosis, and animal herdsman in Africa from Rift Valley Fever.¹⁸

There are also important differences between developed and developing countries; according to the WHO, although developing countries accounted for only 20% of all pesticide use in the early 1990s, they accounted for more than 99% of poisonings, because more toxic products were used under more rudimentary conditions.¹⁸

According to the International Labour Organization (ILO), the agricultural sector is one of the most hazardous to health worldwide. Agricultural work possesses several characteristics that are risky for health: exposure to the weather, close contact with animals and plants, extensive use of chemical and biological products, difficult working postures and lengthy hours, and use of

hazardous agricultural tools and machinery. This brief outlines the occupational health hazards of agriculture, presents a case study on the trade-offs between their health and economic impacts, and proposes responses.¹⁶

Health outcomes associated with these hazards range from relatively simple conditions like heat exhaustion to complex diseases like cancer. Exact data on levels of exposure and associated disease prevalence (or health effects) in the developing world are limited.¹⁶

Ill health arising from agricultural work has negative implications for agricultural productivity. A study of women farmers in mixed cropping systems, by the University of Benin in Nigeria, found that the vast majority suffered from intense muscular fatigue, heat exhaustion, and skin disorders, forcing them to take days off from attending to crops.¹⁶ In Madhya Pradesh, India, in 2000, the value of human life lost to fatal injuries in agriculture, plus the cost of nonfatal injuries, was estimated at US\$27 million.¹⁶

Rigorous evaluations of the health benefits associated with interventions to improve agricultural practices are few. Still, there are a range of opportunities for technologies and policies to substantially reduce the health-related burdens of working in agriculture. Different hazards require different solutions. In general, if occupational health hazards are to be addressed, greater organization and empowerment of the agricultural workforce and small farmers is needed. The International Federation of Plantation and Agricultural Workers advocates for better working and living conditions for agricultural wage workers, while

numerous nongovernmental organizations and some national governments work with small farmers to reduce risks.¹⁶

Giving workers a voice in determining working conditions can make a difference. For example, community monitoring convinced donors to stop providing toxic pesticides to World Bank funded projects in the Philippines.¹⁶ Regulations and codes of conduct that do exist also need to be enforced, such as the ILO and WHO guidelines for reducing hazards in agricultural work and providing occupational health services to agricultural workers.¹⁶

Poor health will result in a loss of days worked or in reduced worker capacity, which, when family and hired labour are not perfect substitutes or when there are liquidity constraints, is likely to reduce output.⁵ For example, prolonged exposure to pesticides could cause cardiopulmonary problems, neurological and hematological symptoms, and adverse dermal effects, which could significantly hamper farmers' work capacity in the field and reduce their management and supervision abilities.⁶

In agricultural communities, poor health reduces income and productivity, further decreasing people's ability to address poor health and inhibiting economic development.¹⁶ Higher agricultural productivity affects family earnings and nutrition, which in turn improves labor productivity and results in better health and well-being.¹⁹

Combining production data from farm-level survey and health data from the same population of farmers in two rice-producing regions of Philippines showed that, pesticide use has a negative effect on farmer health, while farmer

health has a significant positive effect on farm productivity.⁵ In Ethiopia, a study noted evidence of a significant link between health and nutritional status and agricultural productivity. The results showed that the distance to the source of water as well as nutrition and morbidity status affect agricultural productivity; elasticity of labour productivity with respect to nutritional status were very significant. The results also showed a large scope for productivity improvement through better nutrition.¹⁷

A study analyzed the impact of onchocercal skin disease (OSD) on productivity at a coffee plantation in southwest Ethiopia. The results revealed that, permanent male employees, the core of the plantation labour force, suffered significant losses in economic productivity (in the form of lower daily wages earned) as a result of OSD. Depending on the severity of OSD, and controlling for such factors as age, daily wages were 10 to 15% lower among those exhibiting skin-related problems. Relatively older permanent male employees had the biggest OSD-related loss in economic productivity in terms of diminished earnings and an adversely impacted labour supply.¹⁸

Indian scenario

The rural populations work in the most hazardous atmosphere and live in abysmal living conditions. Unsafe and unhygienic practices such as unclean water, poor nutrition, subhuman habitats, and degraded and unsanitary environments are challenges to the public health system. The majority of the rural populations are small land holders, artisans and labourers, with limited resources that they spend chiefly on food and necessities such as clothing and shelter. They

have no money left to spend on health. The rural peasant worker, who strives hard under adverse weather conditions to produce food for others, is often the first victim of epidemics.²⁰

The rural people therefore seek remedies through magico-religious practices. On the other hand, some rural people have continued to follow rich, undocumented, traditional medicine systems, in addition to the recognised cultural systems of medicine such Ayurveda, *Unani*, *Siddha* and naturopathy to maintain positive health and to prevent disease.²⁰

The socioeconomic, cultural and political developments, arising partly from the of human and material resources, have effect on the healthy environment (for example, access to healthy and nutritious food, clean air and water, nutritious vegetation, healthy life styles, and advantageous value systems and community harmony). The basic nature of rural health problems is attributed also to lack of access to health literature and health consciousness, poor maternal and child health services and occupational hazards.²⁰

The majority of rural deaths, which are preventable, are due to infections and communicable, parasitic and respiratory diseases. Infectious diseases dominate the morbidity pattern in rural areas (40%). Waterborne infections, which account for about 80% of sickness in India, make every fourth person dying of such diseases in the world, an Indian. Annually, 1.5 million deaths and loss of 73 million workdays are attributed to waterborne diseases. Three groups of infections are widespread in rural areas, as follows.²⁰

1. Diseases that are carried in the gastrointestinal tract, such as diarrhoea, amoebiasis, typhoid fever, infectious hepatitis, worm infestations and poliomyelitis. About 100 million suffer from diarrhoea and cholera every year.
2. Diseases that are carried in the air through coughing, sneezing or even breathing, such as tuberculosis (TB), whooping cough and pneumonia.
3. Infections, which are more difficult to deal with, include malaria, filariasis and *kala-azar*. These are often the result of development. Irrigation brings with it malaria and filariasis, pesticide use has produced a resistant strain of malaria. The ditches, gutters and culverts dug during the construction of roads, and expansion of cattle ranches, for example, are breeding places for snails and mosquitoes. About 2.3 million episodes and over 1,000 malarial deaths occur every year in India. An estimated 45 million are carriers of microfilaria, 19 million of which are active cases and 500 million people are at risk of developing filaria.

A recent survey by the Rural Medical College, Loni²⁰ in the villages of Maharashtra state, which is one of the progressive states, revealed that agricultural and environment-related injuries and diseases are all quite common in rural areas, for example: mechanical accidents, pesticide poisoning, snake, dog and insect bites, zoonotic diseases, skin and respiratory diseases; oral health problems; socio-psychological problems of the female, geriatric and adolescent population; and diseases due to addictions.²⁰

The alarming rate of population growth in rural areas nullifies all developmental efforts. The rural population, which was 299 million in 1951, crossed 750 million in May 2001. Since 1951, the government has been attempting through various health programs to combat the problems, but to no avail. However, the new National Population Policy 2000 gave emphasis to an holistic approach; for example, improvement in 'quality of life' for all, no gender bias in education, employment, child survival rates, sound social security, promotion of culturally and socially acceptable family welfare methods.²⁰

With regard to the share of public and private facilities in the health care market, evidence indicates that for inpatient care, individuals from both rural and urban areas prefer public facilities.^{21, 22} For outpatient care however, that is, for the treatment of illnesses not requiring hospitalisation, private facilities are more often used in India. Evidence also indicates that the share of private health care providers for outpatient care increases with a rise in the economic status of the population.²³ For example, it has been observed that with the growth in income, high purchasing power and the expansion of the middle class in India has witnessed a tremendous growth in the private health care system.^{24,25}

Health seeking behaviour

Health is a critical component of well-being. Healthy individuals are able to enjoy leisure and gain satisfaction in life. They also have a greater ability to learn new skills, earn more income, and generate wealth to support current and future consumption.²⁶

Health is a fundamental human right, and it is the responsibility of the government to provide health care to all citizens in equal proportions. Ever since India's independence in 1947, various national health schemes and programs have been launched with the view to improve the health status of people living in rural areas. The Government of India launched the National Rural Health Mission (NRHM) on 12th April 2005. The aim of the NRHM is to bring about dramatic improvement in the health system and the health status of the people, especially those who live in rural areas of the country. The Mission seeks to provide universal access to equitable, affordable and quality health care, as well as to bring about an improvement in the health status of the underprivileged sections of the society, especially women and children.²⁷

India has registered significant progress in improving life expectancy at birth, reducing mortality due to malaria, as well as reducing infant and material mortality over the last few decades. In spite of the progress made, a high proportion of the population, especially in rural areas, continues to suffer and die from preventable diseases, pregnancy and child birth related complications as well as malnutrition. In addition to old unresolved problems, the health system in the country is facing emerging threats and challenges.²⁸

The rural public health care system in many states and regions is in an unsatisfactory state leading to pauperization of poor households due to expensive private sector health care. India is in the midst of an epidemiological and demographic transition – with the attendant problems of increased chronic disease burden and a decline in mortality and fertility rates leading to an ageing of the population. An estimated 5 million people in the country are living with

HIV/AIDS, a threat which has the potential to undermine the health and developmental gains India has made since its independence. Non-communicable diseases such as cardio-vascular diseases, cancers, blindness, mental illness and tobacco use related illnesses have imposed the chronic diseases burden on the already over-stretched health care system in the country. Premature morbidity and mortality from chronic diseases can be a major economic and human resource loss for India. The large disparity across India places the burden of these conditions mostly on the poor, and on women, scheduled castes and scheduled tribes especially those who live in the rural areas of the country. The inequity is also reflected in the skewed availability of public resources between the advanced and less developed states.²⁸

Health is a multidimensional concept that is difficult to capture in a single measure. Conventional indicators such as infant mortality rate or life expectancy at birth, anthropometric measures or nutritional status are generally used to measure the health status of the population since they are comparatively simple to analyze and data is easily available. However, in recent times, many studies have used self-reported illness to measure health status because of its consistent relationships with future mortality in many countries and its direct link to policy changes, e.g., those who did not perceive the need would not be seeking health care even though the health care service is fully available.²⁹

A study conducted on female agricultural workers problems in Gadag district in Karnataka in the year 2000, revealed food insufficiencies, health problems and child care problems.³⁰

Though a number of agencies in India such as National Sample Survey Organization (NSSO) and National Council of Applied Economic Research (NCAER) have been conducting national level surveys on ‘morbidity and health care’ on a periodical basis, fewer and limited attempts have been made in assessing the health status of the population across states using data from these sources. Studies that dealt with the evidence of differentials in morbidity are reviewed below.²⁹

The evidence of disaggregated morbidity prevalence in India showed a ‘J’ shaped relationship between age and morbidity, an indication that elders and children are susceptible to higher prevalence of illness.^{21,22} Gender differences are observed with women reporting significantly lower levels of morbidity than men. This suggests under-reporting of ailments among women.³¹

Studies found contrasting pattern of evidences about disease burden between rural and urban population with some reporting greater burden among rural population than in urban population^{32, 33, 34} and others suggesting the opposite.³⁵ Existing evidences indicate that reported morbidity prevalence is negatively associated with educational attainment.^{36, 37} It is argued that better educated take more precautions against diseases, which in turn reduces their morbidity. However, the nature of relationship between economic status of household and the risk of reporting morbidity is far from clear. While evidence from national level surveys suggest a positive association between self-reported morbidity prevalence and economic status of an individual,^{34, 36} the reverse is observed in regional studies.³⁷

Such differences can be attributed to the differences in definition, survey design and the level of health consciousness of the population of these studies. However, very little information is available about the disease profile of different population groups in India.

Expenditure pattern

Health spending in India is estimated to be in the range of 4.5% to 6% of Gross Domestic Product (GDP). Public spending on health in India gradually accelerated from 0.22% in 1950-51 to 1.05% during the mid-1980s, and stagnated at around 0.9% of the GDP during the later years (i.e. spending by only Central and State health departments). Of this, recurring expenditures such as salaries and wages, drugs, consumables, etc. account for more than 90% and is on the rise in recent years. In terms of per capita expenditure, it increased significantly from less than Rupee 1 in 1950-51 to about Rs. 215 in 2003-04. However, in real terms, for 2003-2004 this is around Rs. 120.³⁸ Estimates, irrespective of the definition, reveal that the per capita spending by the results of the NSSO of 1986-87 and 1995-96 showed a considerable decline in the utilization of public health services by the poor, especially the rural poor. Besides, the study also showed that the rich consumed public services three times more often than the poor. The ratio of access to admission between the lowest 10% quintile and the richest 10% was reported to be 6.1 and 2.2 between the below poverty line (BPL) and the above poverty line (APL) populations. The 52nd round of the NSSO (1995-96) provided insights into the quintile- wise health-seeking behaviour. As per this data, of the poor who availed of services, 61% used public facilities compared to 33% among the rich. The poorest, however,

benefit relatively more from spending on primary care only.³⁹ This is primarily on account of the poor quality and irregular supply of these services which dissuade the rich from accessing them. Further, many of the services that benefit the poor are, to some extent centrally funded vertical programmes such as immunization, RCH, TB, Malaria, Leprosy, etc. The inequity in the access to and distribution of public health services has been a concern because of the extent of impoverishment households face on account of ill health, and catastrophic illnesses in particular.³⁷

Information about health expenditure in India is very scanty. Public health expenditure is fairly well documented. In contrast to this, expenditure on private health care is very poorly documented. Over the years the share of expenditure of the state sector has enlarged in comparison to private health expenditure and also in terms of proportion of GDP.⁴⁰

A study to examine the state of the health sector in India showed that, in 1944 private household expenditure on health care was Rs. 2.5 per capita. In comparison the state health expenditure in the same year was only Rs 0.36 per capita. This totaled up to four percent of the GDP with private health expenditure having a share of 87%.⁴⁰

A study done by NSSO in 1951 recorded a private health expenditure of Rs. 5.77 per capita per year. Together with State health expenditure in the same year it worked out of 2.53% of GDP with private health expenditure having share of 87%.⁴⁰

In the fifties and early sixties general health surveys in districts from nine states private health expenditures were recorded. The average was Rs. 3.34 per capita and these varied in different districts from between Rs. 0.40 to Rs. 7.20 per capita but it was seen that, health expenditure worked out to be between three to four percent of the respective SDP and the private health expenditure share was between 83% and 88%.⁴⁰

Similar smaller studies were done in the sixties and seventies which also recorded household health expenditure. In Narangwal during 1966-69 and 1973-74 recorded a private health expenditure of Rs.7.65 and Rs.21.30, respectively, per capita per year. In North Arcot during 1973 a study recorded Rs 0.80 per family per year.⁴¹ National Institute of Health Administration and Education (NIHAE) in 1973 recorded Rs 0.72 per family in rural Delhi.⁴¹ These private health expenditures again amounted to a share of over 80% of total health expenditure. The NSSO results of the 278th round (1973-74) also corroborated this.⁴⁰

In studies undertaken by Foundation for Research in Community Health (FRCH) in the eighties similar results were obtained. An exploratory survey in Bombay (Now Mumbai) of a middle class and working class population revealed private health expenditure to be as high as 6.9% and 12.5%, respectively, of their average income in 1984.⁴⁰ In a fairly large study in 1987 in Jalgaon district private health expenditure was recorded as 5.2% of income.³³

From the review it is evident that the financial burden of households in meeting their health care needs is substantial. Households spend between four to

seven times of what the state spends on health care services. This is not a very happy state of affairs considering the fact that more than half the country's population has resources that barely meet their food requirements. When illness strikes, it necessarily eats into food consumption, and worse still the capacity to earn if the patient happens to be a bread earner. Thus it is important to understand the consequences of such high private health expenditure in the context of the socio-economic scenario of widespread poverty.⁴⁰

The Jalgoan study made an effort at revealing class differentials of morbidity, treatment and health expenditure.³³

Given the socio-economic conditions in India the distribution in is not surprising. When health care services have to be purchased most often as commodities, such a distribution is bound to emerge because purchasing power becomes a crucial factor.⁴⁰

The Jalgaon study³³ threw up a serendipitous finding. After a careful analysis of all associated variables study hypothesized that definition of illness is closely linked with the availability of purchasing power to buy health care services in a market economy. This hypothesis is strongly supported by class differentials of health care utilization and health expenditure.³³

Thus, the poorer classes, due to their impoverished conditions and lack of purchase power, perceive a lower morbidity rate because they cannot afford to spend on every small illness or chronic ailment that may afflict them. Even of the morbidity that they perceive a fairly large proportion stays unattended because

they feel it is an expenditure that can be avoided; and when they decide to use a facility, they prefer public health services because they cost the least.⁴⁰

These findings then clearly provide a basis to question the commodification of health care, the existence of the private health sector and as a consequence expending of vast sums of personal health expenditures by households.⁴⁰

Large volume of private health expenditure in India is probably one of the largest in the world when viewed as a proportion to total health expenditure. Even in the United States about half the expenditure on health care is incurred by the State. In the European capitalist countries the State's share is now over 80%. These facts thus indicate that even under capitalism private health expenditures are on their way out. This situation has arisen in these countries for two reasons. Firstly, a demand for universal and relatively equitable health care, and secondly the need to curb rising cost of health care. In both cases only increased state intervention has helped sort out matters. Thus in India one needs to look at the private health sector and private health expenditure in this context also.⁴⁰

Regarding expenditure pattern, an average Indian household spent Rs. 250 per capita per annum (1999) on the use of health services.²¹ As for health insurance, most Indians are not covered by any insurance schemes, but the small minority that are covered, mostly belong to the organized urban sector; the rural population has almost no insurance coverage at all, formal or informal.³² It is estimated that a small fraction of less than nine percent of the Indian workforce is

covered by some form of health insurance, through Central Government Health Scheme, Employee State Insurance Scheme and Mediclaim.

Till the epidemiological transition is complete in all sections of the urban population, there will remain an immense pressure on both basic primary health care services as well as an increasing demand for sophisticated secondary and tertiary health services. This will see in turn create pressure on existing facilities, spur the further growth of the private sector, and see further inequalities in both access and burden of treatment.²¹

Finally, the health sector may need to formulate and adjust its policies to strengthen its capacity to deal with other sectors in general, and the agriculture sector in particular, on issues of joint interest. Admittedly, for a number of issues (food safety, nutrition, livestock, and veterinary public health) such policies may already exist. Yet the health sector remains deficient in its capacity to effectively deal with the agriculture sector across the board. The parts of the health sector that would need to work directly with the agriculture sector are frequently underfunded, have no formal arrangements for inter-sectoral roles and responsibilities, and have staff with inadequate skills for intersectoral negotiation and decision making.

METHODOLOGY

The present study was conducted in the rural field practice area of Primary Health Center (PHC), Vantamuri, Belgaum. The Vantamuri PHC has five sub-centers catering 18 villages having total population of 31,510. It is situated by the side of Pune-Bangalore National Highway and is 20 Kms. from Belgaum towards North (Figure 1).

Chief languages spoken in this area are Kannada and Marathi. The educational facilities available in the villages are up to secondary level. The Anganwadi Workers, Health Assistants, Trained Dais, Private Practitioners and Medical Officer of PHC Vantamuri and the interns under Reorientation of Medical Education Programme of Community Medicine Department of Jawaharlal Nehru Medical College, Belgaum provide health care facilities.

Design

The study design was community based cross-sectional study.

Duration

This one year study was conducted from January 2009 to December 2009.

Participants

Agricultural workers residing in six villages namely Bhutaramanahatti, Desarwadi, Ukkad, Bennali, Gurlhosur and Ghugranatti coming under

Bhutaramanahatti Sub Centre of PHC Vantamuri, Belgaum were selected as study participants.

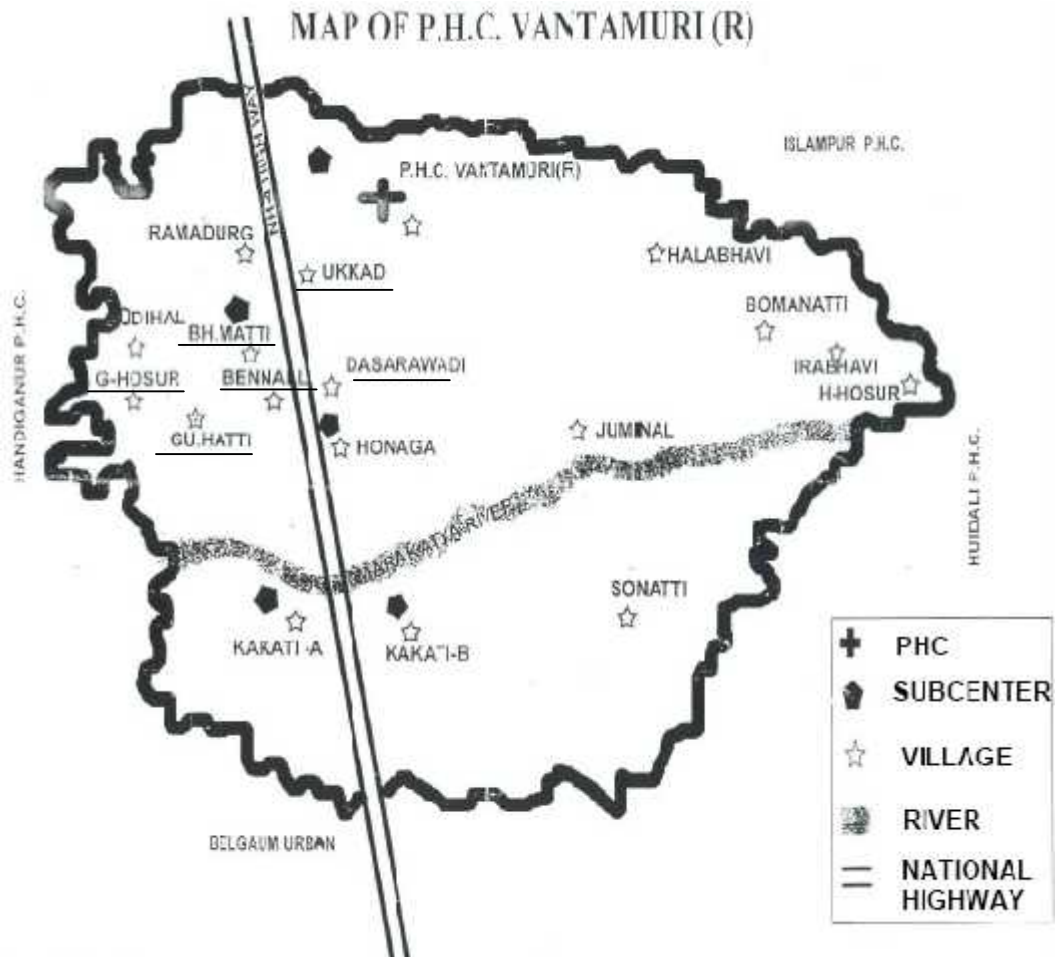


Figure 1: Map of Vantamuri Primary Health Centre

Sample size

Four hundred (400) agricultural workers residing in the villages mentioned were selected for the study.

Sampling procedure

The sample size was calculated from the formula given below:

$$n = 4pq / d^2$$

Where, n = Sample size

 p = Percentage of farmers

 q = (100-p)

 d = Relative error in the estimation of p

Since no previous studies have been recorded on agricultural workers morbidity in this area, the prevalence was considered 50% which is highest assumed in any study. Therefore;

$$p = 50$$

$$q = 100 - p = 100 - 50 = 50$$

$$d = 10\% \text{ of } p = 5\%$$

$$n = 4 \times 50 \times 50 / 25$$

$$n = 400$$

Hence the sample size required was considered as 400 agricultural workers. All agricultural workers were listed residing in Bhutaramanahatti sub centre area was made. By four digit random number table method, 400 participants were selected.

Selection criteria

Inclusion

- Agricultural workers residing in the study area for at least one year preceding the date of survey.

- Age between 16 years to 60 years

Exclusion

- Migrants.
- Pregnant and lactating women working as agricultural workers.

Procedure

Before starting the study, pilot study was carried out in the study population using a predesigned and structured questionnaire. Appropriate changes were made based on the pilot study.

The study was approved from Institutional Ethics Committee for Human Subjects' Research, Jawaharlal Nehru Medical College, Belgaum (Annexure I). The study participants were interviewed in their households/fields. Based on the selection criteria the study participants were selected and written informed consent (Annexure II) was obtained from all the participants. The data was collected using predesigned and pretested proforma (Annexure III).

Data regarding demographic variable like place of residence, age, sex, education status, marital status, socio-economic status and type of family were recorded. The assets and liabilities such as ownership of house, land holding, irrigation, live stock, loans taken, insurance, affiliation with self help group and environment conditions were also noted. The personal history was taken for diet, sleep pattern, appetite and personal habits. Self reported illness symptoms experienced by the subjects (one month preceding the survey) were enquired and noted. History of trauma, animal bite, allergy, zoonotic diseases, and poison

consumption were enquired one month preceding the survey were enquired and noted. A thorough general physical examination and systemic examination was conducted by the investigator to know the morbidities. Necessary laboratory investigation (hemoglobin %) was done wherever required. The study participants were also interviewed for their health seeking behaviour such as priority of health care providers, amount in rupees spent on the treatment of illness per episode, loss of working days and source of funds towards treatment of these morbidities. Two more subsequent visits were made to collect data from those who were absent on first visit.

Statistical analysis

The data was tabulated and master chart was prepared (Annexure IV) Analysis was done using percentages, rates and ratios. Chi square test was used to find the association between attributes. Multiple logistic regression models were used to assess the influence of socio-demographic variables on morbidity pattern.

Definition of study variables

Age: Age was recorded to the nearest completed year as per information given by the subject.

Religion: The subject's religion was noted and was grouped as "Hindu", "Muslim", and "Others" (Jain, Boudh, Parsi, Christian etc).

Type of family³

Nuclear family: Married couples, along with their dependent children living in the same house.

Joint family: Many married couples and their children who are living in the same household. All males are blood relatives and all females of the family are related by either marriage or blood relation.

Three generation family: Married couple with married children and their kids (three generations) related to each other by direct descent and living together.

Broken family: One where, the couple have separated, or where death has occurred for one or both the spouses.

Socioeconomic status: Information of total monthly income of the family in Rupees was obtained as well as the family size. Per capita monthly income in rupees was calculated, and then the family was classified using modified B. G. Prasad's classification.⁴²

Modified B. G. Prasad's Classification

Socioeconomic class	Prasad's classification (1961) per capita income in Rs./ month ⁴²	Modified Prasad's classification in the study period (2009) Per capita income in Rs/month ⁴³
I	100 & above	3600 & above
II	50 – 99	1800 & 3599
III	30 –49	1080 & 1799
IV	15 – 29	540 & 1079
V	below 15	below 540

Average Consumer Price Index for the year 2009 = 727⁴³

Modification was done with the aid of Multiplication Factor (M.F), which was obtained as below:

$$\text{M. F.} = \frac{\text{Average Consumer Price Index for study period}}{100} \times 4.93$$

$$\text{M. F.} = \frac{727}{100} \times 4.93$$

$$= 35.836$$

Educational status: The subjects were asked about their educational qualifications and were grouped into following categories as per NFHS 3 Criteria 2005-06.⁴⁴

Illiterate: A person who could not read and write with understanding in any language.

First to fifth: A person who had studied up to fifth standard or a person who can read and write with understanding in any language (without attending the school).

Sixth to Tenth: A person who had studied between sixth to tenth standard.

Tenth plus: A person who had studied above 10th standard and attended college.

Food habit: Subjects were asked about their food habits i.e. consumption of non vegetarian and/or vegetarian food in their diet. Interpretation was made as “vegetarian diet” and “mixed diet” those who were consuming vegetarian and non vegetarian food).

Tobacco use: Subjects who had smoked either in the past or smoking at present and have used tobacco either in the past or using at present were considered as “smokers” and “tobacco users” respectively. The total duration of use was noted in years. Subjects who had never smoked in any form of tobacco (beedi, cigarette) and never used tobacco in any form viz gutkha, pans were considered as “non smokers” and “tobacco non users” respectively.

Current Smoker: Some one who smokes any tobacco product either daily or occasional.

Alcoholic: A person who has been taking alcohol at least 30 ml per day for at least six months preceding the survey.

Height: The subject was asked to stand straight without footwear, with heels, buttocks and back straight and arms hanging by side. The height was measured from head to heel. The coinciding reading was measured to the nearest 0.1 cm using a flexible measuring tape.⁴⁵

Weight: Body weight was measured without any foot wear and with minimal clothing to the nearest 0.1 kilogram using a standard portable adult weighing machine, which was standardized periodically during the study. The scale was adjusted to zero before each session and weight was recorded in kilograms.⁴⁵

Calculation of Body Mass Index (BMI): As per the revised guidelines recommended by WHO, persons with BMI values of less than 18.5 were classified as “Underweight”, 18.5 to 24.99 were classified as “Normal weight”, 25 to 29.99 were classified as “pre-obese” and above 30 were classified as “Obese”.⁴⁵ Body mass index was calculated as;

$$\text{BMI} = \frac{\text{Weight in Kgs}}{(\text{Height in Meter})^2}$$

Blood pressure measurement: During the course of interview, two measurements of blood pressure of each study participant were measured using mercury sphygmomanometer, first by palpatory method followed by auscultatory method as per JNC VII guidelines. Both blood pressure measurements were obtained after the subject had rested for at least five minutes in a seated position. The first blood pressure measurement was recorded after obtaining sociodemographic information from study subject, while second was recorded after clinical examination. All blood pressure measurements were made on left

arm of each subject, using a cuff of appropriate size at the level of the heart. The average of two SBP and DBP reading in mm Hg were noted to describe the blood pressure of the participant.⁴⁶

Categorization of subjects by blood pressure levels: The subjects were divided into “Normotensives” or “Hypertensives” on the basis of their blood pressure levels and “prehypertensives” were included as normotensives.

Normotensives: Systolic blood pressure less than 120 mm Hg and Diastolic blood pressure less than 80 mm Hg.

Hypertensives: Systolic blood pressure 140 mm Hg or above Diastolic blood pressure 90 mm Hg or above.

Prehypertensives: Systolic blood pressure (BP) in the range of 120 to 139 mm Hg or diastolic blood pressure 80 to 89 mmHg.

Anaemia: The study participants were examined for pallor. The participant in whom pallor was present, Hb% estimation was done using Sahli’s haemoglobinometer. As per WHO, men with hemoglobin percentage below 13 gm/dL and women with hemoglobin percentage below 12 gm/dL were considered anaemic.⁴⁷

Health Expenditure: Data on amount spent for treatment of illness episode was enquired from study subjects. Per capita health expenditure per episode was calculated and converted into US \$ (1 US \$=Rs 45 as per average exchange rate of 2009). Information about loss of working days was collected and per capita average loss of working days calculated.

RESULTS

This community based cross-sectional study was conducted among 400 agricultural workers residing in the six villages of Bhutaramanahatti Sub Centre, PHC Vantamuri, Belgaum between the period of January 2009 to December 2009. The data was coded; master chart was prepared (Annexure IV) and tabulated as below.

Table 1: Distribution of study population according to village

Village	Study population	
	No.	%
Bhutaramanahatti	140	35.00
Desarwadi	57	14.25
Ukkad	55	13.75
Ghugranatti	52	13.00
Gurlhosur	50	12.50
Bennalli	46	11.50
Total	400	100.00

In the present study 35% agricultural workers belonged to Bhutaramanahatti, 14.25% to Desarwadi, 13.75% to Ukkad, 13% to Ghugranatti, 12.5% to Gurlhosur and 11.5% to Bennalli.

Table 2: Distribution of study population according to age and gender

Age group	Gender					
	Male		Female		Total	
	No.	%	No.	%	No.	%
15-30	45	20.18	42	23.73	87	21.75
30-45	89	39.91	68	38.42	157	39.25
45-60	89	39.91	67	37.85	156	39.00
Total	223	55.75	177	44.25	400	100.00

Among the study participants 55.75% were male and 44.25% were females with male to female ratio of 1.25:1. Equal distribution (39%) was seen in the age group of 30 to 45 years and 45 to 60 years. There were 87 (21.75%) people with age between 15 to 30 years.

Table 3: Distribution of study population according to religion

Religion	Study population	
	No.	%
Hindu	358	89.50
Muslim	42	10.50
Total	400	100.00

In this study majority (89.5%) were Hindus and 10.5% were to Muslims. None belonged to Boudh, Christ, Jain and Parsi religions.

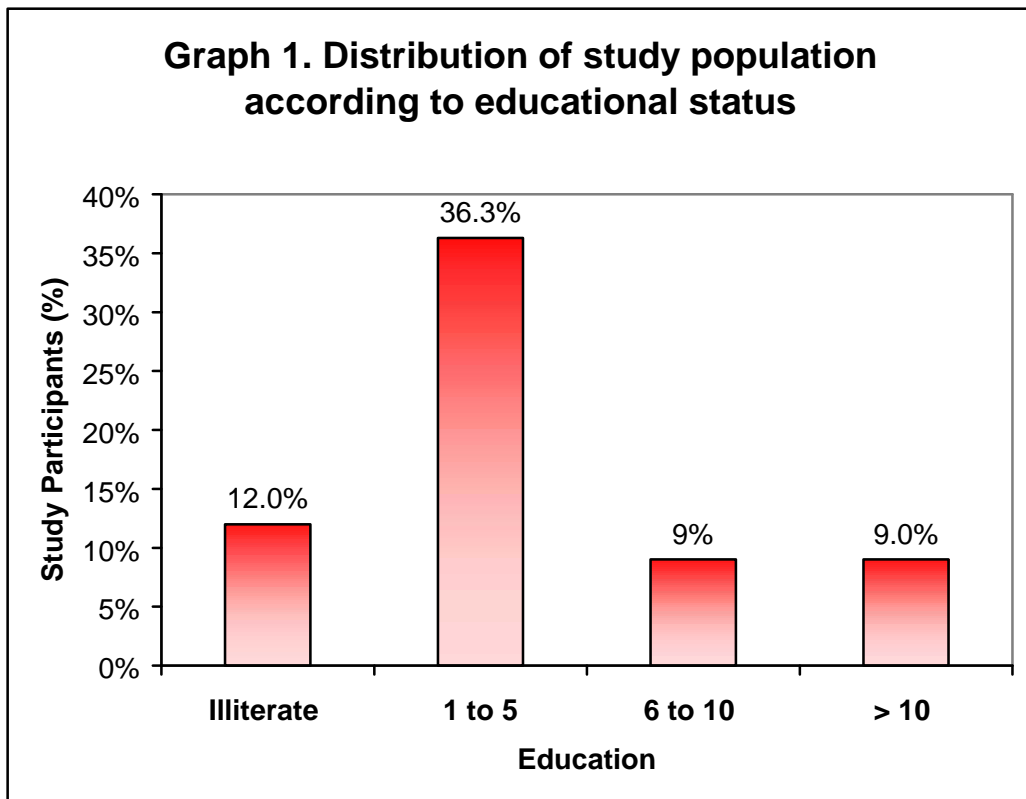
Table 4: Distribution of study population according to educational and socio economic status

Parameters	Study population		
	No.	%	
	Illiterate	188	47.00
	1 – 5	152	38.00
Education status	6 – 10	58	14.50
	> 10	2	0.50
	Total	400	100.00
Socio economic status (Modified B G Prasad's Classification)	Class III	22	5.50
	Class IV	83	20.75
	Class V	295	73.75
	Total	400	100.00

In the present study 47% were illiterates whereas 38% had first to fifth, 14.5% had sixth to tenth and 0.5% had attended tenth plus.

Majority 295 (73.75%) belonged to Class V, 20.75% belonged to Class IV, 5.50% belonged to Class III. None belonged to socio-economic class I and II.

Graph 1. Distribution of study population according to educational status



Graph 2. Distribution of study population according to socio economic status

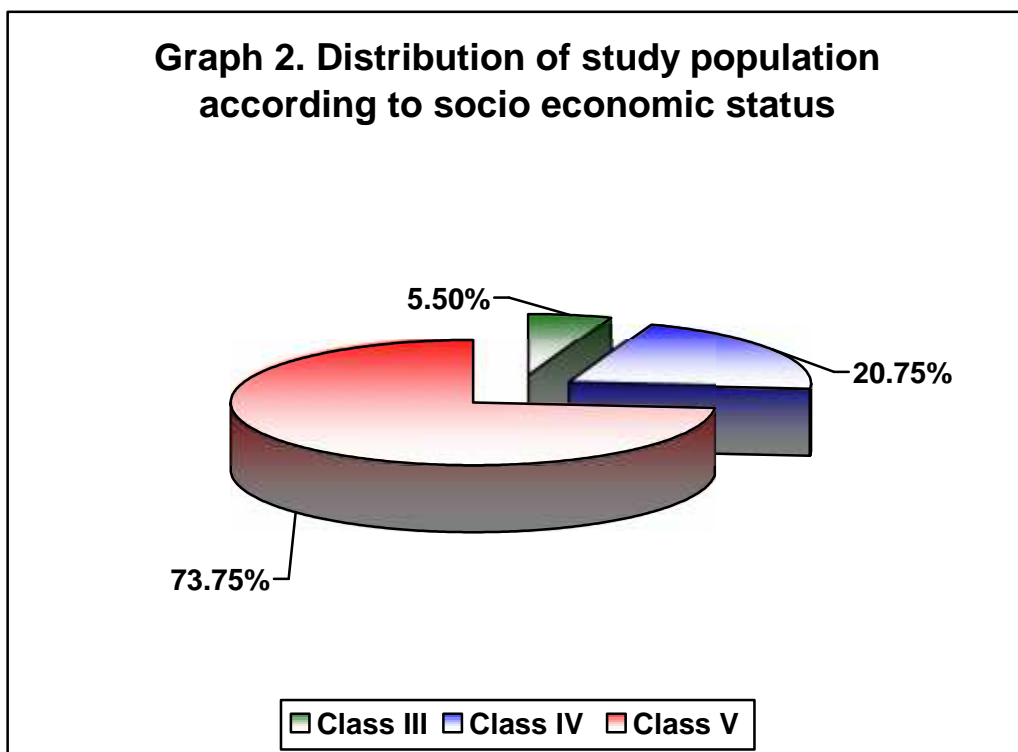
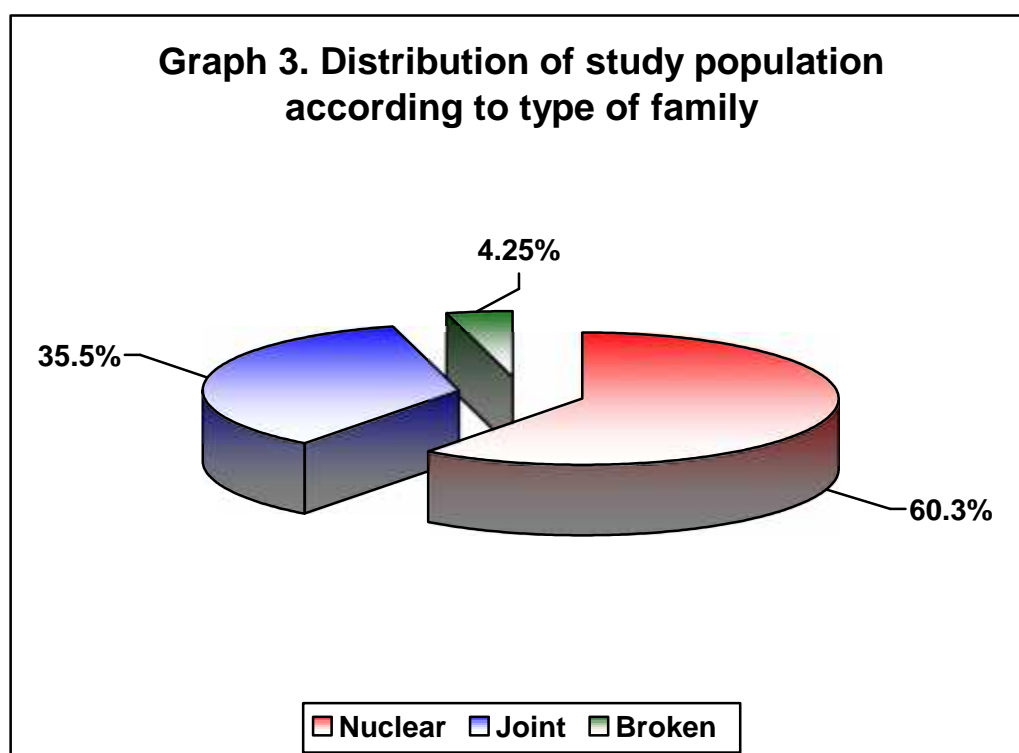


Table 5: Distribution of study population according to marital status and type of family

Parameters		Study population (n=400)	
		No.	%
Marital status	Single	28	7.00
	Married	343	85.75
	Widow / Widower	29	7.25
Type of family	Nuclear	241	60.25
	Joint	142	35.50
	Broken	17	4.25



Among the study participants 85.75% were married, 7% were unmarried and 7.25% were widows/widowers. None were divorced or separated. In this study 60.25% belonged to nuclear family, 35.50% belonged to joint family and 4.25% belonged to broken family.

Table 6: Distribution of study population according to assets

Assets		Study population (n=400)		
		No.	%	
Land holding	<i>Landless</i>	31	7.75	
	<i>Landholding</i>	Non Irrigated	54	13.50
		Irrigated	315	78.75
Assets	<i>Immovable</i>	362	90.50	
	<i>Movable</i>	22	5.50	
	<i>Livestock*</i>	Buffalo	263	65.75
		Cow	74	18.50
		Goat	42	10.50
		Sheep	26	6.50
		Chicken	5	1.25

*Total number may exceed 100% as multiple options were given.

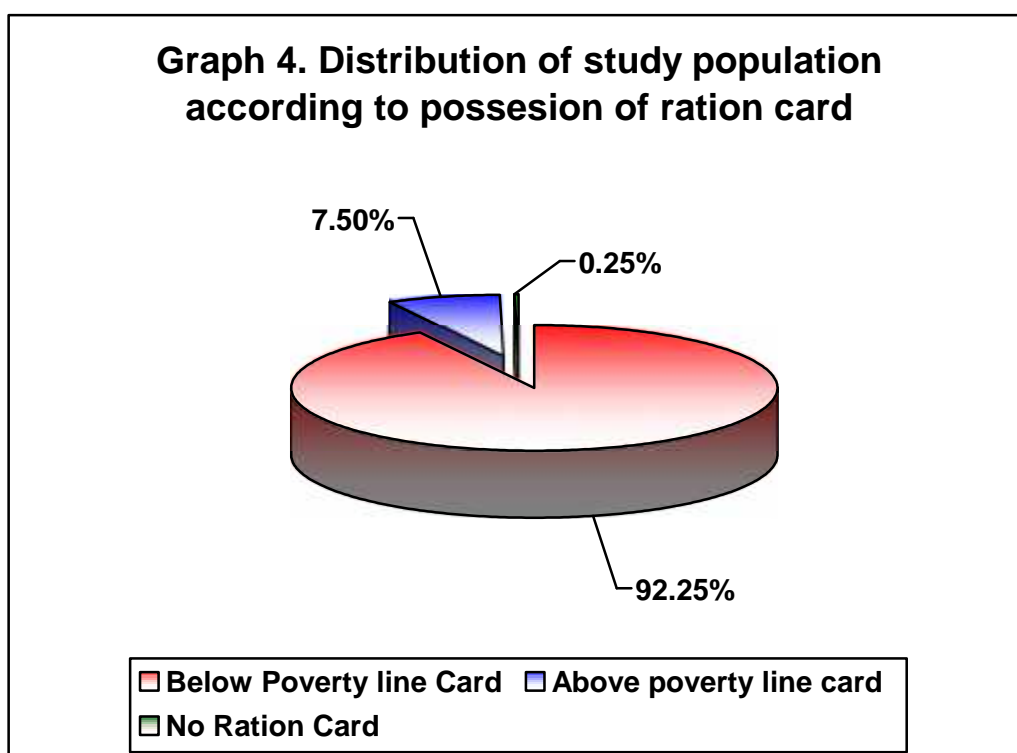
Among 400 study participants, 78.75% had irrigated land, 13.5% had non irrigated land and 7.75% did not own any land.

Of the 400 study participants majority (90.5%) had immovable assets. Movable assets were owned by 5.50%.

In the study population 65.75% had buffalos, 18.50% had cows, 10.50% had goats, 6.50% had sheep and 1.25% had chicken.

Table 7: Distribution of study population according to possession of ration card

Possession of Ration Card	Study population	
	No.	%
Below poverty line card	369	92.25
Above poverty line card	30	7.50
No Ration Card	1	0.25
Total	400	100.00

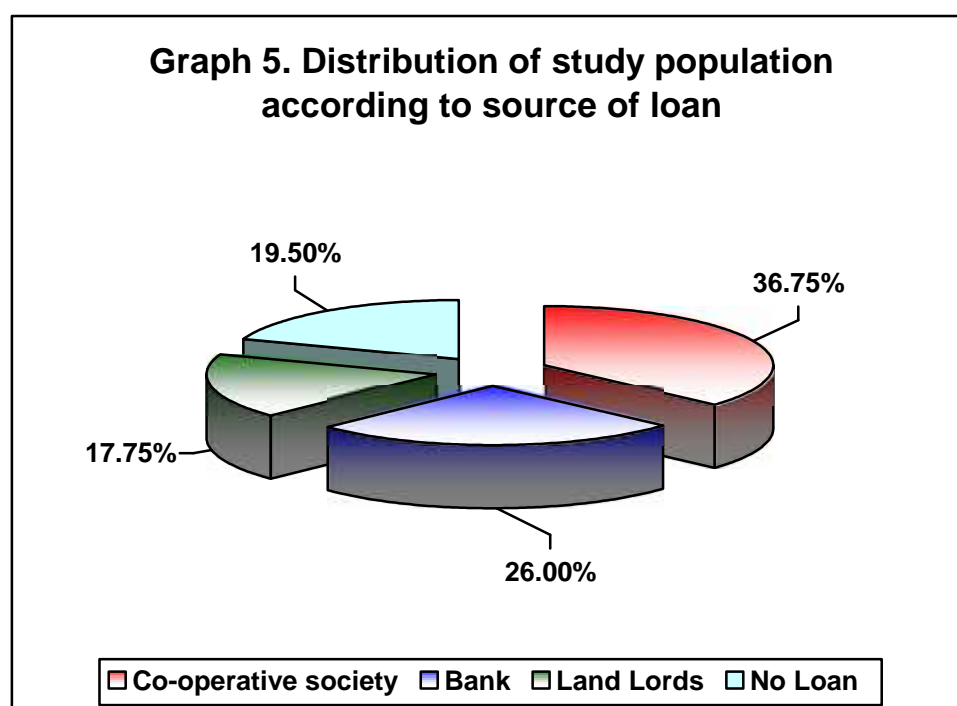


In the study population 92.25% possessed BPL ration cards and 7.50% possessed APL ration cards.

Data was also collected for any type of insurance coverage (Crop / Life / Health) and membership of self help group or Mahila Mandal. Neither of the study participants had opted for any insurance in the year preceding the survey nor were members of self help group or Mahila Mandal.

Table 8: Distribution of study population according to source of loan

Source of loan	Study population	
	No.	%
Loan from Co-op Society	147	36.75
Loan from Bank	104	26.00
Loan from Land Lords	71	17.75
No Loan	78	19.50
Total	400	100.00



In this study 36.75% had taken loan from co-operative society, 26% had taken loan from bank, 17.75% from land lords and 19.5% did not take any loan.

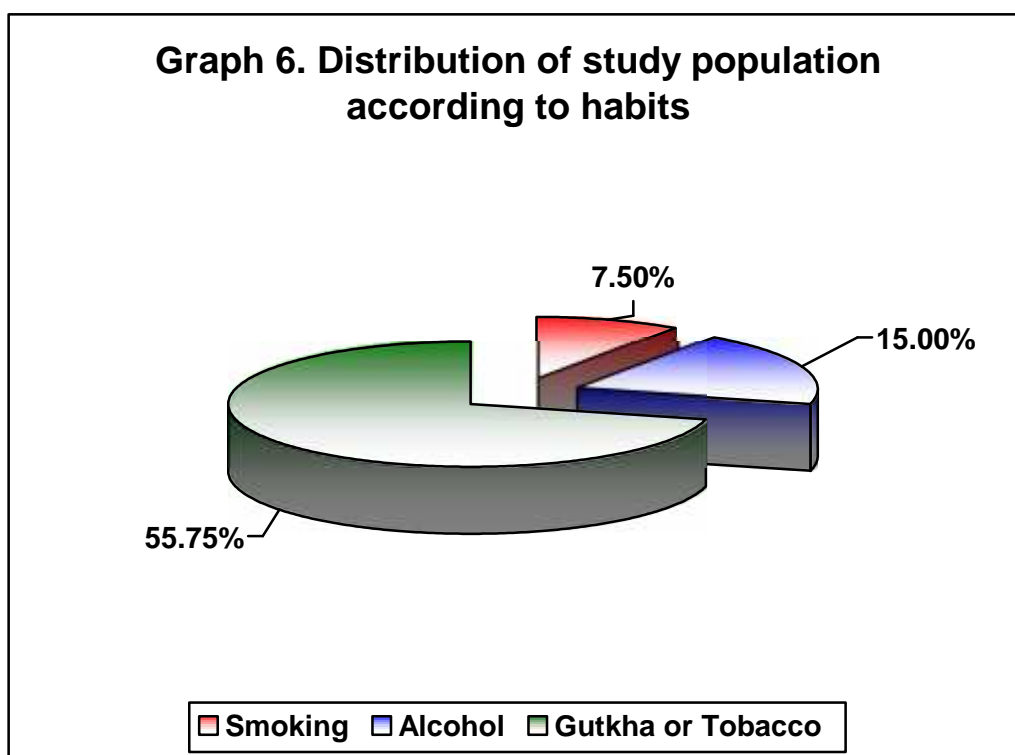
Table 9: Distribution of study population according to diet, appetite and sleep pattern

Parameters		Study population (n=400)	
		No.	%
Diet	Mixed	260	65.00
	Vegetarian	140	35.00
Appetite	Normal	369	92.25
	Disturbed	31	7.75
Sleep Pattern	Normal	386	96.50
	Disturbed	14	3.50

In the present study 65% had mixed diet and 35% were vegetarian. Normal appetite was reported in 92.25% whereas 7.75% had disturbed appetite. With regard to sleep pattern 96.50% had normal sleep pattern and 3.5% had disturbed sleep.

Table 10: Distribution of study population according to habits

Habits	Study population	
	No.	%
Gutkha or Tobacco	223	55.75
Alcohol	60	15.00
Smoking	30	7.50



In the present study 55.75% chewed gutkha/tobacco whereas 15% had the habit of consuming alcohol and 7.50% participants used to smoke.

Table 11: Distribution of study population according to type of housing, source of drinking water and toilet facility

Parameters		Study population (n=400)	
		No.	%
Type of housing	Kutchra	203	50.75
	Pucca	197	49.25
Source of drinking water	Tap	291	72.75
	Bore well	109	27.25
Toilet facility	Absent	392	98.00
	Present	8	2.00

In this study 50.25% people lived in *Kutchra* houses whereas remaining 49.25% lived in *Pucca* houses.

72.75% used tap water as source of drinking water and remaining 27.25% used bore well.

Majority (98%) practiced open air defecation. Only 2% had access to toilet facility.

Table 12: Distribution of study participants according to height, weight and body mass index

Anthropometry	Age group (In years)	Males (n=223)		Females (n=177)	
		Mean	SD	Mean	SD
		Height (Cms)	15 to 30	151.48	4.87
	30 to 45	149.70	5.80	148.14	4.33
	45 to 60	150.34	6.62	149.95	6.73
Weight (Kgs)	15 to 30	53.08	3.75	49.35	2.96
	30 to 45	52.83	4.91	50.94	4.19
	45 to 60	53.16	4.89	50.65	5.38
BMI (Kg/m ²)	15 to 30	23.21	2.33	22.80	2.20
	30 to 45	23.67	2.76	23.28	2.49
	45 to 60	23.64	2.93	22.55	2.15

In the present study the mean height of male study participants among the age group of 15 to 30 years was 151.48 ± 4.87 cms, 149.50 ± 5.80 cms in 30 to 45 years, 150.34 ± 6.62 cms in 45 to 60 years and in female study participants in 15 to 30 years it was 147.42 ± 5.25 cms, 148.14 ± 4.33 cms in 30 to 45 years 149.95 ± 6.73 cms in 45 to 60 years.

The mean weight among male study participants among the age group of 15 to 30 years was 53.08 ± 3.75 Kgs, 53.08 ± 3.75 Kgs in 30 to 45 years, $53.16 \pm$

4.89 Kgs in 45 to 60 years and in female study participants in 15 to 30 years it was 49.35 ± 2.96 Kgs, 50.94 ± 4.19 Kgs in 30 to 45 years 50.65 ± 5.38 Kgs in 45 to 60 years.

The mean BMI of male study participants among the age group of 15 to 30 years was 23.21 ± 2.33 , 23.67 ± 2.76 in 30 to 45 years, 23.64 ± 2.93 in 45 to 60 years. Among female study participants mean BMI in the age group of 15 to 30 years was 22.80 ± 2.20 , 23.28 ± 2.49 in 30 to 45 years 22.55 ± 2.15 in 45 to 60 years.

Table 13: Distribution of study population according to built and nutrition

Parameters		Study population (n=400)	
		No.	%
Built	Heavy	5	1.25
	Moderate	383	95.75
	Poor	12	3.00
Nutrition	Adequate	333	83.25
	Inadequate	67	16.75

In the present study population majority (95.75%) were moderately built followed by poorly built (3%) and heavily built (1.25%).

In the present study 83.25% had adequate nutrition, whereas 16.75% had inadequate nutrition.

Table 14: Distribution of study population according to general physical examination findings and vital signs

Findings		Study population (n=400)	
		No.	%
General physical examination	Pallor	124	31.00
	Fever	43	10.75
	Skin abnormalities	18	4.50
	Icterus	2	0.50
	Kyphosis	1	0.25
Vital signs	Tachycardia	81	20.25
	Tachypnoea	39	9.75
	Hypertension	69	17.25

In the present study majority (31%) had pallor, followed by fever (10.75%), skin abnormalities (4.5%), icterus (0.5%) and kyphosis (0.25%).

In the present study 20.25% had tachycardia and 9.75% had tachypnoea. The blood pressure findings revealed 17.25% of patients with hypertension.

Table 15: Distribution of study population according to systemic examination

Systems	Study population (n=400)		
	No.	%	
Oral cavity	286	71.50	
Musculoskeletal system	87	21.75	
Eyes	Cataract	44	11.00
	Conjunctivitis	9	2.25
	Refractive errors	4	1.00
Skin	Itch mark	27	6.75
	Rash and erythema	27	6.75
	Hypopigmented patch	1	0.25
GIT		42	10.50
RS	Rhonchi	25	6.25
	Crepitations	14	3.50
CNS		6	1.50
GUT		1	0.25
Ears		1	0.25

In the present study majority (71.5%) had poor oral hygiene followed by musculoskeletal abnormalities (21.75%), eyes (11% had cataract, 2.25% had conjunctivitis, 1% had refractive errors), skin (6.75% had itch marks, 6.75% rashes, 0.25% had hypopigmented patches), gastrointestinal system (10.5%), respiratory system (6.25% had rhonchi and 3.50% had crepitations), central

nervous system (1.50%), genitourinary tract findings (0.25%) and ear problems (0.25%).

Table 16: Distribution of study population according to provisional diagnosis (n=400)

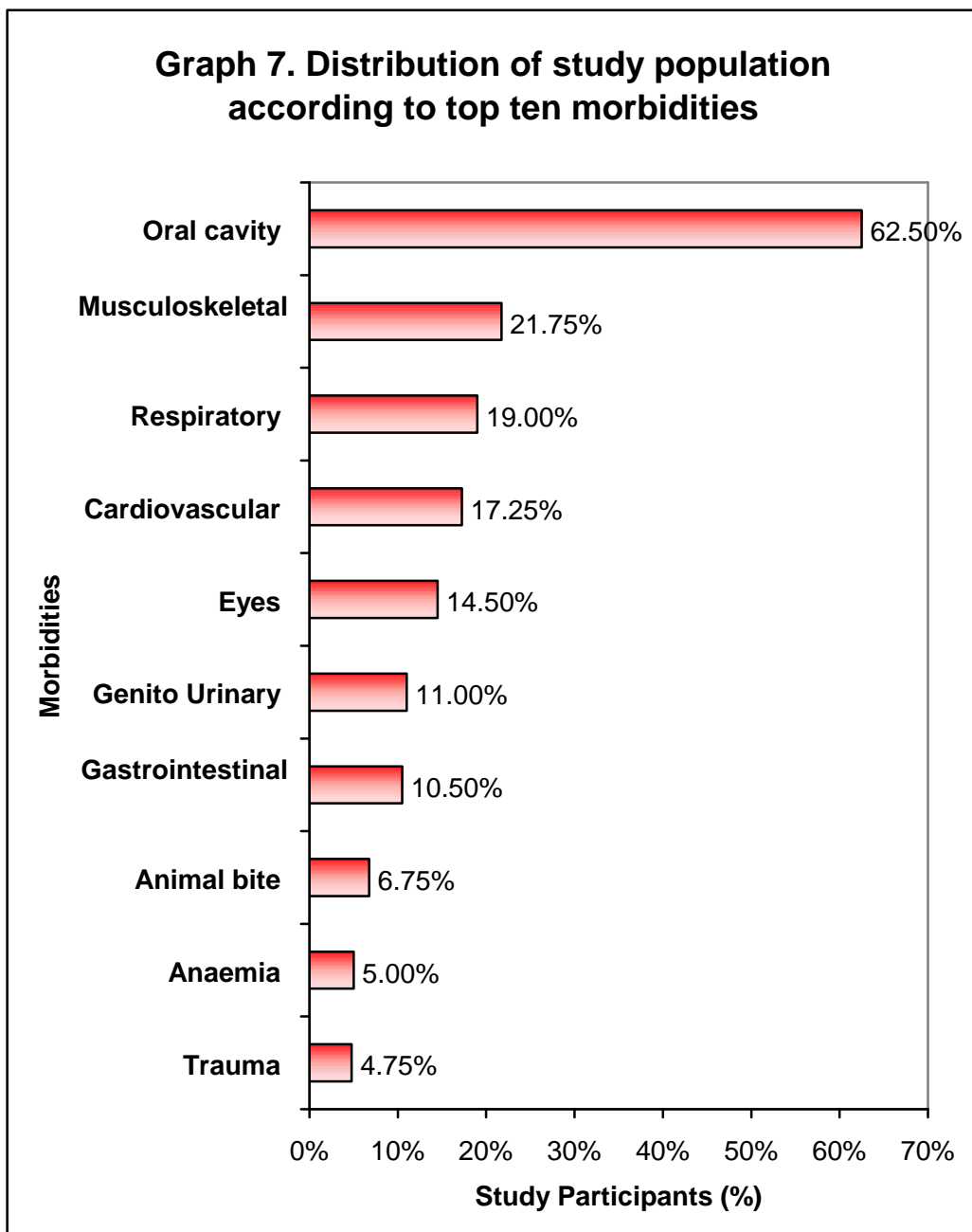
	Provisional diagnosis	Study population	
		No.	%
Oral cavity	Dental caries	102	25.50
	Dental stains	87	21.75
	Dental calculus	46	11.50
	Oral submucous fibrosis	15	3.75
Musculoskeletal system	Osteoarthritis	61	15.25
	Sciatica	23	5.75
	Spondylosis	3	0.75
Respiratory system	Upper respiratory tract infections	37	9.25
	Lower respiratory tract infections	37	9.25
Cardiovascular system	Hypertension	69	17.25
Eyes	Cataract	39	9.75
	Conjunctivitis	10	2.50
	Refractive errors	7	1.75
Genito urinary system	Urinary tract infections	24	6.00
	Leucorrhoea	19	4.75
	Pelvic inflammatory diseases	1	0.25
Gastrointestinal system	Gastritis	22	5.50
	Acute gastroenteritis	20	5.00
Skin	Scabies	17	4.25
	Vitiligo	1	0.25
Central nervous system	Stroke	5	1.25
Ears	Otitis media	1	0.25
Nutrition	Anaemia	20	5.00
Endocrine system	Diabetes mellitus	6	1.50
Trauma		19	4.75
*Animal bites/Insect bites		27	6.75

(*Animal/insect bites included snake bites, rat bite and honey bee bites)

In the present study among the study participants majority (62%) suffered from morbidity associated with oral cavity like dental caries (25.50%), dental stain (21.75%), dental calculus (11.50%) and oral submucous fibrosis (3.75%). The other morbidities seen were as mentioned in Table 17.

Table 17: Distribution of study population according to top ten morbidities

	Morbidities	Percentage
1	Oral cavity	62.50
2	Musculoskeletal system	21.75
3	Respiratory system	19.00
4	Cardiovascular system	17.25
5	Eyes	14.50
6	Genito urinary system	11.00
7	Gastrointestinal system	10.50
8	Animal bite	6.75
9	Anaemia	5.00
10	Trauma	4.75



In the present study majority (62.5%) of the study participants had morbidities associated with oral cavity followed by musculoskeletal system (21.75%) and respiratory system (19%).

Table 18: Distribution of study population according to remedies sought

Remedies sought	Study population (n=400)	
	No.	%
Home remedy	268	67.00
Health care provider	132	33.00
Total	400	100.00

In this study 67% took home remedies and 33% visited a health care provider.

Table 19: Distribution of study population according to health seeking behaviour

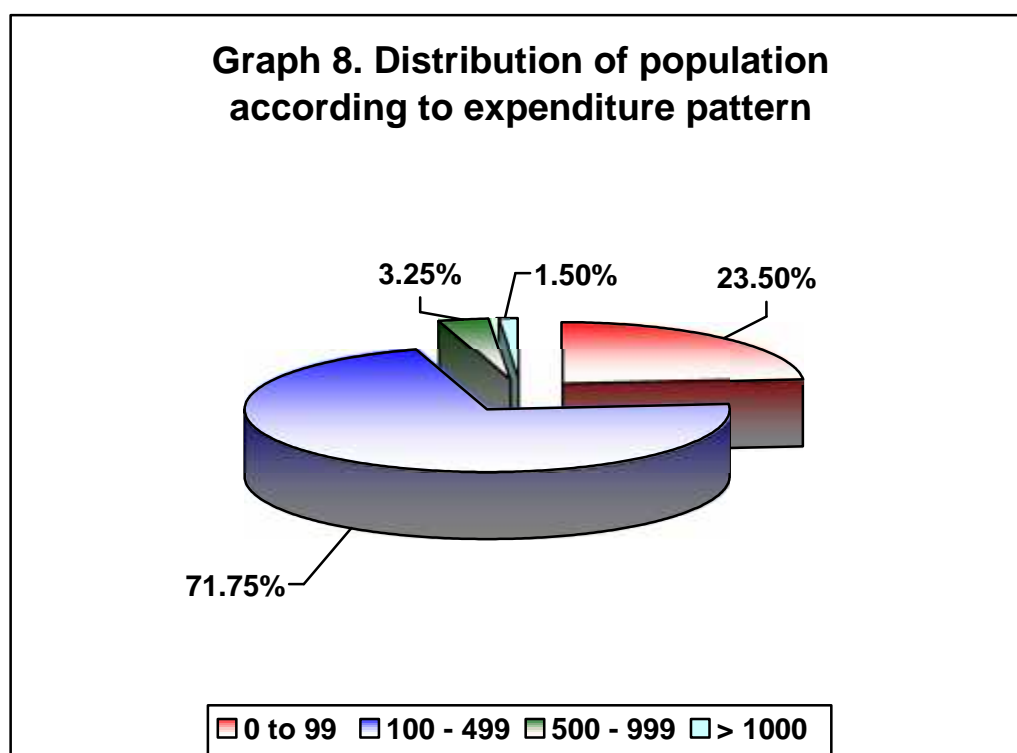
Health care provider	First priority		Second priority	
	No.	%	No	%
Government doctor	195	48.75	73	18.25
Private /AYUSH practitioner	112	28.00	143	35.75
Anganwadi worker	49	12.25	0	0
Auxiliary nurse midwife	40	10.00	0	0
Pharmacist	4	1.00	0	0
Total	400	100.00	216	54.00

In the present study 48.75% opted for government doctor, 28% private doctor, 12.25% anganwadi worker, 10% auxiliary nurse midwives and one

percent pharmacist as first priority health care provider for their illnesses. In 216 (54%) cases 73 (18.25%) opted government doctor and 143 (35.75%) preferred private or AYUSH practitioners, in case of illness was not cured or not satisfied with the treatment given by first health care provider.

Table 20: Distribution of population according to expenditure pattern

Expenditure pattern (Rupees per episode)	Study population	
	No.	%
0-99	94	23.50
100 – 499	287	71.75
500 – 999	13	3.25
> 1000	6	1.50
Total	400	100.00



In the present study the expenditure for one episode of illness was Rs. 0 - 99 among 23.50%, Rs. 100 – 499 among 71.75%, Rs. 500 – 999 among 3.25% and Rs. >1000 among 1.5%. The per capita expenditure per episode of illness was Rs. 173.80 (US \$ = 3.86).

Table 21: Distribution of study population according to money borrowed for episode of illness

Amount of money borrowed (Rupees per episode)	Study population	
	No.	%
Did not borrow	244	61.00
< 99	75	18.75
100	81	20.25
Total	400	100.00

In the present study for episode of illness, 18.75% borrowed less than Rs. 99 and 20.25% more than Rs. 100 and rest did not borrow any money for seeking healthcare. The average amount of money borrowed was Rs. 127.11 per episode (US \$ = 2.82).

Table 22: Distribution of study population according to loss of working days per episode of illness

Loss of working days per episode of illness	Study population	
	No.	%
< 2 days	38	9.50
3 – 5 days	297	74.25
> 5 days	65	16.25
Total	400	100.00

In the present study, among the study participants 38 (9.50%) had loss of working days of less than 2, 297 (74.25%) had loss of 3 – 5 days, 65 (16.25%) had loss of more than five days. The per capita loss of working period for each episode was 4.2 days.

Table 23: Association of gender with morbidity pattern

Provisional diagnosis		Male (n=223)		Female (n=177)		Total (n=400)	
		No.	%	No.	%	No.	%
Oral cavity	Dental caries	62	27.8	40	22.6	102	25.50
	Dental stain	60	26.9	27	15.3	87	21.75
	Dental calculus	28	12.6	18	10.2	46	11.50
	OSMF	9	4	6	3.4	15	3.75
		$x^2=18.214$		df=4		p= 0.001	
MSS	Osteoarthritis	39	17.5	22	12.4	61	15.25
	Sciatica	17	7.6	6	3.4	23	5.75
	Spondylosis	2	0.9	1	0.6	03	0.75
		$x^2=5.989$		df=2		p= 0.050	
RS	URTI	16	7.2	21	11.9	37	9.25
	LRTI	25	11.2	12	6.8	37	9.25
		$x^2=4.441$		df=2		p= 0.109	
CVS	Hypertension	44	19.7	25	14.2	69	17.25
		$x^2=2.173$		df=1		p= 0.140	
Eyes	Cataract	24	10.8	15	8.5	39	9.75
	Conjunctivitis	6	2.7	4	2.3	10	2.50
	RE	2	0.9	5	2.8	7	1.75
		$x^2=2.706$		df=2		p= 0.439	
GUT	UTI	4	1.8	20	11.3	24	6.00
	Leucorrhoea	0	0	19	10.7	19	4.75
	PID	0	0	1	0.6	1	0.25
GI System	Gastritis	18	8.1	4	2.3	22	5.50
	AGE	6	2.7	14	7.9	20	5.00
		$x^2=11.440$		df=2		p= 0.003	
Skin	Scabies	11	4.9	6	3.4	17	4.25
	Vitiligo	1	0.4	0	0	1	0.25
		$x^2=0.577$		df=1		p= 0.577	
CNS	Stroke	5	2.2	0	0	5	1.25
		$x^2=2.407$		df=1		p= 0.121	
Ears	Otitis media	1	0.4	0	0	1	0.25
Nutrition	Anaemia	1	0.4	19	10.7	20	5.00
			$x^2=19.867$		df=1		p= 0.000
Endocrine	DM	2	0.9	4	2.3	6	1.50
		$x^2=0.489$		df=1		p= 0.483	
Trauma		15	6.7	4	2.3	19	4.75
		$x^2=3.419$		df=1		p= 0.064	
Animal bites		25	11.2	2	1.1	27	6.75
		$x^2=15.932$		df=1		p= 0.000	

In the present study significant association was found between morbidities of oral cavity, musculoskeletal system, gastro intestinal system, anaemia and animal bites with gender.

Table 24: Association of age with morbidity pattern

System	Morbidity	Age groups (In Years)						Total	
		15 – 30		30 – 45		45 – 60		No	%
		No	%	No	%	No	%	No	%
Oral cavity	Dental caries	13	14.9	51	32.5	38	24.4	102	25.50
	Dental stain	10	11.5	27	17.2	50	32.1	87	21.75
	Dental calculus	5	5.7	22	14.0	19	12.2	46	11.50
	OSMF	3	3.4	4	2.5	8	5.1	15	3.75
		$\chi^2=47.614$		$df=8$		$p=0.000$			
MSS	Osteoarthritis	1	1.1	29	18.5	31	19.9	61	15.25
	Sciatica	4	4.6	6	3.8	1.3	8.3	23	5.75
	Spondylosis	0	0	1	0.6	2	1.3	3	0.75
		$\chi^2=21.528$		$df=4$		$p=0.000$			
RS	URTI	22	25.3	10	6.4	5	3.2	37	9.25
	LRTI	3	3.4	18	11.5	16	10.3	37	9.25
		$\chi^2=51.829$		$df=2$		$p=0.000$			
CVS	Hypertension	2	2.2	14	8.9	53	34.0	69	17.25
		$\chi^2=70.839$		$df=3$		$p=0.000$			
Eyes	Cataract	0	0.0	0	0.0	39	25.0	39	9.75
	Conjunctivitis	2	2.3	3	1.9	5	3.2	10	2.50
	RE	0	0.0	3	1.9	4	2.6	7	1.75
		$\chi^2=70.839$		$df=3$		$p=0.000$			
GUT	UTI	14	16.1	10	6.4	0	0	24	6.00
	Leucorrhoea	3	3.4	11	7.0	5	3.2	19	4.75
	PID	0	0.0	1	0.6	0	0.0	1	0.25
GI System	Gastritis	8	9.2	8	5.1	6	3.8	22	5.50
	AGE	6	6.9	9	5.7	5	3.2	20	5.00
		$\chi^2=5.295$		$df=4$		$p=0.258$			
Skin	Scabies	4	4.6	12	7.6	1	0.6	17	4.25
	Vitiligo	4	4.6	12	7.6	1	0.6	1	0.25
CNS	Stroke	0	0.0	0	0.0	5	3.2	5	1.25
		$\chi^2=5.535$		$df=1$		$p=0.018$			
Ears	Otitis media	0	0.0	1	0.6	0	0.0	1	0.25
		$\chi^2=0.470$		$df=1$		$p=0.493$			
Nutrition	Anaemia	8	6.2	12	7.6	0	0.0	20	5.00
		$\chi^2=13.460$		$df=1$		$p=0.000$			
Endocrine	DM	0	0.0	0	0.0	6	3.8	6	1.50
		$\chi^2=7.102$		$df=1$		$p=0.007$			
Trauma		4	4.6	7	4.5	8	5.1	19	4.75
		$\chi^2=0.083$		$df=2$		$p=0.959$			
Animal bites		8	9.2	13	8.3	6	3.8	27	6.75
		$\chi^2=3.500$		$df=2$		$p=0.174$			

In the present study significant association was found between morbidities of oral cavity, musculoskeletal system, respiratory system, cardiovascular system, eyes, central nervous system, anaemia and endocrine system with increasing age.

Table 25: Association of education with morbidity pattern

System	Morbidities	Educational Status								Total	
		Illiterate (=188)		1-5 (n=152)		6-10 (n=58)		>10 (n=2)			
		No	%	No	%	No	%	No	%	No	%
Oral cavity	Dental caries	54	28.2	34	22.4	14	24.1	0	0.0	102	25.50
	Dental stain	48	25.5	27	17.8	12	20.7	0	0.0	87	21.75
	Dental calculus	22	11.7	21	13.8	3	5.2	0	0.0	46	11.50
	OSMF	11	5.9	3	3.2	1	1.7	0	0.0	15	3.75
				$\chi^2=19.597$		$df=8$		$p=0.012$			
MSS	Osteoarthritis	43	22.9	15	9.9	3	5.2	0	0.0	61	15.25
	Sciatica	9	4.8	13	8.6	1	1.7	0	0.0	23	5.75
	Spondylosis	2	1.1	1	0.7	0	0.0	0	0.0	3	0.75
				$\chi^2=21.230$		$df=4$		$p=0.000$			
RS	URTI	8	4.3	17	11.2	11	19.0	1	0.7	37	9.25
	LRTI	22	11.7	13	8.6	2	3.4	0	0.0	37	9.25
				$\chi^2=17.103$		$df=4$		$p=0.002$			
CVS	Hypertension	54	28.8	13	8.6	1	0.7	2	1.1	69	17.25
				$\chi^2=31.325$		$df=2$		$p=0.000$			
Eyes	Cataract	33	17.6	6	3.9	0	0.0	0	0.0	39	9.75
	Conjunctivitis	6	3.2	3	2.0	1	1.7	0	0.0	10	2.50
	RE	2	1.1	4	2.6	1	1.7	0	0.0	7	1.75
				$\chi^2=27.369$		$df=6$		$p=0.000$			
GUT	UTI	5	2.7	10	6.6	9	15.5	0	0.0	24	6.00
	Leucorrhoea	14	7.4	5	3.3	0	0.0	0	0.0	19	4.75
	PID	1	0.5	0	0.0	0	0.0	0	0.0	1	0.25
GI System	Gastritis	6	3.2	12	7.9	3	5.2	1	1.7	22	5.50
	AGE	4	2.1	9	5.9	7	12.1	0	0.0	20	5.00
				$\chi^2=13.410$		$df=4$		$p=0.009$			
Skin	Scabies	2	1.1	9	5.9	6	10.3	0	0.0	17	4.25
	Vitiligo	1	1.5	0	0.0	0	0.0	0	0.0	1	0.25
				$\chi^2=8.628$		$df=2$		$p=0.013$			
CNS	Stroke	5	2.7	0	0.0	0	0.0	0	0.0	5	1.25
				$\chi^2=3.758$		$df=1$		$p=0.052$			
Ears	Otitis media	1	0.5	0	0.0	0	0.0	0	0.0	1	0.25
				$\chi^2=0.004$		$df=1$		$p=0.949$			
Nutrition	Anaemia	9	4.8	7	4.6	4	6.9	0	0.0	20	5.00
				$\chi^2=0.419$		$df=2$		$p=0.811$			
Endocrine	DM	4	2.1	2	1.3	0	0.0	0	0.0	6	1.50
				$\chi^2=0.314$		$df=1$		$p=0.575$			
Trauma		5	2.7	8	5.3	6	10.3	0	0.0	19	4.75
				$\chi^2=5.559$		$df=2$		$p=0.062$			
Animal bites		5	2.7	17	11.2	5	8.6	0	0.0	27	6.75
				$\chi^2=9.984$		$df=2$		$p=0.007$			

In the present study significant association was found between morbidities of oral cavity, musculoskeletal system, respiratory system, cardiovascular system, eye, gastrointestinal system, skin and animal bites with educational status.

Table 26: Association of socio economic status with morbidity pattern

System	Morbidity	Socio economic status						Total	
		Class V (n=295)		Class IV (n=83)		Class III (n=22)		No	%
		No	%	No	%	No	%		
Oral cavity	Dental caries	77	26.1	17	20.5	8	36.4	102	25.50
	Dental stain	67	22.7	17	20.5	3	13.6	87	21.75
	Dental calculus	32	10.8	11	3.3	3	13.6	46	11.50
	OSMF	14	4.7	1	1.2	0	0.0	15	3.75
		$\chi^2=7.592$		df=8		p= 0.473			
MSS	Osteoarthritis	40	13.6	13	15.7	8	36.4	61	15.25
	Sciatica	2	0.7	1	1.2	0	0.0	23	5.75
	Spondylosis	17	5.8	5	6	1	4.5	3	0.75
		$\chi^2=8.635$		df=6		p=0.195			
RS	URTI	26	8.8	11	13.3	0	0.0	37	9.25
	LRTI	32	10.8	3	3.6	2	9.1	37	9.25
		$\chi^2=7.513$		df=4		p= 0.111			
CVS	Hypertension	48	19.7	6	7.2	5	22.7	69	17.25
		$\chi^2=5.390$		df=2		p= 0.068			
Eyes	Cataract	24	8.1	11	3.3	4	18.2	39	9.75
	Conjunctivitis	6	2.0	3	3.6	1	4.5	10	2.50
	RE	7	2.4	0	0.0	0	0.0	7	1.75
		$\chi^2=7.313$		df=6		p= 0.293			
GUT	UTI	15	5.1	8	9.6	1	4.5	24	6.00
	Leucorrhoea	15	5.1	4	4.8	0	0.0	19	4.75
	PID	1	0.3	0	0.0	0	0.0	1	0.25
GI System	Gastritis	19	6.4	1	1.2	2	9.1	22	5.50
	AGE	17	5.8	3	3.6	0	0.0	20	5.00
		$\chi^2=5.936$		df=4		p= 0.240			
Skin	Scabies	12	41.0	3	3.6	2	9.1	17	4.25
	Vitiligo	1	0.3	0	0.0	0	0.0	1	0.25
		$\chi^2=1.236$		df=2		p= 0.539			
CNS	Stroke	5	1.7	0	0.0	0	0.0	5	1.25
		$\chi^2=0.690$		df=1		p= 0.406			
Ears	Otitis media	1	0.3	0	0.0	0	0.0	1	0.25
		$\chi^2=0.292$		df=1		p= 0.589			
Nutrition	Anaemia	3	4.1	5	6.0	2	9.1	20	5.00
		$\chi^2=1.177$		df=2		p= 0.555			
Endocrine	DM	4	1.4	2	2.4	0	0.0	6	1.50
		$\chi^2=0.005$		df=1		p= 0.943			
Trauma		12	4.1	5	6.0	2	9.1	19	4.75
		$\chi^2=1.51$		df=2		p= 0.468			
Animal bites		20	6.8	6	7.2	1	4.5	27	6.75
		$\chi^2=0.201$		df=2		p= 0.905			

In the present study no significant association was found between socioeconomic status and morbidity patterns.

Table 27: Association of gender with health seeking behaviour

Priority	Treatment seeking	Gender				Total	
		Male		Female		No	%
		No	%	No	%		
First	Government doctor	126	31.50	69	17.25	195	48.75
	Private /AYUSH	68	17	44	11	112	28.00
	Anganwadi worker	20	9.00	29	16.40	49	12.25
	ANM	7	3.10	30	18.60	40	10.00
	Pharmacist	2	0.5	2	0.5	4	1.00
		$\chi^2=35.537$			df=4		p= 0.000
Second	Government doctor	25	24.00	48	42.90	73	18.25
	Private /AYUSH	79	76.00	64	57.10	143	35.75
	Anganwadi worker	-	-	-	-	0	0.00
	ANM	-	-	-	-	0	0.00
	Pharmacist	-	-	-	-	0	0.00
		$\chi^2=8.535$			df=1		p= 0.003

In the present study male study participants sought treatment outside more than that of female study participants for episode of illness.

Table 28: Association of age with health seeking behaviour

Priority	Treatment seeking	Age group (in years)						Total	
		15-30		30 – 45		45 – 60		No	%
		No	%	No	%	No	%		
First	Government doctor	31	35.6	77	49.0	87	55.8	195	48.75
	Private /AYUSH	25	28.7	46	29.3	41	26.3	112	28.00
	Anganwadi worker	14	16.1	18	11.5	17	10.9	49	12.25
	ANM	16	18.4	15	9.6	9	5.8	40	10.00
	Pharmacist	1	1.1	1	0.6	2	1.3	4	1.00
		$\chi^2=14.360$			df=6				p= 0.026
Second	Government doctor	25	46.3	27	29.7	21	29.6	73	18.25
	Private /AYUSH	29	53.7	64	70.3	50	70.4	143	35.75
	Anganwadi worker	-	-	-	-	-	-	-	-
	ANM	-	-	-	-	-	-	-	-
	Pharmacist	-	-	-	-	-	-	-	-
		$\chi^2=5.028$			df=2				p= 0.081

In the present study significant association was found between increasing age and treatment seeking behaviour.

Table 29: Association of age with expenditure pattern

Expenditure pattern (Rs/episode)	Age group (in years)						Total		
	15 – 30		30 – 45		45 – 60				
	No	%	No	%	No	%	No	%	
0-99	36	41.4	32	20.4	26	16.7	94	23.50	
100 – 499	51	58.6	116	73.9	115	73.7	287	71.75	
500 - 999	0	0	7	4.5	11	7.1	13	3.25	
1000	0	0	2	1.3	4	2.6	6	1.50	
		$\chi^2=26.447$			df=4		p= 0.000		

Significant association was found between increasing age and expenditure pattern.

Table 30: Association of educational status with expenditure pattern

Expenditure pattern (Rs/episode)	Educational Status								Total	
	Illiterate		1- 5		6 – 10		> 10			
	No	%	No	%	No	%	No	%	No	%
0-99	35	18.6	40	26.3	19	32.8	-	-	94	23.50
100 - 499	140	74.5	101	66.4	39	67.2	2	100	282	71.75
500 - 999	9	4.8	9	5.9	0	0	0	0	18	3.25
1000	4	2.1	2	1.3	0	0	0	0	6	1.50
		$\chi^2=9.187$			df=4		p= 0.057			

No significant association was found between expenditure pattern and educational status.

- No significant association was found between socio-economic status with morbidity pattern and health seeking behaviour. (Table not shown)
- No significant association was found between expenditure pattern with education and socio economic status. (Table not shown)

DISCUSSION

The present study was conducted in 400 agricultural workers in primary health centre area of Vantamuri, which is the rural field practice area of Department of Community Medicine, J. N. Medical College, KLE University, Belgaum during January 2009 to December 2009.

Socio-Demographic characteristics of study population (Tables 1 – 5)

In the present study 35% of study population belonged to Bhutaramanahatti 14.25% to Desarwadi, 13.75% to Ukkad, 13% to Ghugranatti, 12.50% to Gurlhosur and 11.50% to Bengali. 55.75% were males, where as 44.25% were females.

Equal distribution (39%) was seen in the age group of 30 to 45 years and 45 to 50 years. There were 21.75% people with age between 15 to 30 years.

Majority of the study subjects (89.5%) were Hindus and 10.5% were Muslims. Among study participants 47% were illiterates, 38% had studied first to fifth standard and 14.5% completed sixth to tenth standard and 0.5% studied more than tenth standard.

In the study population majority (85.75%) of study population were married, 7% were unmarried and 7.25% were widow/widowers.

Two third of study participants belonged to nuclear family and 30% belonged to joint family. Majority (73.7%) belonged to Class V socio-economic

status, 20% to Class IV and 8.1% to Class III as per modified B.G. Prasad's classification.

Assets and liabilities (Tables 6 – 8)

Two third of the study participants (78.75%) had irrigated land.

Most agricultural workers (79%) took loan either from co-operative society or from banks (26%) or from land lords (17.75%). Neither of the study participant opted for any insurance (crop/health/life) in the year proceeding to survey, nor were they members of any self help group or Mahila Mandal.

In the study population majority (90%) had immovable assets and 6% had movable assets. Around two third of study participants had buffaloes, 18.5% had cows, 10.5% had goats, 6.50% had sheep's and 1.25% had chicken. Majority (92.25%) population possessed BPL ration cards and 7.5% possessed APL ration cards.

A study conducted in 2000 reported that as for health insurance, most Indians are not covered by any insurance schemes, but small minority that was covered, mostly belonged to organized urban sector; the rural population had almost no insurance coverage at all.³²

Personal history (Tables 9 -10)

In the present study 65% preferred mixed diet and 35% were vegetarians. 92.25% had normal appetite and 7.75% had disturbed appetite. 96.50% had normal sleep pattern and 3.5% had disturbed sleep.

In the present study 55.75% chewed gutkha/tobacco whereas, 15% had habit of consuming alcohol and 7.50% participants used to smoke.

Environmental history (Table 11)

In the present study 50.25% people lived in kutchha houses where as remaining 49.25% lived in pucca houses. 72.75% used tap water as source of drinking water and remaining 27.25% used bore wells. Most (98%) practiced open air defecation. Only 2% had access to toilet facility.

Anthropometry (Table 12-13)

In the present study the mean height of male study participants among the age group of 15 to 30 years was 151.48 ± 4.87 cms, 149.50 ± 5.80 cms in 30 to 45 years and 150.34 ± 6.62 cms in 45 to 60 years. In female study participants in 15 to 30 years it was 147.42 ± 5.25 cms, 148.14 ± 4.33 cms in 30 to 45 years 149.95 ± 6.73 cms in 45 to 60 years.

The mean weight among male study participants among the age group of 15 to 30 years was 53.08 ± 3.75 Kgs, 53.08 ± 3.75 Kgs in 30 to 45 years, 53.16 ± 4.89 Kgs in 45 to 60 years. In female study participants in 15 to 30 years it was 49.35 ± 2.96 Kgs, 50.94 ± 4.19 Kgs in 30 to 45 years 50.65 ± 5.38 Kgs in 45 to 60 years.

The mean BMI of male study participants among the age group of 15 to 30 years was 23.21 ± 2.33 , 23.67 ± 2.76 in 30 to 45 years, 23.64 ± 2.93 in 45 to 60 years respectively. Among female study participants mean BMI in the age

group of 15 to 30 years was 22.80 ± 2.20 , 23.28 ± 2.49 in 30 to 45 years 22.55 ± 2.15 in 45 to 60 years.

Morbidity pattern (Table 14-17)

In the present study among the study participants majority (62%) suffered from morbidity associated with oral cavity like dental caries (25.50%), dental stains (21.75%), dental calculus (11.50%) and oral sub-mucous fibrosis (3.75%) followed by musculoskeletal system (21.75%) and respiratory system (19%).

A study in 2006 showed that women farmers in mixed cropping systems found that the vast majority suffered from intense muscular fatigue heat exhaustion and skin disorders.⁴

According to ILO, the agricultural sector is one of most hazardous health world wide. Agricultural work possesses several characteristics that are risky for health; exposure to wealth, close contact with animals and plant, extensive use of chemicals and biological products, difficult working posture and lengthy house and use of hazardous agricultural tools and machinery.¹⁶

Health seeking behaviour (Table 18-19)

In the present study 67% took home remedies and 33% visited health care provider. 48.75% opted for government doctor, 28% private doctor, 12.25% anganwadi worker, 10% auxiliary nurse midwives and one percent pharmacist as first priority health care provider for this illness. In 54% cases 18.25% opted government doctors and 35.75% preferred private or AYUSH practitioners in

case illness was not cured or not satisfied with the treatment given by first health care provider.

Expenditure Pattern (Table 20-22)

In the present study the per capita expenditure per episode of illness was Rs. 173.80 (US\$=3.84).

A study done in Narangawal in sixth and seventh decades, recorded household health expenditure. The study showed that private health expenditure of Rs. 7.65 and 21.30, respectively per capita per year. Another study in North Arcot (1973) recorded Rs. 80 per family per year. NIHAIE in 1973 recorded Rs. 72 per family in rural Delhi.⁴¹

In the present study among 400 study participants 61% did not borrow any money for seeking health cure. The average amount of money borrowed was Rs. 127.1(US\$=2.82) per episode of illness. The per capita loss of working period of each episode was 4.2 days.

Association of gender with morbidity pattern (Table 23)

Increasing age, gender and poor educational status were significantly associated with morbidities of oral cavity, musculoskeletal system, respiratory system anaemia and animal bites.

Association of age with morbidity pattern (Table 24)

In the present study significant association was found between morbidities of oral cavity like dental caries, dental stain, dental calculus, Oral submucous

fibrosis, musculoskeletal system, morbidity like osteoarthritis, sciatica, spondylosis, respiratory system, morbidities like upper respiratory tract infection, lower respiratory tract infection, hypertension, eye morbidities, stroke, anaemia, diabetes mellitus with increasing age.

Association of education with morbidity pattern (Table 25)

In the present study significant association was found between morbidities of oral cavity, musculoskeletal system, respiratory system, cardiovascular system, eyes, gastrointestinal system, skin trauma and animal bites with educational status of study participants.

Association of gender and age with health seeking behaviour and expenditure pattern (Table 26-30)

In the present study significant association was found between treatment seeking behaviour and gender. In the present study significant association was found between increasing age with health seeking behaviour and expenditure pattern.

CONCLUSION

This community based cross sectional study among 400 agricultural workers revealed that prevalence of morbidity associated oral cavity (62%) was high followed by morbidities associated with musculoskeletal system (21.75%) and respiratory system (19%). Prevalence of animal bites (6.75%) and trauma (4.75%) were also present in agricultural workers.

Most of agricultural workers (47%) were illiterate and belonged to Class V of socioeconomic status (93.75%) and most (92.25%) were below poverty line ration card holders. Most (98%) had no access to toilet and practiced open air defecation.

None of the agricultural workers had any insurance like crop or life or health insurance in last one year and were not members of any Self Help Group or Mahila Mandals. Around half of agricultural workers used to visit government doctor for their illness and one third to private or AYUSH practitioners.

Present study also revealed per capita expenditure per episode of illness which was Rs. 173.80 (US\$=3.84) and the average amount of money borrowed was Rs. 127.11(US\$=2.82) per episode. The per capita loss of working days for each episode was 4.2.

Increasing age, gender and poor educational status were significantly associated with morbidities of oral cavity, musculoskeletal system, respiratory system anaemia and animal bites. Increasing age was significantly associated with expenditure pattern.

LIMITATIONS

The limitations of the study were:

- DALY could not be estimated because of data mainly based on signs and symptoms.
- Laboratory investigations could not be done in all cases due to time restraint.
- Few references were available for comparisons on morbidity of agricultural workers in India

RECOMMENDATIONS

Based on the findings of present study following recommendations are being suggested for the improvement of health of agricultural workers by utilizing available health services.

1. Information, education and communication (IEC) activities needs to be strengthened in order to generate a favourable opinion among rural agricultural workers towards services provided by government.
2. Special health check-up camps for agriculture workers with emphasis on improvement of health.
3. Creating awareness about benefits of self help group/Mahila mandal membership.
4. Agricultural workers should be motivated to become members of community based health insurance schemes like Yashaswini.
5. Creating awareness about benefits of toilets and harms of open air defecation and effective implementation of Nirmal gram yojana.
6. Bank loans should be easily made available to agricultural workers at low interest rates.
7. IEC activities need to be strengthened to create awareness about ill effects of tobacco/Gutkha/alcohol consumption.

SUMMARY

The present study was a cross sectional study conducted in rural field practice area of Primary Health Centre Vantamuri, Belgaum using pre-designed and pre-tested questionnaire to know morbidity pattern, health seeking behaviour and expenditure pattern of agricultural workers.

The study consisted of 400 agricultural workers residing in six villages under Bhutaramanahatti Sub Centre in Vantamuri Primary Health Centre, Belgaum. The duration of study was for one year from 1st January, 2009 to 31st December, 2009.

Socio Demographic characteristics

The socio demographic characteristics of study population showed that majority of study subjects were in the age group of 30 to 45 years (34.25%) followed by 45 to 60 years (39%). Males (55.75%) were more than females (44.25%).

Majority of them were Hindus (89.5%) followed by Muslims (10.5%). According to family type 60.25% belonged to nuclear family and 35.50% belonged to joint family.

Most of the study subjects were either illiterates (47%) or had education first to fifth (38%). Majority of them belonged to class V (73.75%) followed by class IV (20.75%) socio-economic status.

Assets and liabilities

Two third of study participants had irrigated land (78.75%) and most of study participant (92.25%) possessed BPL card.

Most of agricultural workers (79%) took loan either from co-operative society or from bank (26%) or land lords (17.75%).

Neither of the study participants had opted for any insurance (Crop, Health, Life) in one year preceding the survey, nor a member of any Self Help Group or Mahila Mandal.

Majority (55.25%) of study participants had the history of chewing Gutkha or Tobacco followed by habit of drinking alcohol (15%).

Environmental conditions

Half of (50.75%) the study participants used to stay in kutchha house and remaining (49.25%) in pucca house. Two thirds (72.75%) of study population used tap water as a source of drinking water. Most (98%) had no access to toilet facility.

Morbidity pattern

In the present study among the study participants majority (62%) were suffering from morbidity associated with oral cavity, followed by morbidities associated with musculoskeletal system (21.75%) and respiratory system (19%).

Health seeking behaviour

In this study 67% took home remedy first and 48.75% opted Government doctor, 28% private doctor as first priority health care provider for this illness. In remaining (54%) study participants 37.75% preferred private or AYUSH practitioners and 18.25% opted Government doctor in case illness was not cured or not satisfied with treatment provided by first health care provider.

Expenditure pattern

In the present study majority (71.75%) study participants had spent Rs. 100 to 499 for one episode of illness. The per capita expenditure per episode of illness was Rs. 173.80 (US \$ 3.84). 39% of the study participants borrowed money and the average amount of money borrowed per episode of illness was Rs. 127.11 (US \$ 2.82). The per capita loss of working days for each episode of illness was 4.2.

Increasing age, gender and poor educational status were significantly associated with morbidities of oral cavity, musculoskeletal system, respiratory system, anaemia and animal bites. Increasing age was significantly associated with higher expenditure pattern.

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ANNEXURE I - ETHICAL CLEARANCE CERTIFICATE



K.L.E.SOCIETY'S
JAWAHARLAL NEHRU MEDICAL COLLEGE,
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Ref. No. : MDC/DOME/2158

Date: 7/10/2008

To,

Postgraduate student in
Department of Community Medicine,
J.N.Medical College,
Belgaum.

Dear

The JNMC – Institutional Ethics Committee on Human Subjects Research met on 6th October, 2008 to consider your application for approval of the research project “A CROSS-SECTIONAL STUDY OF MORBIDITY PATTERN, HEALTH SEEKING BEHAVIOR AND EXPENDITURE PATTERN OF AGRICULTURAL WORKERS RESIDING IN RURAL FIELD PRACTICE AREA, VANTAMURI, BELGAUM”.

After review of the documents submitted by you and satisfactory explanations provided to the members, the committee has provided approval date through October 5th, 2009 at which time the study will be reviewed by the committee.

If you have any questions concerning the above, please feel free to contact the committee office.

Sincerely,


(Dr. V.D. Patil)
Chairman,

JNMC Institutional Ethics Committee on
Human Subjects Research


13/10
PROFESSOR & HEAD,
Department of Community Medicine
J. N. Medical College, BELGAUM.

ANNEXURE II

INFORMED CONSENT FORM

“A CROSS SECTOINAL STUDY OF MORBIDITY PATTERN, HEALTH SEEKING BEHAVIOUR AND EXPENDITURE PATTERN OF AGRICULTURAL WORKERS RESIDING IN RURAL FIELD PRACTICE AREA, VANTAMURI, BELGAUM”.

Investigator: Dr. *****

Guide: Dr. *****

Introduction

You are being invited to participate in this study to find out morbidity pattern, health seeking behaviour and expenditure pattern of agricultural workers belonging to Rural Field Practice Area of P.H.C. Vantamuri, Belgaum.

Explanation of procedure

In this study you will have to answer a few prepared questions about your health problems like back pain, cough, fever etc. The questionnaire will also contain about activities undertaken by you in response to symptom experience and then you would be asked questions on health seeking behaviour and expenditure pattern for these health problems. The entire procedure may take about 20 to 30 minutes.

If you agree to participate, you will be continued asking questions; but the moment you don't want to continue, then you can leave.

Possible benefits

The investigator does not promise or guarantee that you will receive direct benefit being in the study. It will benefit for whole agricultural community

because by this study, we will come to know about your health problems, how do you respond, where you seek treatment and how much money you will spend. This study will surely help in future for development of farmer community.

Confidentiality

Your personal identity will not be revealed. All information will be collected and coded, so that no one will know your identity.

Withdrawal

Participation in this study is voluntary .If you don't wish to participate in this study; you will not lose benefits to which you are enrolled.

Cost of participation

The cost of study will be borne by the researcher. There will be no additional cost to you for participation in this study.

Questions

If you have any questions about this study, you can contact **Dr. ******* ***** , Postgraduate student in Community Medicine, J. N. Medical College, Belgaum, - 590010 Cell: ***** or **Dr. ******* Department of Community Medicine, J.N. Medical College, Belgaum – 590010 Cell: *****.

If you have any questions about your rights as a study participant, you may also contact Dr. **** * Principal, J. N. Medical College and Chairman, Institutional Ethics Committee on Human Subjects Research, J.N.M.C, Belgaum-590010.

Alternatives

The participant's willingness, to participate or not to participate in this study, will not influence the care being provided at P.H.C., Vantamuri by J. N. Medical College, Belgaum.

Legal rights

By signing this consent form, you are not waiving any of your legal rights.

Publication rights

The result of survey will be used for teaching and medical publication; however the participant's identity will be kept confidential.

Consent statement

"I volunteer and consent to participate in this study. I have read the content or it has been read to me in the language I can understand. The study has been fully explained to me and I may ask any questions at any time".

1. Signature or Left hand thumb impression _____

(Volunteer subject) and Name _____

2. Signature of person (obtaining consent) _____

And name _____

3. Signature of witness _____

And name _____

Date:

Place:

ANNEXURE III – PROFOMA

RESEARCH QUESTIONNAIRE

“A cross sectional study of morbidity pattern, health seeking behaviour and expenditure pattern of agricultural workers residing in rural field practice area, Vantamuri, Belgaum”

(Note: All the personal information provided during this study will be kept confidential. Only aggregated data will be published)

I] GENERAL INFORMATION

Sl. No. Village: Date of survey: _____

Name: Age: _____years Sex: M \ F

House no: Galli: _____

Religion: Hindu \ Muslim \ Others: Caste: _____

Category: SC \ ST \ OBC \ Others:

Marital status: Single\ married \ widow \ widower \ separated \ divorced

Type of family: Nuclear \ Joint \ Extended \ Broken

Family size: _____

Total income: Rs_____ / month per capita Income: Rs_____/ month

Education: Illiterate\1-5\6-10\>10

Socio Economic Status:I \ II \ III \ IV \ V (Modified BG Prasad’s classification)

II] ASSETS AND LIABILITIES

Land holding: Yes \ No

If yes: Irrigated land: _____ acres, Crops/Year: _____

Non-irrigated land: _____ acres, Crops/Year: _____

ASSETS**Yes****No**

1 Own House

2 Bullock cart

3 Tractors

Animals Yes \ No

If yes: Cow \ Buffalo \ Oxen \ Sheep \ Goats \ Chicken

Presence of Ration card: APL Card \ BPL Card \ No ration card

Loans: Yes \ No

If yes from: Banks \ Land lords \ Co-op society

Insurance in last year: Crop insurance Yes / No

Life insurance Yes / No

Health insurance Yes / No

Individual\Group based Yes / No

Are you member of any Self Help Group /Mahila Mandal? Yes / No

Personal history

A) Diet: Mixed \ Vegetarian

B) Appetite: Normal \ Disturbed

C) Sleep: Normal \ Disturbed

D) Habits: Yes \ No

If yes, duration

a) Alcohol consumption Yes \ No

b) Smoking Yes \ No

c) Tobacco chewing \ Gutkha Yes \ No

D) Any other (specify) _____

FAMILY HISTORY: DM / HTN / Asthma / Others

ENVIRONMENTAL HISTORY

Housing:

Water supply:

Sanitation: a) Solid waste

b) Liquid waste

Toilet: Open air defecation/Common Toilet/Separate toilet

III. MORBIDITY PATTERN

1) **Self reported sickness at the time of survey** [1 month preceding the date of survey]

S No.	Complaints\Disease	Duration
-------	--------------------	----------

1

2

3

OTHERS Yes / No

Type

H\o Injury \ trauma

H\o Animal bite

H\o Allergy

H\o Zoonotic disease

H/o Poison consumption

2. GENERAL PHYSICAL EXAMINATION

1. Built –Heavy \Moderate \Poor	9.Clubbing \ Kylonochia Pr /Ab
2. Nutrition – Adequate \ Inadequate	10.Lymphadenopathy Pr /Ab
3. Pallor – Pr \ Ab	11.Skin N \ Ab
4. Icterus – Pr \ Ab	12.Height_____cms Weight ____Kgs
5. Spine-N\AbN	13.BMI _____
6. Joints- N\AbN	14.PR _____\min
7. Temperature Febrile\Afebrile	15. BP_____mmHg
8. Oedemea Pr / Ab	16. RR_____min

3. SYSTEMIC EXAMINATION

1. CVS	6. MSS
2. RS	7. SKIN AND STD
3. GIT	8. ORAL CAVITY
4. CNS	9. MENTAL HEALTH
5. GUT	10.EYES Lt Rt
	EARS Lt Rt

4. PROVISIONAL DIAGNOSIS _____**IV. HEALTH SEEKING BEHAVIOUR**

1. Did you have any home remedy? Yes / No
2. Did you visit any health care provide? Yes / No
3. If yes, whom did you seek care first? ANM / AWW / Govt. Doctor
/ Pvt. Doctor / Pharmacist
/AYUSH Practitioner

4. After that, were you all right? Yes/No
5. If no, which other health facility Govt. Doctors /Pvt. Doctors
did you approach? Outpatient / Inpatient
6. After that, are you alright now? Yes/No

V. EXPENDITURE PATTERN

- a) Approximately how much money was spent by you on this episode of illness?
Rs_____ (Doctor Fee /Admission / Drugs /Travel etc)
- b) Did you borrow money for the treatment? Yes/No
If yes, how much? Rs_____
- c) Did you mortgage /sell your belonging /asset for the treatment? Yes/No
- d) How many working days were lost because of this illness? ____days

MASTER CHART

h ture n	Sale of asset for treatment	Loss of working days
	0	7
	0	8
	0	5
	0	7
	0	7
	0	7
	0	5
	0	7
	0	7
	0	7
	0	7
	0	2
	0	4
	0	4
	0	5
	0	4
	0	4
	0	4
	0	7
	0	7
	0	7
	0	2
	0	4
	0	4
	0	5
	0	4
	0	4
	0	4
	0	4
	0	2
	0	7
	0	7
	0	6
	0	6
	0	5
	0	2
	0	4
	0	4
	0	7
	0	4
	0	2
	0	2
	0	2
	0	2
	0	4

MASTER CHART

h ture n	Sale of asset for treatment	Loss of working days
	0	2
	0	4
	0	2
	0	2
	0	4
	0	4
	0	4
	0	4
	0	4
	0	4
	0	3
	0	2
	0	3
	0	4
	0	4
	0	4
	0	4
	0	3
	0	3
	0	2
	0	2
	0	2
	0	4
	0	2
	0	4
	0	4
	0	6
	0	4
	0	2
	0	4
	0	5
	0	8
	0	4
	0	4
	0	4
	0	3
	0	4
	0	3
	0	4
	0	2
	0	4
	0	4
	0	2
	0	2
	0	4

MASTER CHART

h ture n	Sale of asset for treatment	Loss of working days
	0	2
	0	2
	0	4
	0	2
	0	2
	0	2
	0	4
	0	4
	0	4
	0	6
	0	4
	0	4
	0	4
	0	2
	0	4
	0	4
	0	4
	0	2
	0	4
	0	4
	0	4
	0	2
	0	6
	0	6
	0	6
	0	8
	0	8
	0	6
	0	4
	0	6
	0	5
	0	5
	0	5
	0	6
	0	5
	0	5
	0	4
	0	5
	0	4
	0	5

MASTER CHART

h ture n	Sale of asset for treatment	Loss of working days
	0	4
	0	5
	0	4
	0	4
	0	4
	0	4
	0	4
	0	4
	0	4
	0	4
	0	6
	0	4
	0	4
	0	4
	0	4
	0	4
	0	4
	0	4
	0	4
	0	4
	0	4
	0	4
	0	4
	0	4
	0	4
	0	4
	0	8
	0	4
	0	6
	0	8
	0	4
	0	5
	0	4
	0	4
	0	6
	0	2
	0	4
	0	6
	0	4
	0	3
	0	4
	0	4
	0	4
	0	3
	0	4

MASTER CHART

h ture n	Sale of asset for treatment	Loss of working days
	0	4
	0	3
	0	4
	0	5
	0	4
	0	4
	0	4
	0	4
	0	4
	0	5
	0	6
	0	3
	0	4
	0	4
	0	5
	0	6
	0	4
	0	6
	0	4
	0	6
	0	4
	0	2
	0	3
	0	4
	0	4
	0	3
	0	4
	0	4
	0	4
	0	5
	0	6
	0	4
	0	6
	0	4
	0	2
	0	3
	0	4
	0	4
	0	6
	0	3
	0	4
	0	4
	0	4
	0	4
	0	3
	0	4
	0	4
	0	5

MASTER CHART

h ture n	Sale of asset for treatment	Loss of working days
	0	6
	0	4
	0	5
	0	5
	0	2
	0	2
	0	3
	0	4
	0	4
	0	2
	0	4
	0	3
	0	4
	0	6
	0	4
	0	4
	0	6
	0	4
	0	8
	0	6
	0	4
	0	2
	0	5
	0	7
	0	4
	0	3
	0	3
	0	4
	0	4
	0	5
	0	4
	0	4
	0	4
	0	3
	0	2
	0	6
	0	4
	0	2
	0	3
	0	4
	0	4
	0	5
	0	3

MASTER CHART

h ture n	Sale of asset for treatment	Loss of working days
	0	4
	0	4
	0	4
	0	4
	0	4
	0	4
	0	3
	0	3
	0	4
	0	6
	0	4
	0	4
	0	4
	0	3
	0	2
	0	4
	0	4
	0	5
	0	2
	0	4
	0	8
	0	3
	0	4
	0	5
	0	4
	0	4
	0	4
	0	4
	0	3
	0	4
	0	4
	0	3
	0	4
	0	4
	0	3
	0	4
	0	8
	0	5
	0	6
	0	3
	0	4
	0	4
	0	3
	0	4
	0	4

MASTER CHART

h ture n	Sale of asset for treatment	Loss of working days
	0	4
	0	3
	0	4
	0	4
	0	4
	0	5
	0	6
	0	3
	0	4
	0	4
	0	3
	0	4
	0	4
	0	4
	0	8
	0	5
	0	6
	0	3
	0	4
	0	4
	0	6
	0	3
	0	4
	0	4
	0	3
	0	3

ANNEXURE IV - KEY TO MASTER CHART

Village

- | | | |
|---|---|--------------|
| 1 | - | Bhutaramatti |
| 2 | - | Desarwadi |
| 3 | - | Ukkad |
| 4 | - | Bennali |
| 5 | - | Gurlhosur |
| 6 | - | Ghugranatti |

Gender

- | | | |
|---|---|--------|
| 1 | - | Male |
| 2 | - | Female |

Religion

- | | | |
|---|---|--------|
| 1 | - | Hindu |
| 2 | - | Muslim |

Education

- | | | |
|---|---|----------------|
| 1 | - | Illiterate |
| 2 | - | First to fifth |
| 3 | - | Sixth to tenth |
| 4 | - | Tenth plus |

Marital Status

- | | | |
|---|---|----------------------|
| 1 | - | Married |
| 2 | - | Widow/widower |
| 3 | - | Single |
| 4 | - | Divorced / separated |

Type of family

- 1 - Joint
- 2 - Nuclear
- 3 - Broken

Socio economic status (As per Modified B. G. Prasad's Classification)

- 1 - Class I
- 2 - Class II
- 3 - Class III
- 4 - Class IV
- 5 - Class V

Land holding

- 0 - No Land
- 1 - Land holding

Irrigation and Non-irrigated Land

- 0 - Irrigated land
- 1 - Non-irrigated Land

Assets

- 0 - No asset
- 1 - Own asset

Ration card holding

- 0 - No card
- 1 - APL card
- 2 - BPL card

Loan

0	-	No Loan
1	-	Loan from bank
2	-	Loan from landlord
3	-	Loan from co-operative society

Personal History

Diet

0	-	Vegetarian
1	-	Non Vegetarian

Appetite and Sleep pattern

0	-	Normal
1	-	Disturbed

Habits

0	-	Absent
1	-	Present

Family history

0	-	Absent
1	-	Present

Environment

Housing

0	-	Kutchha
1	-	Pucca

Source water supply

0	-	Tap Water
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1 - Bore well

Sanitation

Solid waste

0 - Outside village

1 - Municipal garbage bin

Liquid waste

0 - Outside house

1 - Municipal drainage

General physical examination

Built

0 - Heavy

1 - Moderate

2 - Poor

Nutrition

0 - Adequate

1 - Inadequate

Pallor

0 - Absent

1 - Present

Icterus

0 - Absent

1 - Present

Spine

0 - Normal

1	-	Abnormal
Joints		
0	-	Normal
1	-	Abnormal
Temperature		
0	-	Afebrile
1	-	Febrile
Oedema		
0	-	Absent
1	-	Present
Clubbing		
0	-	Absent
1	-	Present
Lymphadenopathy		
0	-	Absent
1	-	Present
Skin		
0	-	Normal
1	-	Abnormal
Pulse rate		
0	-	Normal
1	-	Abnormal
Blood pressure		
0	-	Normotensive

1 - Hypertensive

Respiratory rate

0 - Normal

1 - Abnormal

Systemic examination

Respiratory system

0 - Normal

1 - Rhonchi

2 - Crepitation

Central nervous system

0 - Normal

1 - Abnormal

Genito-urinary system

0 - Normal

1 - Abnormal

Musculo-skeletal system

0 - Normal

1 - Abnormal

Skin

0 - Normal

1 - Itch mark

2 - Rash and erythema

3 - De-pigmented patch

Oral hygiene

0 - Good

1 - Poor

Mental health

0 - Normal

1 - Abnormal

Eyes

0 - Normal

1 - Unilateral cataract

2 - Bilateral cataract

3 - Conjunctivitis

4 - Refractive error

Ears

0 - Normal

1 - Abnormal

Provisional diagnosis

Cardiovascular system

0 - Normal

1 - HTN

Nutrition

0 - Normal

1 - Anaemia

Respiratory system

0 - Normal

1 – Upper respiratory tract infection

2 – Lower respiratory tract infection

Gastro intestinal tract

0 – Normal

1 – Acute gastroenteritis

2 – Gastritis

Central nervous system

0 – Normal

1 - Stroke

Genito-urinary tract

0 – Normal

1 – Urinary tract infection

2 – Leucorrhoea

3 – Pelvic inflammatory diseases

Musculo-skeletal system

0 – Normal

1 – Osteoarthritis knee

2 – Spondylolysis

3 – Sciatica

Skin

0 – Normal

1 – Scabies

2 – Vitiligo

Oral cavity

0	–	Normal
1	–	Dental caries
2-	-	Dental Stain
3	-	Dental Calculus
4	-	Oral sub-mucous fibrosis

Mental health

0	–	Normal
1	–	Abnormal

Eyes

0	–	Normal
1	–	Cataract
2	–	Conjunctivitis
3	–	Refractive error

Ears

0	–	Normal
1	–	Otitis media

Trauma

0	–	Absent
1	–	Present

Animal bites

0	–	No
1	–	Yes

Endocrine system

0 - Normal

1 - Diabetes mellitus

Health seeking behaviour

Home remedy

0 - No

1 - Yes

Visit to health care provider

0 - No

1 - Yes

Priority of health care provider

0 - Auxiliary nurse midwife

1 - Anganwadi worker

2 - Government doctor

3 - Private doctor / AYUSH practitioner

4 - Pharmacist