

Cooking Smoke and Water Scarcity: Rural Women's Healthazard

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Abstract—Countless studies reveal that women and children are worst victim of environmental degradation. The male only effects of pollutant known till date is reduction in sperm count. But there is a long list of female only effects of pollutants ranging from early onset of puberty to breast cancer. Studies reveal that pollutants may lead to abortion, irregular menstrual cycle, cancer of ovary uterus and breasts; early onset of puberty, infertility and hormonal disorders. Many of the health problems that women face spring from the environs in which they work. This is in addition to the problems they obtain on a large scale, including air and water pollution, ozone depletion and global warming.

In this paper impact and effects of two pollutants; air that is cooking smoke and water in scarcity on rural women's health hazard is discussed and efforts made to analyses it of selected sample survey of 45 families from low, middle and high income group of a rural spatial-temporal area in Dhule district of Maharashtra in India.

Keywords: Pollutant, Puberty, Uterus, Breast, Hormonal disorder.

1. INTRODUCTION

Superficially men and women may appear the same, but women are much affected by scarcity of natural resources, environmental degradation and environmental pollution. Much has been written on impacts of environmental degradation on women health, but effects of environmental pollution and chemicals on women health is mostly a topic of research papers. Many studies reveal that pollutants may lead to abortion, irregular menstrual cycle, and cancer of ovary, uterus and breasts, early onset of puberty, infertility and hormonal disorders. Many of the health problems that women face spring from the environs in which they work. This is in addition to the problems they obtain on a larger scale, including air and water pollution, ozone depletion and global warming. IT is not that men are immune to such problem, but women seem to be more exposed to the pollutants than men. Steps are being taken to use environment friendly use of harmful pollutants and better waste management techniques, but not much is being done to look in to the problems facing the women in her most immediate work environment. High levels of air pollution appear to increase the risk of death in females more than in males, reports a study published in the May 200 issue of the journal of Occupational and environmental medicine,

official publication of the American college of occupational and Environmental Medicine, (ACOME).

This paper is an effort to know the health hazard of air and water contamination of the rural women. India, still being a majority of villages and rural population, a village is selected as an illustrative sample study to know the problem and attempt to find few solutions.

2. WOMEN'S HEALTH AND THE ENVIRONMENT

Environmental threats stem from traditional problem related to poverty and development including lack of access to safe water poor sanitation, food contamination, and indoor air pollution from cooking inadequate solid waste disposal occupational hazards.

While surface-water sources were already contaminated by sewage groundwater sources are now pollution form vehicular transportation, power plants and industrial sources is on the rise especially in rapidly growing urban areas. The drive for economic growth is pushing countries. To over-exploit natural resources including timer, fossil fuels and minerals resulting in unprecedented deforestation and land degradation .When threats face the family system as a whole survival of women and their family of closely.

I. Pollutants Inside Home:

Attention has recently been drawn to the health problems posed by air pollutants the originate from building materials, furnishings, equipment and human activities such ah as cooking, cleaning, smoking and heating. The pollutants of concern in residential building are radon formaldehyde and combustion of coal or unprocessed biomass fuels represents perhaps the largest energy –related source of ill health Biomass fuels are often burnt in open fires or inefficient stoves in poorly ventilated houses and give off smoke and chemicals that contribute to respiratory disease Because of the presence of known carcinogens in the indoor air an increased risk of lung cancer must be assumed. Women are generally responsible

II. Cooking Smoke:

People spend their day at different place in the kitchen indoor at home and at work outdoors in field and on crowded roads. Particulate matter concentration in kitchens due to the burning of fuels are known to be as high as 30 times the WHO guideline while concentration in kitchens at the work place for primary works can be as high.

The World Resources Institution has estimated that around two – third of the population of less developed countries some 3.5 billion people still rely predominantly on biofuels (wood; dung and crop residues) for domestic energy. The fuel is typically burned in open fires or simple stove often indoor and rarely with adequate ventilation or chimneys. This situation leads to some of the highest ever recorded levels of air pollution to which women particularly large are exposed for many hours each day.

Although smoke from biofuels contains thousands of substances many of which are harmful to health it is particulates that are thought to represent best the health damaging potential of this pollution. Particles are defined by their size (aerodynamic diameter) expressed in microns. It is the smaller particles of less than 10 microns in diameter that are judged to be most harmful due to their ability to penetrate deeply in to the lungs. Even when wood fuel is available kitchens typically are choked with smoke from fat chimneys and stove. In 1992 the World Health Organization identified indoor air pollution from smoke as one of the world's chief health problems. Ailments range from eye diseases such as cataracts to respiratory illnesses like pneumonia bronchitis, and asthma. Globally more children die from respiratory infections than from diarrhea previously the number one affliction of infants. Low birth weight have been linked to high levels of carbon monoxide in wood smoke.

III. Air Pollution- Deadlier To Women:

It remains unknown why air pollution should have greater effect on death risk in women than in men more research will be needed to answer this question between air pollution and death rate but many new research indicate that fetus also gets affected even by moderate levels of air pollution.

During the International conferences on Environmental Threats to the Health of children held at Bangkok in March 2002 a WHO release revealed that three million women's. A major contributing factor to these diseases is malnutrition which affects around 150 million children and affects immune system malnutrition and diarrhea form a vicious cycle. The organisms that cause diarrhea harm the walls of digestive tract which prevents them absorbing their food causing even greater malnutrition and vulnerability to disease.

For the formulation of any effective pollution control strategy it is essential to have detailed study on the effect of pollution on women especially pregnant women deformed and weak.

3. WATER POLLUTION, SCARCITY AND WOMEN

The careful management of the local resource base to provide for continued human sustenance is something women have long been doing in many different ecosystems. We understand the term sustainable to mean capable of being maintained in existence or kept going. Rural women in Africa and Asia for example have to collect water and fuel wood for household sometimes traveling for hour on foot low income women are particularly hard hit by the lack of services in large areas because of their traditional role when urban authorities fail to provide water supply sanitation and refuse collection to low-income urban areas because they have inadequate resources it is the lack of such services. They have to work out ways of finding and transforming water and fuel and keeping their home reasonably clean.

Most of the rural women are still a domestic and unpaid labour looking after husband caring arranging fuel wood providing fodder to the cattle, cooking, cleaning, washing and many more such jobs. Most of the women lead a life that is nothing but suffering pain and humiliation. Every plan for society enlistment bring more suffering for them and even environmental degradation on water sources in hilly regions.

Water from rain or melted snow flows from farmland in to streams and carries chemical fertilizers and pesticides that farmers have used on the land. Animal wastes also many cause water pollution particularly from feed lots with large numbers of animals. Cattle, pigs, sheep, and poultry that are being fattened on feed lots do not distribute their wastes over widespread pastures. Instead much of their waste used for irrigation many also be polluted by salt, agricultural pesticides, and toxic chemicals on the soil surface before it flows back in to the ground

The water polluted with human and animal wastes can spread typhoid fever, cholera, dysentery and other diseases. In rural area male emigration has coated new roles and responsibilities for women. Their presence as decision-makers in the irrigated lands increased significantly when men emigrate. Because of the importance of the role of women as administrator and producers of irrigated lands managers and users, their roles should be redefined to improve over all water resources management.

I. Water Pollution and Supply:

At very UN conference from Rio to Rome government agreed to ensure universal access to safe drinking water in sufficient quantities by the year 2000 yet one billion people lack access to safe water supply. The UN estimates that 40 percent of the world's population living in 80 countries.

II. Sewage and Solid Waste:

The link between women's health and poor sanitation and waste disposal is clear without basic services partial at best in informal squatter

Indoor air pollution caused by the combustion of coal or unprocessed biomass fuels represents perhaps the largest energy-related source of ill – health. Biomass fuels are used to meet the energy needs of nearly half of the world's population. They are often burnt in open fires or makeshift stoves in poorly ventilated houses which emit smoke and chemicals that contribute to respiratory disease, which has long-term cardiovascular effects. Because of the presence of known carcinogens in the indoor air, an increased risk of lung cancer is most probable. Women generally being responsible for cooking and looking after children at home, they and their children are exposed to greater risk. It has been estimated that about 700 million women in the developing world are under the direct threat of pollution right inside their kitchen. Many of them use raw fuels in the form of wood, dung, leaves and sawdust. The burning of organic fuel generates a myriad of pollutants along with smoke. The major pollutants are particulate matter, carbon monoxide, oxide of nitrogen, sulphur dioxide, hydrocarbons, aldehydes, benzene, phenols, creosol, toluene and polyaromatic hydrocarbons. Although indoor concentrations vary considerably, the pollutants in the kitchen far exceed in magnitude than prescribed in the World Health Organization (WHO) guidelines. Many studies undertaken by the WHO have shown that the Indian kitchen is much higher than the prescribed standards. Numerous studies have shown that the concentrations of other pollutants

4. ILLUSTRATION

A sample survey is done to find out the air and water borne diseases affecting the various age and income groups of women. For this a small rural area, village Bhampur, Tal.-Shirpur Dist.- Dhule,(MS) is selected. Among the various income groups of population four groups i.e. Below Poverty Line, Lower Income Group, Middle Income Group, and Higher Income Groups selected. Among these four major groups, fifteen families selected, from each income group the only women are selected, at the age group of 18-25, 26-35, 36-40, and 41-45. These groups mainly selected that the age of rural women is mainly engaged in house work, labour works, agricultural activities and it is the age group of menstrual cycle in which various water and air borne diseases have been contaminated. The main objective of the sample survey is to study rural women's health in accordance to the rural condition of water and mostly indoor air pollution. For this age group selected, according to their income and age group, the information is collected about the parameters e.g. economical condition, nature of habitat, education and social status, water resources and medical facilities as available in Bhampur village. With the help of these parameters the health condition of women in relationship to air and water borne disease of this rural area, according to the income group shown in the table No 1, 2, 3, and 4 as below.

Table No.1: AIR AND WATER POLLUTION BORNE DISEASES (BPL. INCOME)

Age Group	Bronchitis	Typhoid	Asthma	Jaundice	Stomachache	Skin Disease	Diarrhea	Other
18-25	4	7	1	4	4	1	10	8
25-35	11	8	5	3	2	1	6	10
35-40	3	3	2	4	—	—	2	1
40-45	6	6	4	1	—	—	3	5

Table No.2: AIR AND WATER POLLUTION BORNE DISEASES (LOW INCOME)

Age Group	Bronchitis	Typhoid	Asthma	Jaundice	Stomachache	Skin Disease	Diarrhea	Other
18-25	5	3	4	4	1	1	2	1
25-35	10	12	6	5	1	1	8	8
35-40	2	3	1	—	2	—	—	—
40-45	2	2	—	1	—	—	1	2

Table No.3: AIR AND WATER POLLUTION BORNE DISEASES (MIDDLE INCOME)

Age Group	Bronchitis	Typhoid	Asthma	Jaundice	Stomachache	Skin Disease	Diarrhea	Other
18-25	4	2	—	1	2	1	2	—
25-35	2	4	—	1	1	2	1	1
35-40	4	5	3	—	1	2	—	—
40-45	2	3	2	—	—	—	—	—

Table 4: AIR AND WATER POLLUTION BORN DISEASES (HIGH INCOME)

Age Group	Bronchitis	Typhoid	Asthma	Jaundice	Stomachache	Skin Disease	Diarrhea	Other
18-25	—	4	—	—	1	—	—	—
25-35	3	5	1	2	2	—	—	—
35-40	1	1	2	—	—	—	—	—
40-45	—	3	—	—	—	—	—	—

This information regarding the seasonal as well as indoor air pollution and water borne collected through the primary sources. All these selected air and water borne diseases i.e. Bronchitis, Typhoid, Asthma, Jaundices, Stomachache, Skin Diseases and Diarrhea etc. are depicted with the pie diagram. Figure- A1 represents the proportional effects on women's health of BPL group. It is shown that most of these income groups women suffered from air borne fever and water borne diarrhea as well a nearly half of these two diseases the women are affected asthma and jaundices. Figure-A2 represents the proportional impacts of air and water borne diseases of the womens health i.e. lower income group level asthma, diarrhea and jaundices respectively. In the figure- A3 income group women health is proportionally affected that Fever higher proportion, Asthma second, diarrhea third and jaundice is the fourth position. Figure-A4 depicts that this high income group womens are having first level fever then asthma then jaundice, but diarrhea is not shown as well as other income groups. In comparison to women age groups, all four income groups, the age group of 18-25 comparatively less affected of the diseases because of the good health and proper excretion. But the age group of 26-35 in all income group comparatively high infection of this pollution of rural water and cooking smoke.

Figure- B reveals the relationship between income group and air water borne diseases affecting the women's health. Cough, it is common seasonal air borne in the village area as well as fever, but asthma, jaundice and diarrhea these are cooking smoke and water borne diseases, comparatively decreases as the income level increase. The income and social as well as hygienic awareness is inter-related not only in urban areas but even rural areas too. The most of the women's health is highly affected in Below Poverty Line and Lower Income group because of improper habitat, uncertain income, unhygienic habitat condition, and scarcity of water, less or no education. Theses income groups of women for all four age groups are whole day long engaged in house hold activities. At the same time theses income groups of women have to look out their children and husbands and apart from, medical facilities still are far away from their reach as well as the rural position. In middle and higher income groups, and even the village comparatively better than the Below Poverty Line and Low Income groups. The habitat facilities comparatively seen better but use of bio-fuels are common even to all these four income groups. In rural areas cooking smoke and unhygienic bathing and cooking conditions some what changed theses income groups. Income and education, water scarcity i.e. a major role in rural India is particularly to this village but even

the water borne jaundice and diarrhea mostly controlled or having no effects of the women of high income group but partially affected the middle income group (Figure- B). Looking into principal sources of the indoor air, viz combustion, burning material, the ground under the building and biological agents are major sources. Indoor air pollution is concern where energy efficiency improvements sometimes make the houses relatively airtight, thereby reducing ventilation and raising indoor pollution. There seems to be something in the air that can harm even the developing fetuses.

5. CONCLUSION

The studies reveal that Indian rural women spend nearly 60% of their reproductive life in either pregnancy or breast feeding. Most of the womens keep their children in the kitchen when busy in cooking, thereby exposing the children to the prevailing pollutants there. This combined with debilitating malnutrition may retard their growth and lead to smaller lungs and higher prevalence of chronic bronchitis. Indoor air pollution caused by the combustion of cool or unprocessed biomass fuels represents perhaps the largest energy related source of ill health. Biomass fuels are used to meet the energy needs of nearly half of the population. They are often burned in open fires or makeshift stoves in poorly ventilated houses, which emit smoke and chemical that contribute to respiratory diseases, with long term cardiovascular effects. Because of the presence of known Carcinogens in the indoor air an increased risks of lung cancer is most probable. Women generally being responsible for cooking and looking after children at home they and their children are exposed to greater risk. Major proportions of in developing world as well as sin a rural India are under the direct thereat of revolution right inside their kitchen. Many of them row fuels in the form of dry wood, dung, leaves and sawdust. The burning of organic fuels generates myriad of pollutants along with smoke. The major pollutants are particulate matter, carbon monoxide oxide of nitrogen, sulphur di-oxide, hydro carbons, benzene, and phenols. Although indoor concentrations vary considerably, the pollutants in the kitchens far exceeds in magnitude than prescribed in the WHO. Many studies revealed that the concentration of the pollutants inside the Indian kitchen is much higher than the proscribed standards. Numerous studies shown that the concentrations of other pollutants inside the Indian kitchen are found to be as much as 60 times higher than outward environment. Illustrative study of village Bhampur reveal the impact of in ventilated kitchen effect resulted in

bronchitis and asthma degrading not only the poor and poorest women but also from higher income group mostly formal the ages.

Water pollution is one of our most serious environmental problems. It occurs when water is contaminated by such substances as human and other animal waste, it can affects ground water, rivers and nallas. Rural areas water discharge is mostly polluted. Water polluted with human and animal waste spread typhoid fever, cholera, and dysentery. The illustrated the village study explains the most of the women surveyed are affected with typhoid fever, jaundices and diarrhea, only high income group’s females due to better economic condition few hygienic facilities made available and there is lacuna of diarrhea. The study reveal that uncertain rural areas the level of pollution insides homes much higher than the out doors. Contaminated water is the permanent problem which still today as it was fifty years back. It is common consideration that women and children stay indoors for longer duration than men, it means women and infants are worst affected by such savior pollution of rural air and water contamination, degrading the women health.

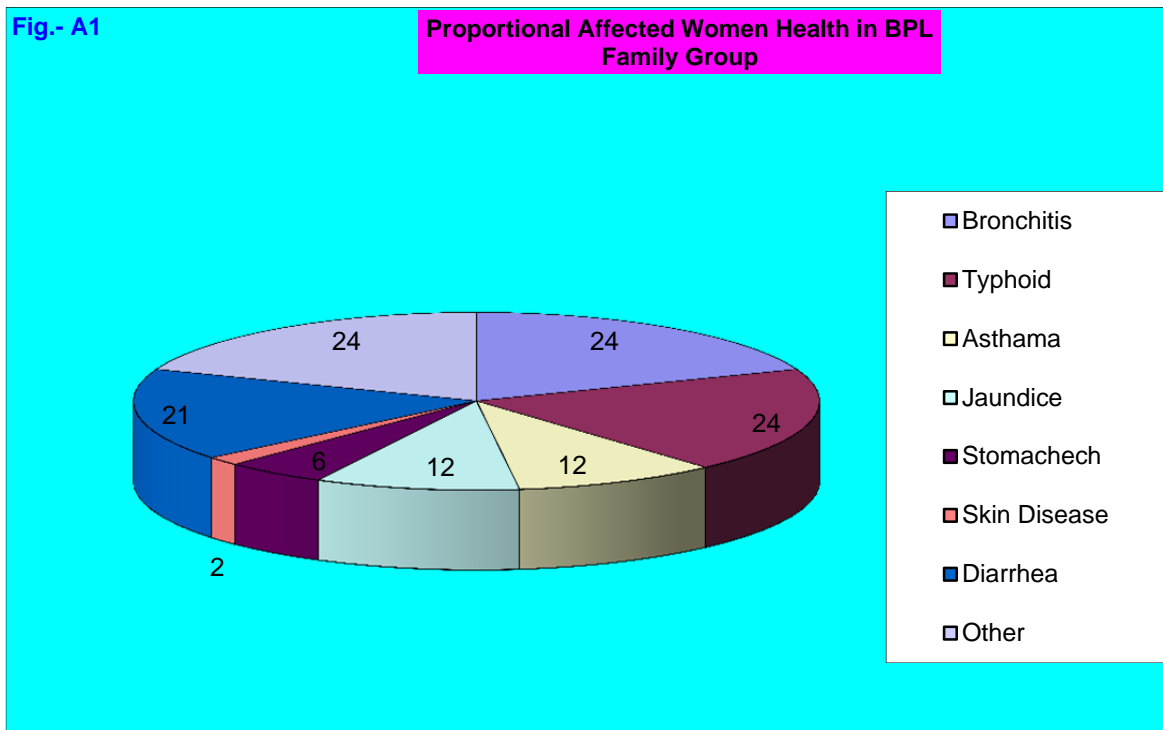
6. ACKNOWLEDGEMENT

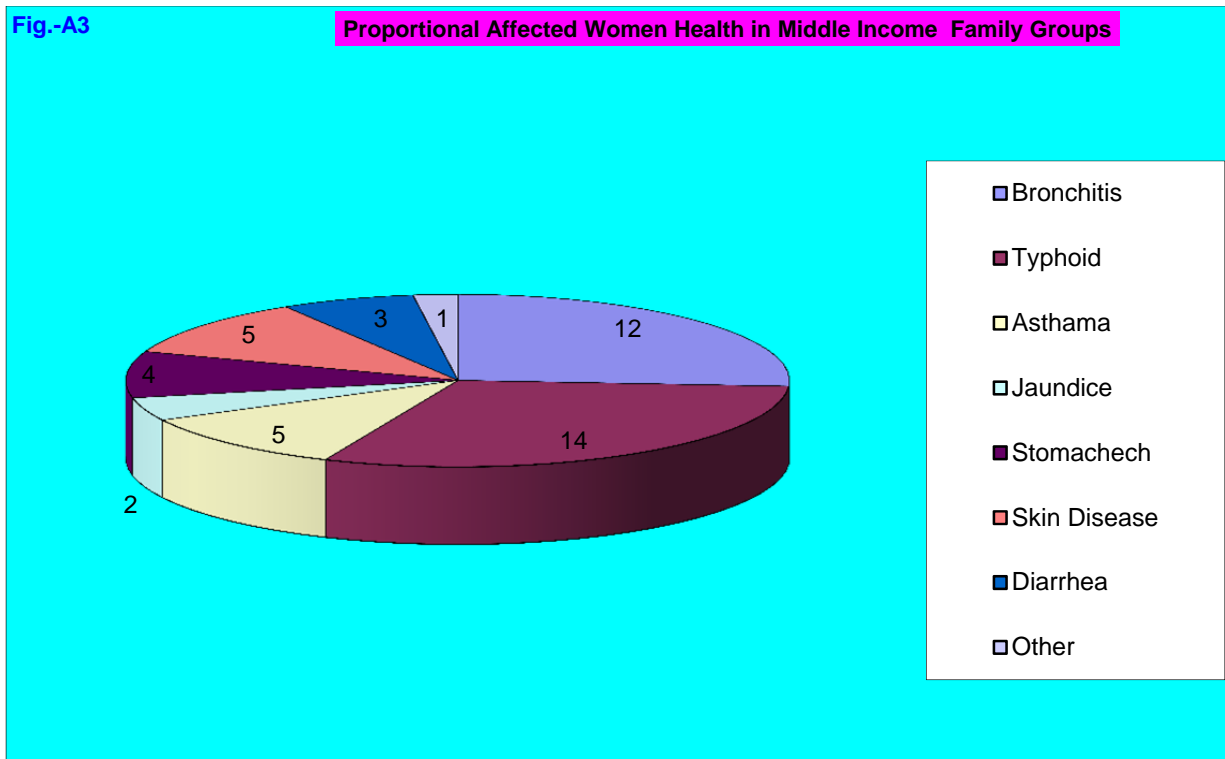
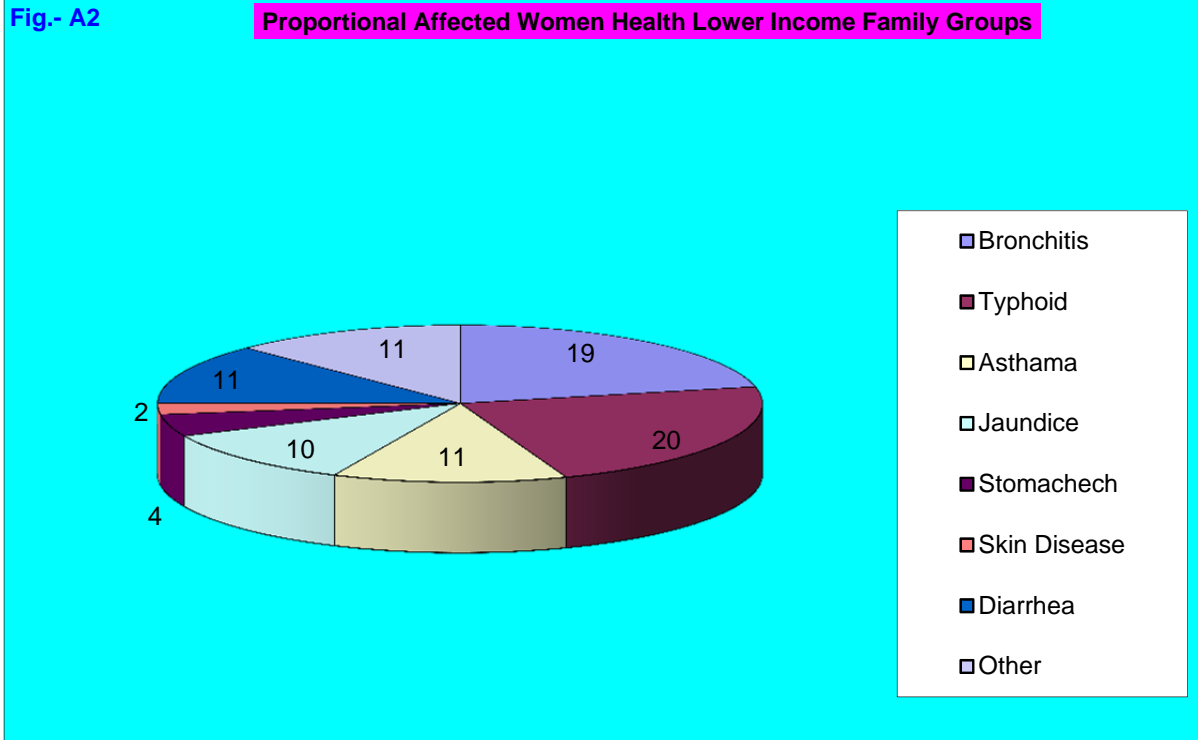
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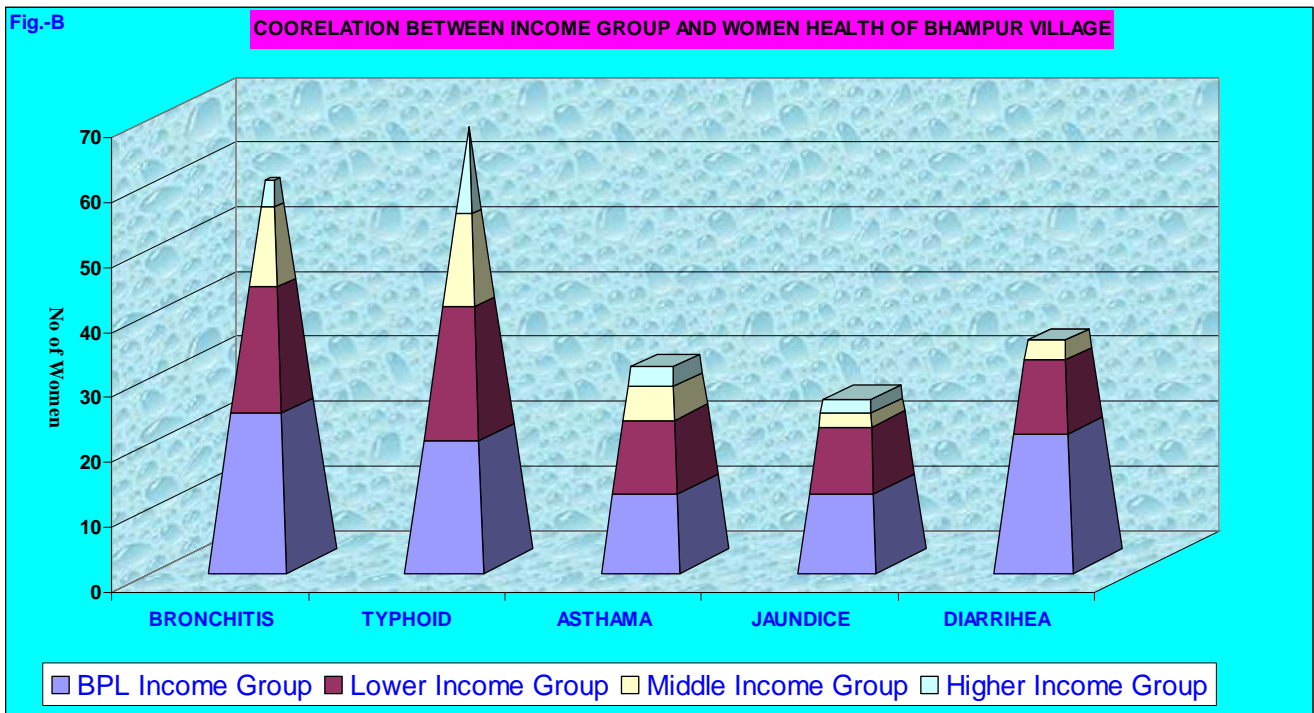
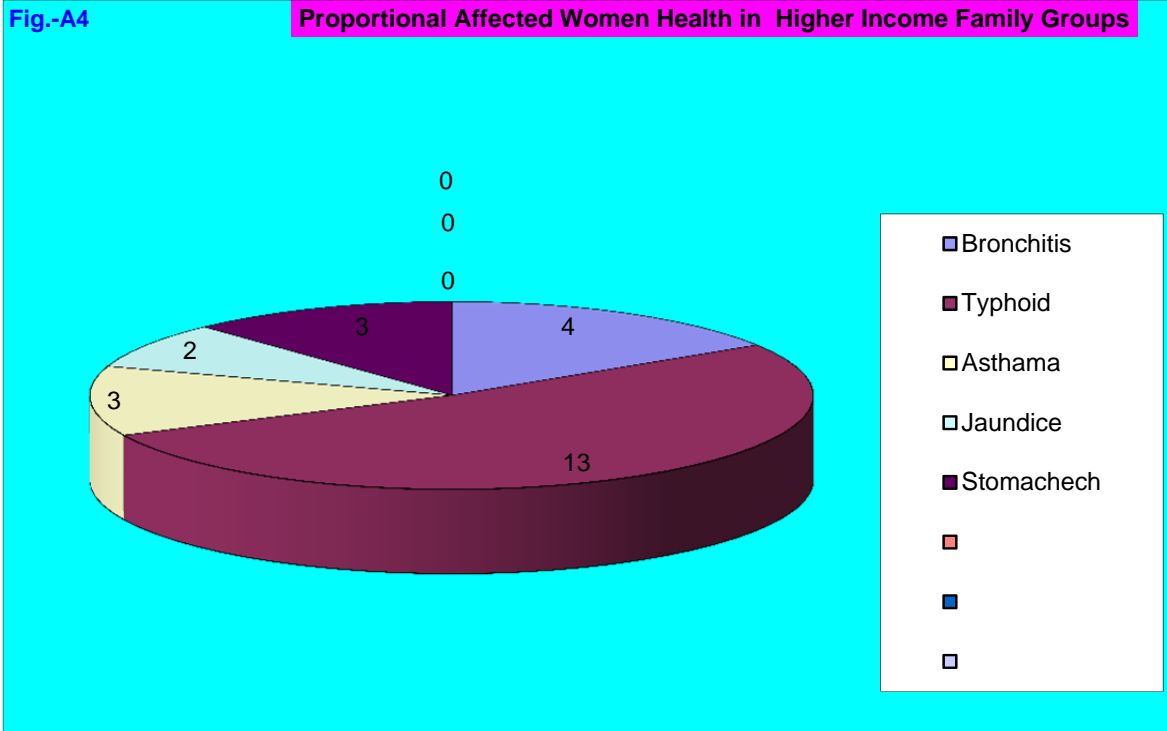
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Fig. A - AIR AND WATER BORNE DISEASES (WOMEN HEALTH) IN BHAMPUR VILLAGE (2010-11)







Burning of organic fuel in earthen 'Chulha' is common in rural India.

