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PUBLIC PERCEPTIONS AND AWARENESS ON ENVIRONMENT AND HEALTH RISKS: A STUDY OF HYDERABAD INDUSTRIAL AREAS

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ABSTRACT:

The environment and human health are thoroughly entangled and it is tough and difficult to imagine the perfect health of a human without having right environment. Any change in environment leads to adverse health implications both in human and animals, thereby, the economic growth, population growth and all the developmental processes will get fragile. With above conceptual framework, the present study has been carried out to understand the public perceptions and awareness on environment and health risks in and around of Hyderabad industrial areas. Simple random method was used to draw the samples from the universe and the interview schedule is the prime tool used for the collection of primary data. The collected data was analyzed through descriptive and inferential statistics. The results are: the rapid and rampant growth of industrialization and urbanization and the uncontrolled spread of urban sprawl spur two-fold burden of environmental health. Pollutants have several adversarial health effects from early life to death. Some of them are causing the most harmful effects on peri-natal disorders, infant mortality, respiratory disorders, allergy, malignancies, cardiovascular disorders, increase in stress oxidative, endothelial dysfunction, mental disorders, and various other harmful effects.

KEYWORDS: *Awareness on Environment, Health Risk.*

INTRODUCTION

Human beings have been inventive much before the evolution of human civilization and is inherited this quality from the nature itself. In order to meet his requirements, in order to raise his standards of living, he has been carrying on various activities. Human beings are now producing things which were not there earlier and he is also enhancing production which was there, but not in abundant quality. The contamination of environment is such a way that it creates hazards or potential hazards to the health and well-being of living and non-living beings. Every substance existing in the environment has definite composition. When a foreign body is introduced into a substance, or a proportion of its constituents are modified, it loses its original character and qualities. The harmful effects of industrial activity have been seen in almost every country. The Bhopal gas tragedy in India and the leakage of radioactive substances from Chernobyl Atomic Plant in Russia are some of the disasters that may result due to industrial pollution. In the present day world, industrial activity is the most important cause of environment pollution.

With the above conceptual framework, the present the study covers the problem of "industrial pollution" is very acute in areas such as Patancheru, Nacharam, Katedan and Jeedimetla. N. D. Tiwari Committee of the Union Government has identified Patancheru on the outskirts of the city of Hyderabad as one of the eleven areas seriously affected by industrial pollution. Next is the sub-urban areas of Hyderabad where industrial pollution has been causing a serious damage to the environment. Hence, the study dwell into the deeper of industrial problem and its effects on health and thereby, social vulnerability.

OBJECTIVE OF THE STUDY

- The main objective of the present study is to assess the health risks and social marginalization due to the damage of environment in the context of rapid and unplanned industrialization in and around of Hyderabad city.

METHODS AND MATERIALS

The present study is descriptive in nature; therefore, survey-descriptive research design was used to carry-out the present study in order to assess the environmental damages, health risks and social vulnerabilities onslaughts of industrial pollution. The study area was four industrial areas located in and around of Hyderabad namely 1) Patancheru, 2) Jeedimetla, 3) Nacharam and (4) Katedan.

A total of 38,38,923 stakeholders have been considered as the universe for this study. The Creative Research Systems survey software and Krejcie and Morgan table were used to determine sample size, thus, the study has taken 384 respondents as the standard sample size, thereby, collected the information from 384 sample respondents who live in the industrial areas located in and around of the Hyderabad city. The simple random sampling method was adopted to draw the sample respondents.

The primary data collected from the field by administrating a semi-structured interview schedule consisting of four parts on socio-economic background, environmental awareness, health risks and social vulnerabilities. The collected data was tabulated through SPSS and further it was analyzed through both descriptive and inferential statistics.

FINDINGS AND DISCUSSIONS

The data describes the rank-wise priority of various pollutions which indirectly indicates the respondent's level of awareness on various issues. The data show that air pollution has been secured a top place that is 200 (52%) of the respondents preferred as the first priority. Secondly, the water pollution was stood at the next place as 137 (35.68%) respondent said that water pollution is the important pollution among the all whereas 187 (48.7%) also ascribed second rank to the water pollution. In case of air pollution, 139 (36%) have stated that air pollution is the second preferable pollution in damaging the environment. As far as geo-pollution and noise pollution, the stakeholders are not fully aware what exactly the implications of geo-pollution and noise pollution. Thus, it is inferred that people did not properly notice those pollutions.

Regarding the deploration of Ozone leads to environmental pollution, the data shows that a majority of the respondents that is 67 (17.4%) has given seventh rank priority whereas 65 (16.9%), 61 (15.9%) and 57 (14.8%) respondents have preferred 5th, 6th and 8th rank respectively. There are 50 (13%) and 48 (12.5%) respondents have given 8th and 10th ranks. On the whole, 33 (8.6%) respondents have given less priority that is third rank. However, it can be said that the ozone layer is a belt of the naturally occurring gas "ozone." It sits 9.3 to 18.6 miles (15 to 30 kilometers) above Earth, and serves as a shield from the harmful ultraviolet B (UVB) radiation emitted by the sun. Ozone is a highly reactive molecule that contains three oxygen atoms. It is constantly being formed and broken down in the high atmosphere, 6.2 to 31 miles (10 to 50 kilometers) above Earth, in the region called the stratosphere.

The data on pollution as a factor responsible for the extinction of species explains that a majority of the respondents that is 107 (27%) have stated 9th priority. 91 (23.7%) and 90 (23.4%) have

chosen as 8th and 10th ranks as a factor responsible for extinction of species. There are 47 (12.2%) and 26 (6.8%) have opted 6th and 5th priority. On the generation of radiation onslaught of pollution, a majority of the respondents that is 56 (14.6%), each 53 (13.8%) and 50 (13%) have stated that radiation is being developed from different samees causes the various environmental pollution. The data on the impact of pollution on visibility in the environment clarifies that a substantial number of respondents 225 (58.6%) have stated that the impact of pollution on visibility is not considerable. There are 121 (31.5%) respondents who mentioned air visibility is widely appeared. On the whole, a considerable number of respondents that is 38 (9.9%) were neutral in this regard.

Regarding the relationship between over-population and air pollution, a majority of the respondents 68 (17.7%), 62 (16.1%) and 53 (13.8%) have stated that the priority-rank stands at 8th, 10th and 7th places while providing the preference in order to assess the level of environment. Thus, it is stated that the most common ambient air pollutants encountered in our daily life are particulate matter (PM), sulfur dioxide (SO2), nitrogen dioxide (NO2), ozone (O3), carbon monoxide (CO), and carbon dioxide (CO2).

About respiratory problem, a substantial number of respondents that is 261 (68%) have made a clear statement that they have been suffering from air pollution and breathlessness is one of the biggest problems in their respective areas. They also pointed out that the emission of industrial smoke one of the leading factor responsible for the respiratory related problems. The data related to how pollution confines the individual from the out-door activities show that just below half of the respondents 191 (49.7%) stated that pollution is a barrier to perform the out-door activities. Almost its equal number of them that is 181 (47%) has mentioned that pollution is not a responsible factor to perform the outdoor activities. The ANOVA test is conducted to assess the religion-wise perceptions of the respondents on out-door activities. The religion-wise perception on doing less out-door activity to avoid the affect of environmental pollution, the data show that F-value is 2.853 with 380 degree of freedom at 0.037 significance level clears that 'there is no variance among the respondent's religion and their perception on doing less out-door activities' is accepted as the p-value is lesser than 0.05. It is clear that the respondents belong to Christianity are different from Hindus and Muslims as well as the probability levels are 0.008 and 0.2026. The test of homogeneity is conducted to know the uniform behaviour of the respondents. The Tueky' S-B describes Christians possess unique behaviour as formed as sub-set whereas Islam, Hindus and Atheist are having similar kind of behaviour who differ from Christians. However, it is inferred that Christians are not preferred to work at outside and other religion respondents work at outside.

The data on feeling depressed due to industrial pollution shows that just below half of the respondents that is 187 (48.7%) have experienced that industrial pollution forces them feel depressed whereas a sizable number of them that is 176 (45.8%) have stated that industrial pollution does not disturb them psychologically. However, it can stated that over-half of the respondents are mentally disturbing owing to industrial pollution in and around of Hyderabad city. The data related to the effects of pollution on eyes, nose and throat envisages that a substantial number of respondents that 235 (61%) said that pollution effects eyes, nose and throat of the stakeholders of industrial areas. Just below 1/3rd of the respondents that is 125 (32.6%) have mentioned that pollution never show any impact on eyes, nose and throat. However, it is concluded that majority of the respondents have stated that the diseases related to eyes, nose and throat widely appeared owing to industrial pollution. Just of the below half the respondents that is 190 (49.5%) mentioned they did not face any skin related problems while 166 (43.2%) were affected by the skin diseases.

Perception of the stakeholders on child health, a majority of the respondents that is 205 (53.4%) stated that they are worrying about the Health and fate of their children as the levels of pollution will exponentially augment which degrade the sustainability of environment. At the end, a small portion of respondents that is 24 (6.2%) were natural in this regard. The ANOVA test was conducted on respondent's educational status-wise perception on the health of their children with regard to sustainable environment. The data show that the F-value is 2.205 with 378 degree of freedom at 0.053 level of significance. It implies that the acceptance of null hypothesis that is 'there is no

variance among the respondents in relation to their children's health". Further, the post-hoc test is conducted to assess the difference between various levels of education. The considerable difference between illiterate and read and write, collegiate and post-graduate respondents. The read and write also differs from post-graduate. When its compare to primary studied and post-graduate are different. In case of collegiate, the illiterate are unique. At the end, the post-graduate studied respondents who are unlike primary studied respondents. The test of homogeneity (Tukey S-B) eventually explains that illiterate are entirely different from all educational stratus namely read and write, primary, secondary, collegiate and post-graduation. It is needless to say that education socializes the human in a different way whereas the layman more is socialized with generalist culture and tradition.

The ANOVA test was conducted for religious-wise respondents' view on children health and the data show that 2.196 with 380 degree of freedom at 0.048 level of significance denotes that there is no variance between respondent's religious-wise notion and their health of the children. It is observed that Hindu respondents poles apart from the Christians as they try to take more care on the health of children as Christians are having more health awareness compare to Hindus.

As par the educational status of the respondents vis-à-vis child health, the data show that the F-value is 2.594 with 378 degree of freedom at 0.025 level of significance. It conveys that there is no variance between educational statuses of the respondents on the view of children health as the F-value is lesser than that is 0.05. However, it is inferred that children are considered as if they were small adults. This is not really true. There are many differences between children and adults in the ways that they respond to air pollution. For example, children take in more air per unit body weight at a given level of exertion than do adults. When a child is exercising at maximum levels, such as during a game or sports event, they may take in 20% to 50% more air - and more air pollution - than would an adult incomparable activity. The data of post-hoc LSD test explains that the labour is different from private job and self-employment. The strata of business respondents are different from the private job respondents. However, it is concluded that this probably does not mean that children are less sensitive to air pollution than adults.

The group statistics related to possession on the possession on life and health insurances and their opinion on children health. The data show that there are 136 respondents having 1.43 as mean of worrying about the health of their children while 242 are having 1.59 are not worry about children health among the life insured respondents. Regarding the health insured respondents, there are only 40 respondents are worrying about the health of their children while a substantial number of them that 334 respondent do not have any trouble with the children health as they have already covered with health insurance policies. If any family member fell in ill-health, the concerned insurance agency can bare all the expenses.

The t-value is -2.338 with 376 degree of freedom at 0.020 level of significance indicates a significant difference between the possession of life insurance and their worry on the health of children. On the contrary, the respondents worry on the children health among the health insured is presumed very less as the t-value is -1.726 with 372 degree of freedom at 0.061 probability level. However, it is concluded that generally, health insurance plans cover the cost of medical office visits for illness and checkups, hospitalization, emergency room services, ambulance transportation, operations, physical therapy, and even prescription drugs, to provide several examples of potentially covered health care services. But, every plan is different and it behooves a policyholder to become familiar with the details of the plan before the benefit is needed.

Regarding the respondent's place of birth-wise impact of pollution on unborn babies shows the F-value is 3.648 with 381 degree of freedom at 0.027 level of significance approves the null hypothesis that is 'there is no variance in the distribution with regard to the respondents' opinion on the impact of pollution on unborn babies'. The impact of pollution on unborn babies in rural areas is compared to semi-urban area and rural and semi-urban areas are having different opinion. In tune with urban areas, the respondents from semi-urban unlike each other. That it means the respondents who hail from semi-urban areas poles apart from the rural and urban area respondents as well. Thus, it is deduced that majority of the industries situated in semi-urban areas so that the levels of pollution are usually

high. As a result, the impact of pollution may be higher in these areas. Rural areas covered with greenery and having almost no polluted industries, thus, the problem of pollution may not arise there itself. Similarly, the core and central areas of towns and cities occupied by the residential zones where the production of pollution is also limited, this is why; the rural areas and urban areas consist of less pollution.

The ANOVA test clears no variance among the educational status of the respondents and their perception of the impact of pollution on unborn babies as the F-value is 2.550 with 378 degree of freedom at 0.028 level of significance. When it compares to illiterate respondents with all stratus of respondents, only the read and write is different. In case of read and write, the illiterate, secondary, collegiate and post-graduates are differ. The test of homogeneity is conducted by Tukey's-b test and the results are: The respondents who studied post-graduation and who have not studied anything are similar pattern of opinion on the impact of pollution on unborn babies whereas the next category of the respondents who are familiar with read and write formed as another unique group in terms of explicating their view on impact of pollution on unborn babies. Meanwhile, the respondents who have studied the primary, secondary and collegiate level of education combine or intermix in both the categories. However, it is clear that high level of knowledge or least education play a predominate role in formulating the opinion on the impact of pollution but the in-between category of people are unclear in asserting their original view.

SUMMARY, CONCLUSIONS AND SOCIAL WORK IMPLICATIONS

Air pollution has been secured a top place while the water pollution was stood at the next place and ambient air pollution has been associated with increases in acute morbidity and mortality. The findings of the present study are similar to the study conducted by Du, Y., et al. (2016) and Peters et al. (2012) elevated concentrations of ambient particulate air pollution have been associated with increased hospital admissions for cardiovascular disease. Air pollution is a risk factor for cause-specific cardiovascular disease mortality via mechanisms that likely include pulmonary and systemic inflammation, accelerated atherosclerosis, and altered cardiac autonomic function. However, the emission of industrial smoke one of the leading factor responsible for the respiratory related problems. The study of Schwartz, J-(1999), Romieu, I et al. (2002), Zhang, J., & Smith, K. R. (2003) and Sagar., A, et al. (2007) also revealed the same findings, the most common ambient air pollutants encountered in our daily life are particulate matter (PM), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), carbon monoxide (CO), and carbon dioxide (CO_2). Human beings chronically exposed to SO_2 have higher incidence of cough, shortness of breath, bronchitis, colds of long duration and fatigue. Most of the SO_2 in the atmosphere is converted to sulphate salts, which are removed by sedimentation or by washout along with precipitation thereby making rain water acidic due to sulphuric acid formation.

The skin is also the site of significant absorption of environmental pollutants and the percutaneous absorption of skin is equivalent to the respiratory uptake, emphasizing how important it is to recognize skin absorption in toxicologic exposures. The similar results were also found in Baudouin, C., et al. (2002).

The study results show that the surface water and ground water were highly contaminated in and around of the industrial areas of Hyderabad. Gowd, S. S., & Govil, P. K. (2008) also denote that the surface water in the area is highly contaminated showing very high concentrations of some of the heavy/toxic metals like Cadmium, Chromium, Copper, Nickel, Lead and Zinc. K. Shiv Kumar, K and Biksham, G. (1995) reveal that pollutants are contaminating the ground water at a faster rate than anticipated as the pollutants migrated and became deposited in its attached environs. Subrahmanyam & P. Yadaiah (2001) found the groundwater quality in and around Patancheru has become hazardous by having high values of electrical conductivity (EC) and concentrations of Na^+, Ca^{2+}, Cl^-, and HCO_3^- indicate the impact of industrial effluents.

The study found over-population leads to pollution as the overpopulation of human damages the ecological footprint in a specific geographical location exceeds the carrying capacity of the place occupied by that group. Overpopulation cannot be maintained given the rapid depletion of non-

renewable resources or given the degradation of the capacity of the environment to give support to the population. The reasons for the sudden rise of population in Hyderabad industrial areas is pull factors of migration from rural to urban. Meanwhile, push factors in rural areas also paving a way for more concentration of urban population. Hema, B. and Shagufta Jamal (2004) believed that slums not only create environmental pollution through their unorganized and unsystematic drainage and sewage disposal, congested and unplanned houses as well as through unethical socio-cultural habits and values, but also expand its influence. When economic development reaches an intermediate stage, air pollution concentration levels tend to increase appreciably or even rise sharply. Modernity is risk society as said by Mol, A. P. (2006) and that leading towards industrial pollution.

The environmentalists opine that the common cold, running nose and stuffy nose are the most prevalent diseases in the industrial areas. The reason is that viruses cause colds by targeting the pharynx and the nasal passages. Thus, it is noted that allergy and the diseases of ear, nose and throat (ENT) have been increased day by day due to pollution. It is needless to say that air pollution exists everywhere, but without feeling its effects every day, some of us might forget that it can affect us in more subtle ways that we might not immediately notice.

It is observed that religious-wise classification of awareness on decline of visibility is insignificant. The pollution also diminishes the visibility in the environment of industrial areas of Hyderabad by sprawling the particles. Atmospheric pollution due to industry, the primary emission sources of particles over urban area, was considered to be the main cause of visibility degradation. The sky is so smoggy due to air pollutants that visibility is limited. It happens most often in large cities with many people, but these pollutants can also travel to other areas with the help of the wind. When pollutants are in the sky, sunlight can have trouble shinning through it. As a result, the climate of the area can be changed by pollutants.

It is found in the study that pollution is leading towards various adverse implications on health and those problems are skin problems, breathlessness, eye infection, poor visibility, cardio vascular issues, diarrhea, lung cancer, pulmonary diseases etc. Marilena Kampa and Elias Castanas (2007) also observed air pollution has both acute and chronic effects on human health, affecting a number of different systems and organs. It ranges from minor upper respiratory irritation to chronic respiratory and heart disease, lung cancer, acute respiratory infections in children and chronic bronchitis in adults, aggravating pre-existing heart and lung disease, or asthmatic attacks.

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