

Assessment of health problems and reproductive outcome in residents of uppal industrial area in Telangana State

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Abstract

Study Objective: To determine and identify the health issues and higher incidences in people of residents or residing in industrial area of Uppal, Hyderabad, Telangana State of India.

Study Design: The study population living near or in the industrial area includes Thimmapur, Mallapur, Nacharam, Uppal and other villages of Uppal Industrial residents nearby the industries. For comparison, Non industrial areas of Jagtial district villages (Atmanagar, Jaggasagar, Atmakur, Ibrahimpatnam, Kathalapur etc.) not exposed to industrial chemicals were selected as control group. A door to door survey was conducted in each village to collect epidemiological data.

Results: In this present study gastro, respiratory disorders, hypertension, diabetics and their incidence rates was more predominant than in controls and found to be significance statistically. Other health issues includes neuro disorders and generalised weakness also showed significance when compared with controls group.

Conclusions: The results indicated that direct or indirect exposure to various environmental factors including chemicals increasing various health disorders in residents of industrial areas.

Keywords: health problems, reproductive outcome, uppal industrial, Telangana State

Introduction

Hyderabad is the heart of the newly established 29th state i.e Telangana and fifth largest city in India with its population touching five millions. Uppal is a suburban locality in the city which popularly known as Industrial Development Area (IDA) as it has hundreds of major, medium and small industries like pharmaceutical, food, alloys, plastic, soaps and detergents and many small scale industries are located, which may cause contamination of ground water, air and soil in the surrounded area. It has been identified as one of the most contaminated areas by both central and state pollution control boards (PCBs) and frequently referred uppal as an area of ecological disaster (Govil *et al.*, 2001^[4], Subrahmanyam *et al.*, 2001)^[5].

Industrialisation brings prosperity and creates jobs. Since the ages of industrial and technological revolutions, economic growth has been regarded as the major fundamental of the world's growth. Industrial growth has started to affect the entire environment with its severe downside problems including air, water, soil pollution, destruction of natural resources, ill effects etc. Among growing concerns over deteriorating air quality in India's major cities Delhi, Agra, Kanpur, Lucknow, Varanasi, Faridabad, Ahmedabad, Chennai, Bengaluru and Hyderabad, recently the government launched the National Air Quality Index (AQI) that will put out real time data about the level of pollutants in the air and inform people about the possible impacts on health. Patancheru, one of the major industrial hubs in Telangana has affected lives in the nearby villages such as Sultanpur, Kistareddypet and Kazipally. There are close to 300 industries in Patancheru area and as many as 10 surrounding villages face the worst ecological threat due to disposal of solid, liquid

and gaseous effluents by industries. The threat to environment has been a serious problem for years now.

Govil *et al* (2001)^[4] carried out a geochemical investigation in and around the patancheru industrial development area of andhrapradesh to determine chemical pollution in the soil. Their data revealed significant contamination, showing two to three times higher levels of toxic elements than normal and heavy metals like Cr, V, Fe, As, Cd, Se, Ba, Zn, Sr, Mo and Cu were found to be present above normal distribution in the soil.

P.P Reddy *et al* (1996) carried a study on reproductive performance and epidemiology of wives of 300 men working in sulfonamide factory in hyderabad and the percentage of abortions, stillbirths, premature births, and live births among the wives of these workers and the frequency of congenital malformations in the offspring were recorded. The reproductive performance of 360 men and their wives who were not exposed to toxic chemicals, drugs, radiations, and so forth and who belonged to the same socioeconomic group served as the control population. There was a significant increase in the percentage of abortions and decrease in live births in the sulfonamide-exposed population when compared to controls. Growth parameter such as weight and body mass index showed significant reduction, higher prevalence of respiratory, eye and skin problems and a higher genetic damage (micro nuclease test) in childrens (4288) who lives in industrial areas when compared to non-industrial areas. Parveen Jahan *et al* (2009)^[7] conducted a school survey and health camps at balangar, hyderabad an another industrial area showed height, weigh, BMI showed differences.

The health problems and environmental problems including

water, air and soil contamination due to regulatory bodies negligence and irrigation problems. There was no proper irrigation projects, since 1972 at the time of the area declared as industrial hub by Sri Late Indira Gandhi. Also negligence by industries are also major cause of the situation. As a result, air, water and soil are contaminated by deadly chemicals, and metals like copper, lead and mercury. Most of the inhabitants of sultanpur are ill due to the prevailing toxicity and exposure to environmentally unfriendly chemicals. A report by Dr. Reddy says that the toxicity has now entered even the human system. “We have tested mother’s breast milk and found out some toxic substances in it. This is the outcome of breathing poisonous air and drinking contaminated water,” Industrial pollution has also affected the fertile lands, now there is no scope for agriculture in the area useless for growing any kind of crop.

Although studies have been carried out all over the globe on health problems and genetic effects in industrial workers, very few studies were undertaken in residents of industrial areas. Hence a study has been taken up on epidemiological and reproductive performance in people residing in uppal industrial area.

Materials and Methods

Study Area

The Study area includes Thimmapur, Mallapur, Nacharam,

Uppal and other villages of Uppal Industrial residents nearby the industries. For comparison, Non industrial areas of Jagtial district Villages, Atmanagar, Jaggasagar, Atmakur, Ibrahimpatnam, Kathalapur and other villages not exposed to industrial chemicals were selected (control group). A door to door survey was conducted in each village to collect epidemiological data.

Assessment of Health Problems in Uppal Industrial Area

560 residents of the industrial area were examined and information on age, sex, habits, socioeconomic status, occupation, nativity, details of their residence, living conditions, health problems, duration of their stay, habits (smoking and alcohol consumption), general health were recorded using a standard questionnaire. For comparison, 1069 subjects living in non-industrial area were selected (control group). Minor and major health problems of the residents were recorded.

Reproductive Performance of the couples

Reproductive history of 200 couples living in the industrial area and 250 couples living in non industrial area was studied. Information on the type of marriage, family history and number of live births, abortions, still births, congenital malformations and neonatal deaths were recorded as per WHO criteria.

Results:

Table 01: Health problems of people of Uppal Industrial area

Health Problems	< 20 yrs	< 20 yrs	21-40 yrs	21-40 yrs	41-60yrs	41-60 yrs	>60 yrs	>60 yrs	Total	Total	Mean ±	Mean
	N = 200	N = 384	N = 216	N = 418	N = 110	N = 209	N = 34	N = 58	N = 560	N = 1069	SD	±SD
	Subjects	Controls	Subjects	Controls	Subjects	Controls	Subjects	Controls	Subjects	Controls	Subjects	Controls
Hypertension	0	0	29(13.42)	28 (6.70)	18 (16.36)	15 (7.18)	7 (20.58)	6 (10.34)	54 (9.60)	49 (4.58)	11.0±6	16.4±1
Diabetes	0	0	23(10.64)	18 (4.31)	16 (16.36)	4 (1.91)	4 (11.76)	2 (3.45)	43 (7.70)	24 (2.25)	14.4±9	8.0±8
Renal problems	0	0	1 (0.46)	0	0	0	2 (5.88)	3 (5.17)	3 (0.50)	3 (0.28)	0.75±0.9	0.75±1
Skin problems	4 (2.00)	34 (8.85)	12 (5.55)	1 (0.24)	5 (4.54)	0	2 (5.88)	6 (10.34)	23 (4.10)	41 (3.84)	5.75±4	10.2±16
Gastrointestinal disorders	2 (1.00)	0	14(6.48)	0	9 (8.18)	2 (0.96)	0	1 (1.72)	25(4.40)	3 (0.28)	6.25±6	0.75±1
Infections	0	1 (0.26)	2 (0.92)	0	0	0	0	0	2 (0.35)	1 (0.09)	0.5±1.0	0.25±0.5
Nero disorders	0	0	15 (6.94)	0	7 (6.36)	0	3 (8.82)	1 (1.72)	25 (4.4)	1 (0.09)	6.25±6.5	0.25±0.5
Muscular pain	12 (6.00)	0	31 (14.35)	0	26 (23.63)	2 (0.96)	7 (20.58)	2 (3.45)	76 (13.5)	4 (0.37)	19.0±1	1.0±1
Respiratory disorders	17 (8.5)	0	24 (11.11)	0	10 (9.09)	2 (0.96)	5 (14.70)	6 (10.34)	56 (10.00)	8 (0.75)	14.0±8	2.0±2
Weakness/lassitude	3 (1.50)	0	13 (6.01)	0	5 (4.54)	0	2 (5.88)	0	23 (0.50)	0	5.75±4	0.0±0.0
Total	38 (19.00)	35 (9.11)	164 (75.92)	47 (11.24)	96 (87.27)	25 (11.96)	32 (94.11)	27 (46.55)	330 (58.92)	134 (12.54)	82.5±6	33.5±10

Table 2: Reproductive performance of couples in Uppal industrial area

Parameter	No. (%)	
	Subjects	Controls
Couples Studied	200	250
Infertile couples	10 (5)	6 (2.4)
Pregnancies	432	235
Live children	384 (88.88.)	226 (90.4)
Children with congenital anomalies	5 (1.30)	0
Neonatal deaths	21 (5.46)	5 (2.0)
Stillbirths	0	1 (0.4)
Abortions	22 (5.09)	12 (4.8)
Live/ Female	1.92	0.86

Results of the present study reveals that age group of industrial area of the subjects was found to be 18 years to 70 years. Demographic details of the patient's age, gender, contact information, smoking status were also recorded. Apart from this patients' demographics health issues revealed by test subjects were also recorded. The detailed health issues were recorded in table (Table-01). Muscular pain (13.5%), Respiratory disorders (10%) are more prevalent and found to be significant when compared with control subjects (0.37% & 0.75%) followed by hypertension (9.6%, 4.58%), diabetes (7.7%, 2.2%), Gastrointestinal disorders (4.4%, 0.3%), neuro disorders (4.4%, 0.1%), skin problems (4.1%, 3.8%) and general weakness (0.5%, 0%) in cases and controls. From this data what we found that is all these health issues are more dominant at the age group of 40-60 years.

Reproductive outcome of 250 couples living in this area was studied. The reproductive outcome was assessed by measuring the incidence of abortions, stillbirths, malformations, neonatal deaths, etc. The results showed a decrease in the fertility (90.4% against 88.88% in control group), a high incidence of abortions (4.8% against 5.09% in control group), and also a high frequency in neonatal deaths (2% against 5.46% in control group). The Study was conducted to identify the industrial pollutants and their effect in people residing in industries and their surround areas. There are very few reports available till today about the selected areas in this study. Earlier studies carried out indicated health problems in children exposed to industrial wastes. There are two most important zones like Patancheru and Uppal in twin cities having many minor and major industries and the studies carried out in residents of this industrial zone are very meagre. Hence a detailed study was taken up and the preliminary studies have shown a high incidence of health problems besides an increased frequency of abortion indicating an adverse reproductive outcome.

Discussion

The formation of massive pollution making industries are the result of the various health issues of the human being. These industries include, transportation and manufacturing, which are exhausting the earth's resources, but also causing tremendous stress on the environment and the ecological system. In the present study we found muscular pain is more in cases when compared with controls may be due to work related stress. But respiratory disorders were found to be high when compared with controls indicating the Air pollution and occupational exposure to various chemicals and dust etc. In our study, living within or nearby proximity of exposure in industrial area showed a greater risk of lung disorders amongst the 20-40 years age group, and this finding may suggest increased vulnerability amongst the younger age group. There are numerous reports showed air pollution and lung disorders including Asthma (Anuradha *et al.*, 2013), lung disorders (Braun *et al.*, 2007) common in urban population who located at industrial area and poor socio economic conditions than in rural areas, also reports showed occupational exposures may increases the lung cancer risk (kirmani *et al.*, 2010). Physiological illness includes cardiovascular diseases, musculo-skeletal disorders (MSD), and gastrointestinal disorders also found in this study which may cause by stress. According to reports from American heart association and Alan H. Lockwood *et al.*, accumulating evidence indicates that

air pollutants contribute to serious, even fatal damage to the cardiovascular system – and air pollution is a factor that you can't control just through healthy lifestyle. Environmental stressors like physical, chemical and biological agents can affect the comfort and performance at the workplace also noted by generalized illness and weakness. The effects might be due to direct or / indirect exposure to industrial pollution that is generated from various industries through inhalation, ingestion and skin contact but impact was more adverse. Further studies are necessary to understand the nature of effects of industrial pollution in population of Uppal industrial area and need to study about kind of exposure increasing the various health disorders.

Conclusion:

The study clearly showed an increase in the incidence of health problems and reproductive performance in people living in Uppal industrial area when compared to the health problems and reproductive performance observed in control group. However, we could not able to draw strong conclusions about the causative factors because there is no epidemiological data predating the exposure in industrial area and health risk. These results help for further to carry out the studies in genetical and molecular level.

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