CHAPTER 8
CONCLUSION, FINDINGS & SUGGESTIONS

8.1 CONCLUSION AND FINDINGS

The analysis of the trend of urbanization in India, Gujarat and Ahmedabad shows gradual but steady increase. However, the urbanization trend in Gujarat is quite faster than other state in India. Ahmedabad, being centrally located in Gujarat and enjoying the status of the biggest city, obviously shows high level of urbanization.

Demographically the study area is highly urbanized and industrialized. After analysing the trend and pattern of urbanization, it was observed that the urbanization growth of Ahmedabad shoot up after 1980. As a result, Ahmedabad's peripheral areas started expanding towards northwest and northeast direction. In other words the development of Ahmedabad happened in concentric pattern. This makes the urban governance more challenging to provide basic amenities for urban dwellers in order to improve the wellbeing of urban people.

The higher level of urbanization along with industrialization plays an important role not only in the economic development but also resulting in adverse consequences on health of people. Therefore, it is important to study such aspects.

Industrialization process in Gujarat and specifically in Ahmedabad is rapidly changing the morphology of Geographical extent. This has some positive effect on the standard of living among the people living in the city and state. However, the adverse effect of this process has to be experienced by only those people who are either working in industries or residing near the industries. This study has observed adverse impact of industrialization process on health of people working and residing near GIDC area. The detailed analysis is carried out at micro level and it is explain in following section.

Having high level of urbanization and industrialization, the city Ahmedabad is exposed to various challenges to maintain quality of life. Disparity in quality of life is assessed by Gorard index. Looking into the Gorard index for basic amenities provided by government, the highest disparity is prevailing in treated drinking water which is followed by piped sewer system. There is lot to achieve in millennium development goal as far as drinking water and pipe sewer system are concerned. The next range of
amenities is essential but privately owned. The disparity is less in the matter of cooking inside the home. This is obvious for urban areas. However cooking gas disparity is the highest among all essential amenities as its 'S' value is 0.094. Cooking gas is available with most of the people concentrated in wards located in northwest Ahmedabad. The third range of amenities is privately owned inspirational and luxurious goods. This amenity includes television, computer, cell phone, two wheelers and other luxurious goods. The disparity index is the highest for computer. It's 'S' values is 0.408. This is followed by luxurious goods such as car with 'S' value of 0.336. The disparity is also higher in two wheelers with 'S' value of 0.155. Looking in to an overall scenario the disparity is higher among inspirational goods compared to those of essential goods. In fact, ward wise disparity for government provided basic amenities is observed less in Ahmedabad. This may be due to the efforts of the AMC. Regarding the availability of various basic amenities covering entire Ahmedabad, it can be said that drinking water and sewerage are the most important requirements for human beings especially when we are talking about the smart city concept. At present, the proportion of these facilities is very low in the peripheral regions of Ahmedabad. The lack of pure drinking water and closed drainage connections are the chief reasons behind the spread of water-borne diseases. Frequent discussions can be seen in newspapers that gutter-lines were installed many years ago and due to the lack of proper maintenance, the pipelines of drinking water and gutter-lines get mixed and this leads to increase in water borne diseases.

8.2 FINDINGS OF MICRO LEVEL STUDY

8.2.1 WORKERS WORKING IN GIDC

- From the data analysis of chapter it can be observed that majority of the male workers are from Odhav GIDC and majority of the female workers are from Naroda GIDC area. Around 3% of the workers are female and 97% of the workers are male from all the three GIDCs taken under the study.
- Most of the workers are from OBC category. Only 3% of the workers belong to ST category, 41% of the workers belong to General category, 5% of the workers belong to SC category and 51% of the workers belong to OBC category which is the highest among all categories. Highest numbers of OBC
category workers are from Odhav GIDC. There are no ST workers in Naroda GIDC sample.

- 218 workers are Hindu. Only 1 worker is Christian and 6 workers are Muslim working in these three GIDCs. Odhav GIDC sample has representation of all the religions among workers taken under the study.

- The highest number of workers; i.e. about 35% of total workers, belong to the age group of 26 to 35 years. This is followed by age group of 36 to 45 years, 46 to 55 years, 18 to 25 years and at the last more than 55 years of age group. It can be observed that lowest number of old age workers were observed in our sample whereas number of workers within the age group of 26 to 35 years was observed to be the highest.

- 21% of the workers have Primary education, 40% have Secondary education, 24% have Higher Secondary education, 6% of the workers are Graduate, and only 1% of the workers have Post Graduate education. About 8% of the workers are illiterate. Most of the workers have Secondary education and only one worker has Post Graduate education. This indicates that the education level is not very high among the sample of workers in all the three GIDCs.

- Around 60% of the workers have migrated from other states of India whereas 40% of the workers are originated or born in Gujarat. Majority of the migrated workers are working in Odhav GIDC and majority of Gujarat originated workers are working in Naroda GIDC.

- The worker relocated to Ahmedabad are as follows; 10% from Bihar, 7% from Rajasthan, 22% from Uttar Pradesh and 21% from other states. Remaining 40% of the workers are from Ahmedabad.

- Out of the total workers selected from three GIDCs, 24% of the workers are working in Dyes / Chemical industry, 27% in Metal / Steel industry, 29% in Engineering industry, 5% in Plastic industry, 11% in Textile industry and 4% in other industries.

- Out of the total workers, 12% earn up to 5000 Rs per month, 71% earn 5000-10000 Rs per month, 14% earn 10000-15000 Rs per month and 4% earn more than 15000 Rs per month. The number of workers earning 5000-10000 Rs per month is the highest from Naroda and Vatva GIDC. The numbers of workers earning more than 15000 Rs per month are highest in Odhav GIDC.
32% of the workers live within 1 to 2 km away from GIDC area, 44% live away between 2 to 4 km from GIDC area, 13% workers live between 4 to 6 km from GIDC area and 11% of the workers live more than 6 km away from GIDC area. So it can be concluded that most of the workers live near and only few workers live far from GIDC area.

More than 50% of workers have habit of addictions which are detrimental to health. Addiction of Tobacco, Biddi, Ghutakha, Alcohol and Cigarette are the most common. However, 43% of workers don’t have any bad habit or addiction.

Among the addicted people, most of the workers have habit of Tobacco chewing. This is followed by habit of Biddi, Ghutakha, Alcohol and Cigarette. So it is observed that majority of the workers are addicted to Tobacco chewing. Bidi smoking is the most hazardous amongst all Tobacco consumers to the community because passive smokers in community are also at risk of Tobacco hazards.

OBC workers have the highest addiction of Tobacco. This is followed by workers from General caste and then the workers from SC- ST category.

25% of the workers have less than 5 years of experience, 36% have about 5 to 10 years of experience, 19% have about 11 to 15 years of experience, 9% have about 16 to 20 years of experience and 10% have more than 20 years of experience. So it can be concluded that majority of the workers have 5 to 10 years of experience.

75% of the workers reported that work affects their health whereas 25% of the workers did not.

29% of the workers reported to have high blood pressure where as 71% of the workers reported to have normal blood pressure. So it can be concluded that high blood pressure was significant among the sampled workers.

Looking into the industry wise pattern of suffering, it was observed that 36% of the workers working in metal/steel industry suffer from high blood pressure. This is followed by 29% of workers from engineering industry, 18% of workers from Dyes / Chemical industry , 9% of workers from Textile industry, 5% of workers from other industries, 3 % of workers from plastic industry.
66% of the workers have reported cardiac related symptoms.

The highest numbers of workers, i.e. 29% from engineering industry have chest pain. This is followed by workers of metal/steel industry. About 25% of the textile workers experience heaviness in chest and only one percentage of worker experience palpitation. Heart related issue including high blood pressure may be due to inadequate sleep, job insecurity, separation from family and addiction. Further, depression also plays a role in the development and progresses of cardio vascular disease. (Grundy, 2007)

43% of the workers have reported neurological symptoms whereas 57% of the workers did not.

Workers have reported two major negative effects of their work namely; tremors and nerve compression. It is observed that workers working in engineering industry have reported the highest tremors related symptoms. This is followed by workers working in metal/steel industry. Workers working in engineering industry have the highest nerve compression related symptoms. Workers working in plastic industry suffered the least. Neurological issues may be because of faulty postures, continuous working with vibrating tools and exposure to heavy metal chemicals and dyes colours. Such impact is also reported by various scholars. (Mamtani R et al., 2011)

97% of the workers reported that they have ophthalmic problems whereas 3% of the workers did not.

Workers working in metal/steel industry have reported the highest symptoms related to watering of eyes among all the industry workers. Workers working in dyes/chemical industry have reported the itching in eyes. This may be due to chemical fumes. Workers working in engineering industry are most affected with the redness of eyes. These issues may be related to prolonged exposure of chemicals, fumes, pollen and heat. Eyes related symptoms were less reported by workers from other industries such as food, beverages etc.

67% of the workers reported that they have auditory symptoms whereas 33% of the workers didn’t.

Workers working in metal/steel industry have reported suffering mainly from earache. Workers working in plastic industry did not report much about suffering from earache. Workers working in metal/steel industry have the
highest deafness related symptoms while workers working in other industry have least deafness related symptoms. Highest numbers of workers facing difficulty in hearing are from engineering industry. Looking into overall picture, workers working in metal/steel industry have reported highest ear related problems whereas workers from plastic industry are the least affected with ear related problems. Impaired hearing is mainly attributed to prolonged exposure to sound of high decibels. Continuous noise is produced by high velocity air flow in compressors fan, gas burners and motors. Crushing, drilling and grinding are important sources of continuous noise. It can affect respiratory system. Dizziness, disorientation, loss of physical control and other physiological changes resulting from stress, nausea and vomiting may be caused due to high level of noise.

- 97% of the workers have reported that they have musculoskeletal symptoms whereas 3% of the workers have not.
- Workers of metal/steel industry have reported the highest musculoskeletal symptom. This is followed by workers of engineering industry, whereas workers from plastic industry have least musculoskeletal symptoms. Highest number of workers experience backache while tingling is experienced by the least number of workers. Musculoskeletal issues are because of faulty posture, heavy weight lifting and vibrating tools. Sometimes in metal industries, jerky motions and sudden accelerations of objects place unusually high stresses on muscles and joints.
- 96% of the workers have reported that they have respiratory problems whereas only 4% of the workers have not reported. This shows a significant negative impact of industries on human health.
- Workers of textile industry have reported the highest breathing related symptoms. This is followed by workers working of dyes/chemical industry and textile, metal, engineering and plastic industry. Repeated coughing is the most prevalent complain. Prolonged inhalation of irritants like pollens, cotton flakes and chemicals may cause lung damage. This can result into diseases such as Asthma, Bronchitis and Interstitial lung diseases.
• 93% of the workers have reported that they have dermatological problems whereas 7% of the workers did not report them. This is also another major adverse impact of industry on human health.

• Workers of dyes/chemical industry are suffering the highest from the skin related problems. This is followed by workers working in metal/steel industry whereas workers from other industries have the least skin related symptoms. Itching is seen the most amongst workers while scabies is less experienced by the workers. Skin disease may occur due to improper hygiene and direct contact with certain chemicals. Some chemicals like corrosive acids can damage the skin by a single contact while others like organic solvent may cause damage by respected exposures.

• 47% of the workers don’t get adequate sleep, the highest being from engineering. This is followed by metal/steel industry, dyes/chemical, textile and plastic industry.

• Almost all the workers working in GIDC have mental stress. Stress is a natural reaction of the body and is necessary for survival and to motivate the person into action. Long term stress can affect the immune system and cause serious ailments. There are many reasons of mental stress. Stress may not be directly related to the type of industries in which these workers belong to. However, the main causes of stress in the present context are insufficient salary, promotion tension, job insecurity, being away from family and behaviours of colleagues.

• Workers working in engineering industry have reported maximum mental stress related symptoms. This is followed by workers working in metal/steel industry. Workers from plastic industry have reported minimum mental stress. Salary and promotion tension are the key reasons for mental stress. Mental stress is as dangerous to the heart as physical stress (Akinboboye et al. 2005)

• Workers from Odhav industry have reported the highest common cold related symptoms whereas Naroda GIDC workers have reported the least common cold related symptoms. Workers from engineering industry have reported the highest common cold related symptoms whereas other industry workers have reported the least common cold related symptoms. Usually industrial area is
densely populated and because of close proximity of people, the air borne disease like common cold is more common in industrial area.

- Workers working in GIDC have also reported the fever/malaria issue. Workers from Odhav industry have reported the highest fever/malaria issue whereas Naroda GIDC workers have reported the least fever/malaria related symptoms. Workers from engineering industry have reported the highest fever/malaria related symptoms whereas other industry workers have reported the least fever/malaria related symptoms. Polluted water pools in the industrial area are the major breeding sites for vector mosquitoes causing malaria, dengue and Chikungunya. Inadequate disposal of industrial waste water is the key reason of such polluted water pools.

- Workers working in GIDC have also reported common diarrhoea and vomiting related symptoms. Workers from Odhav industry have reported the highest diarrhoea and vomiting cases whereas Vatva GIDC workers have reported the least diarrhoea and vomiting cases. Workers from engineering industry have reported the highest diarrhoea and vomiting cases where plastic industry workers have reported the least diarrhoea and vomiting cases. Consumption of contaminated water and food causes diarrhoea and vomiting.

- Maximum numbers of workers from Odhav GIDC suffer from tuberculosis, whereas the least number of workers from Naroda GIDC suffers from tuberculosis. Workers from textile industry suffer the most from tuberculosis. Tuberculosis being an air-borne disease is more prevalent in dense population like industrial area. Lack of nutritious food, improper hygiene and stress and tobacco addiction also contribute to this disease.

- Workers from Odhav GIDC have reported the highest dengue cases whereas Naroda GIDC workers have reported the least dengue cases. Workers from metal/steel industry have reported the highest dengue cases whereas plastic and other industry workers are not suffering from dengue.

- Workers from Vatva GIDC have reported the highest chickengunya cases whereas Odhav GIDC workers have reported the least chickengunya cases. Workers from dyes/chemical industry have reported the highest chickengunya cases whereas plastic industry workers are the least sufferers from chickengunya.
- Only 1 worker suffered from swine flu in last 2 years. Dense population, impaired immunity may cause air borne disease like swine flu.

- Workers from Naroda GIDC have reported the highest skin problems whereas Odhav GIDC workers have reported the least skin problems. Workers from metal/steel industry have reported the highest skin problems. Skin problems are higher with metal, steel, dyes, chemical, engineering industry. Direct contact with chemicals and corrosives is the main reason. Non workers of industrial areas also show higher rates of skin diseases because contact with chemically contaminated water (due to inadequate drainage).

- Workers from Vatva GIDC have reported the highest respiratory issues whereas Odhav GIDC workers have reported the least respiratory related symptoms. Workers from metal/steel and engineering industry have reported the highest respiratory related symptoms whereas other industry workers are least suffered with the respiratory problem. Inhalation of the chemicals is responsible for respiratory problems. Majority of dyes-chemicals industries belong to Vatva GIDC. This explains why the respiratory problems are the highest at Vatva.

- Majority of the workers go to ESI hospitals for treatment. This is followed by Charitable Trust, Private clinic, PHC and other sources for health treatment.

- More than 50% of the workers working in GIDC have been hospitalised for some or other health related issues in the last two years. The incidence of hospitalisation was found more among the workers from Vatva GIDC.

- Most of the workers complete the dose of medicines they are taking for health problems.

- Almost 50% of the workers need to take at least 3 days of medical leave. Many have to take about 4 to 8 days. About 3% of the workers reported that they had to take more than 8 days leave per month. This was the loss of income for them. These workers are engaged mainly in informal sector. Therefore, it shows that the economic cost of health impact would be high for these workers.

- 88% of the workers, on an average, spend up to 500 Rs per month on health problems, the engineering industry workers being highest in numbers among them.
- 88% of the workers have reported that villages have less disease than cities. 12% of the workers have reported that villages have more diseases compared to cities.

- 61% of the workers have health insurance whereas 39% of the workers don’t have health insurance. So it can be concluded that majority of the workers believe in insuring themselves to reduce health related expenses. However, many are still left. Their insurance need to be covered immediately.

- 13% of the workers have personal insurance and 87% of the workers avail insurance facility from employers.

- 92% of workers believe that Urbanization has detrimental effects on their health. Various factors like density of population, separation from family, job stress, transportation stress, unavailability of nutritious food, consumption of junk food, easy availability of energy saving devices leading to sedentary lifestyle are attributes of urbanization and ill health.

- Majority of the workers believe that dirtiness is the reason for their diseases. The other reasons include pollution of air, food contamination and habit or addiction.

- Maximum heart related symptoms can be seen in workers with more than 20 years of work experience. This is followed by workers with 16 to 20 years of experience. Workers with less than 5 years of work experience have reported the least heart related symptoms compared to other workers. Chest pain and continuous heaviness in chest are the heart related symptoms experienced by the workers.

- Maximum neurological symptoms can be seen in workers with more than 20 years of work experience. This is followed by workers with 16 to 20 years of experience. Workers with 11 to 15 years of experience have reported the least neurological symptoms. Tremors are the commonest symptom experienced by all type of experienced workers.

- Redness of eyes is the prominent eye related symptom experienced by all type of workers. Workers with more than 11 years of experience have reported the eyes related symptoms whereas workers with > 20 years of experience have reported the highest itching problem.
• Difficulty in hearing is the major ear related symptom experienced by all ranges of experience among workers. Workers with > 20 years of experience have reported the highest auditory symptoms whereas workers with less than 5 years of experience have reported the lowest ear related symptoms.

• Backache is the prominent musculoskeletal symptom found in all ranges of experienced workers. Tingling is the least experienced by the workers. Workers having more than 20 years of work experience are mainly affected with the backache issue. Workers with 5 to 10 years of experience are highly affected with the pain in upper limb whereas workers with 16 to 20 years of experience are the least affected with musculoskeletal symptoms.

• Repeated coughing is the common breathing problem for all workers, which is mainly experienced by the workers with 11 to 15 years of work experience. Asthma and T.B. are less experienced by workers with different work of experience. Workers with 16 to 20 years of work experience are highly affected with breathing problems whereas workers with 11 to 15 years of work experience are the least affected.

• Itching is very common for all range of work experience among workers. Almost all workers with different years of experience face same type of skin problems. Ring warm and scabies are less experienced by the workers.

• Salary and promotion tension are the major causes of stress related symptoms for almost all the range of work experiences of workers. Promotion is the key issue for the workers having more than 20 years of experience. Stress related symptoms can be experienced less by workers with less than 5 years of experience. behaviours of colleagues are not the issue for workers with more than 20 years of experience. However, workers with more than 20 years of experience have reported the highest stress related symptoms.

8.2.2 RESULTS NEAR GIDC AREA

• Majority of the male respondents are from near Naroda GIDC area and majority of the female respondents are from near Odhav GIDC area. Total 25% of the respondents are females and 75% of the respondents are males among all the three GIDC areas taken under study.
Most of the respondents are from General category (61%). Only 2% of the respondents are of ST category, 33% of OBC category and 4% of SC category. Highest numbers of General category respondents are from Vatva GIDC study area. There are no SC respondents from Vatva study GIDC area and no ST respondents from Odhav GIDC study area. Odhav GIDC study area showed the highest OBC respondents i.e. 31%.

219 respondents are Hindu. Only 3 respondents are Christian, 2 respondents are Muslim and 1 respondent is Shikh living near these three GIDC areas. In Vatva GIDC study area, all the respondents are Hindu, while the representation of all the religions was there in Odhav GIDC study area.

Respondents with 46-55 years of age group were the highest i.e. 26%. This is followed by 36-45 years of age group, 26-35 years of age group and more than 55 years of age group. The representation of respondents from 18-25 years of age group was the least. It can be observed that the lowest numbers of young respondents are from GIDC study area where as number of respondents with age group of 46-55 years is the highest.

22% of the respondents have Primary education, 34% of the respondents have Secondary education, 21% of the respondents have Higher Secondary education, 12% of the respondents are Graduate, only 2% of the respondents have Post Graduate education and 8% of the respondents are illiterate. Most of the respondents have Secondary education and lowest numbers of respondents have Post Graduate education living near GIDC study area.

It can be suggested that 42% of the respondents are migrants from other states of India where as 58% of the respondents are originated or based in Gujarat from the childhood. Majority of the migrants respondents are from Naroda GIDC study area and majority of Gujarat originated respondents are from area near Odhav GIDC study area.

3% of the respondents are migrants from Bihar, 7% of the respondents are migrants from Rajasthan, 8% of the respondents are from Uttar Pradesh and 21% of the respondents are migrants from other states of India.

47% of the respondents earn 5000 to 10000 Rs per month, 34% of the respondents less than 5000 Rs per month, 12% of the respondents earn 10000 to 15000 Rs per month and 8% of the respondents earn more than 15000 Rs.
per month. Majority of the respondents from Vatva GIDC study area earn 5000 to 10000 Rs per month and very few earn more than 15000 Rs.

- Most of the (59%) respondents are living within 1 to 2 km. of an area from the GIDC, 28% respondents are living within 2 to 4 km. of an area away from the GIDC, 5% respondents are living within 4 to 6 km. of an area from the GIDC, 7% respondents are living more than 6 km. away from the GIDC area. So it can be concluded that most of the respondents are living nearby and the least number of respondents live far from GIDC area.

- It is observed that 39% of the respondents have bad habits whereas 61% of the respondents don’t have any bad habits.

- Most of the respondents have habit of tobacco chewing followed by habit of Biddi, Ghutakha, Alcohol, Cigarette and Chhikni. Tobacco can cause respiratory problems, oral cancer, gastric ulcer, cardio vascular disease etc. Smoking is a mean of tobacco consumption that is as detrimental to non consumer of tobacco (Passive smoker) as the tobacco consumer (Active smoker).

- 85% of the respondents have pakka house where as only 15% of the respondents have kachha house. Respondents living near Naroda GIDC have mostly kachha house compared to respondents living near Odhav and Vatva GIDC. Poverty level is higher in population residing in Kachha house. They also have more problems of lack of nutrition, poor sanitation, lack of awareness and higher level of addiction

- 50% of the respondents have 1 room house and 50% of the respondents have 2 rooms house. Majority of respondents living near Vatva GIDC area have 2 rooms house. Respondents living near Naroda GIDC have mostly 1 room house.

- 54% of the respondents have more than 4 family members whereas 46% of the respondents have up to 4 family members. It is observed that in industrial area many members stay in small houses. This reduces per capita space and income leading to poor sanitation, poor nutrition and lack of privacy. These all add to the stress in this situation.

- As far as basic facilities such as drinking water, sanitation and electricity are concerned, the coverage for our sample respondents is hundred per cent.
Drainage facility is an issue for the residents of Vatva and Naroda GIDC. Main complaint of the residents is about improper drainage system with contaminated industrial water. This problem becomes complex in monsoon due to sewage back flows and sewage seepage.

- 70% of the respondents living near GIDC study area have reported that quality of the water is good. 16% of the respondents have reported that they get average quality of water whereas 14% of the respondents have reported that they get bad quality of water. Quality of water of an area near Vatva GIDC is better than area near Odhav and Naroda GIDC.

- 82% of the respondents living near GIDC area have reported that there is no water purification plant whereas 18% of the respondents have reported that water purification plant is employed.

- About 43% of the respondents living near GIDC study area reported that there is no water logging issue during rainy season whereas 57% of the respondents living near GIDC study area reported that there is water logging issue during rainy season.

- 43% of the respondents reported that there is no problem of water logging in area near GIDC. About 34% of the respondents reported that water logging problem gets solved only by them in area near GIDC. Only 1% of the respondents reported that water logging problem is solved by the society. 19% of the respondents reported that water logging problem is solved by Municipality in their area of GIDC and 3% of the respondents reported that water logging problem is solved by other sources like civil society.

- 27% of the respondents living near GIDC area reported that there are no drainage related problems whereas 73% of the respondents living near GIDC area reported that there are drainage related problems.

- It is observed that 27% of the respondents reported that drainage problem is not solved in area near GIDC, 33% of the respondents reported that drainage problem gets solved by them, 1% of the respondents reported that drainage problem is solved by the society, 37% of the respondents reported that drainage problem is solved by Municipality and 2% of the respondents reported that drainage problem is solved by other sources such as Non-Government Organisation.
92% of the respondents reported that their surrounding is neat and clean.

88% of the respondents reported that cleanliness is done by municipality, 4% reported that cleanliness is done by the GIDC where as 8% reported that there is no cleanliness in area near GIDC.

47% of the respondents reported that weekly cleaning is done in their residence area near GIDC, 37% reported that daily cleaning is done, 8% reported that cleaning is not done at all, 4% reported that monthly cleaning is done and 3% reported that cleaning is rarely done in their residential area.

47% of the respondents reported that cleanliness is good in the area near GIDC, 46% reported that cleanliness is fair, 4% reported that cleanliness is poor, 2% reported that cleanliness is very good.

94% of the respondents reported that there are flies and mosquitoes near GIDC area where as only 6% of the respondents did not report. Mosquitoes and files spread vector borne diseases like malaria/dengue/chikengunya. So such infectious diseases are prevalent in these areas. Main causes are water logging and improper drainage of contaminated water.

67% of the respondents reported that flies and mosquitoes are seen throughout the year while 27% reported that flies and mosquitoes are seen in particular season.

Most of the respondents use Goodnight as precaution against flies and mosquitoes. This is followed by the use of net and spray as precautions.

88% of the respondents reported that municipality takes action against dirtiness where as 12% of the respondents reported that the work of municipality is not effective.

Most of the respondents reported that municipality uses DDT to control dirtiness. Municipality also uses other methods such as spraying of ammonia to control mosquitoes.

98% of the respondents reported that there is an adverse effect of industrial area on their health whereas only 2% of the respondents reported negatively for this.

Most of the respondents reported that pollution problem is the key problem of GIDC. They also experience other problems such as gas leakage, smell, ash in atmosphere, colouring water in tap and pollen in textile industry. Respondents
from Vatva reported problems of pollution and gas leakage as major problems because of concentration of chemical and dyes industries.

- 49% of the respondents go to private clinics when they are sick, 32% go to ESI hospitals, 14% go to PHC whereas only 4% of the respondents go to charitable Trust. Many residents go to private hospitals for health problems. This may be due to unavailability of general hospital in nearby area or due to social stigma.

- 93% of the respondents reported that doctors are available at government hospital whereas 7% of the respondents answered negatively.

- 64% of the respondents living area near GIDC reported that they have to go far up to 2 km. away for the medical treatment, 18% of the respondents reported that they have to go 4 to 6 km. away for medical treatment, 12% reported that they have to go 2 to 4 km. away for treatment and 3% reported that they have to go more than 8 km for medical treatment. Majority of the residents near GIDC area can get treatment within 2 km of circumferential area.

- 98% of the respondents reported that they are taking medical treatment as per doctor's advice whereas only 2% of the respondents don't follow doctor's advice.

- Most of the respondents reported that dirtiness is the main reason for their diseases and sickness. The also mentioned that polluted water, faulty eating habits and dirty water tanks are also contributing to sickness.

- Fever/malaria cases are observed to be the highest during monsoon season. Respondents go to ESI hospitals for treatment of fever/malaria. There is not a single case reported of fever/malaria during winter and summer in area near Vatva GIDC. During monsoon water logging is a major problem, which becomes more complex by mixing with contaminated industrial water and sewage back flows. Mosquitoes breed heavily in such water leading to malaria, dengue and chikungunya

- Diarrhoea and vomiting cases are observed to be the highest in monsoon season followed by summer and then winter season. Most of the respondents go to private clinic for the treatment of diarrhoea and vomiting. Contaminated water is the main cause for such diseases.
● Skin problems are found in all the seasons. Most of the respondents go to private clinic for the treatment of skin problems. Reported cases of skin problems are observed to be the highest in Vatva GIDC study area. This is followed by Naroda and Odhav GIDC study area. There is no seasonal variation in skin problems.

● Respiratory problems are reported to be higher Vatva GIDC study area. This is followed by Odhav and Naroda GIDC study area. Most of the respondents go to private clinics for the treatment of respiratory problems. Vatva GIDC shows the highest rate of respiratory problems. This may be due to the highest number of dyes and chemical industries located in this area.

● Cases of Chickengunya are not found in area near Vatva GIDC during winter and summer season. Most of the respondents go to private clinics for the treatment of chickengunya.

● Numbers of cases of tuberculosis are low in all the three GIDCs area taken under study.

Industrialization and urbanization go hand in hand. They adopt many processes and create many environmental factors. People working within and outside the industries may become victims of industrial hazards. Urbanization has its own challenges in form of stress, life style disorder (obesity, hypertension, and diabetes), and infectious diseases. Industrialization multiplies these challenges.

Improper disposal of solid/liquid/gaseous wastes, poor sanitation, addiction, density of population, improper observation and breaking of law etc. are main causes responsible for industrial ill health. All these factors are correctable. It is the joint responsibility of Government, employers, employees and all residents in industrial areas to address these issues properly for betterment of the society.

8.3 SUGGESTIONS
FOR THE GOVERNMENT/MUNICIPALITY
1. Municipality has to check water, drainage lines and air pollution of GIDC area and its surroundings. Action should be taken to provide pure drinking water and fresh air
2. Proper roads, drainage lines should be developed
3. Tree plantation would also help to purify air naturally; more trees should be planted near GIDC area
4. Govt should have check on awareness programs related to health near GIDC area.
5. More medical clinics should be opened within premises of Industries especially in Odhav and 24/7 services should be provided by the municipality.
6. Municipality should check the solid, liquid and gaseous wastage of the industries and when needed actions should be taken to provide better life and health to the residents living near GIDC area
7. During monsoon, municipality should spray D.D.T, ammonia gas etc. and should cover potholes.

FOR THE INDUSTRY
1. Adequate safety equipments should be provided to the workers working in GIDC area.
2. There should be regular maintenance of the machinery and safety equipments used in the industry.
3. After recruiting workers, regular medical check-ups of the workers should be done and if needed medical assistance should be provided to them.
4. Medical check-ups of the workers on a regular interval would be helpful for the industry.
5. Workers working without safety tools should be informed and taught the importance of the safety equipments.
6. Outdated or very old machinery should be checked and if it is producing hazardous or toxic waste, then it should be replaced immediately
7. Leaves should be given to the unfit workers and basic medical assistance should be provided.
8. Medical awareness seminars would be helpful for the workers and their family
9. The workers and family members should be insured for the medical problems by the employers.
10. Health and Safety of the workers should be the priority because health and safety of the workers in workplace is depended mainly on the enactment of
legislation and inspection of work places to ensure compliance with health and safety standards.

At last, we can say that urban areas offer the attraction of better business, construction, medicinal services, and culture, which contribute excessively to national economies. However, if urban advancement is fast, unplanned and unsustainable, it may result into health hazards and leads to adverse environment. To make urban areas sustainable, urban dwellers should play an active role of stakeholder and participate in urban health care policy and decision making processes. Building comprehensive and inclusive urban areas that are open and age-accommodating will provide welfare to every single urban inhabitant. Such activities don't require extra subsidizing, however assurance to redirect funds to priority interventions, in this manner accomplishing more noteworthy productivity.