



A study on Urban Problem : Water Logging in Patna

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Abstract : *Water logging is becoming a severe problem in Patna with the increase of towering buildings which made the land limited and disrupted. The sewerage and drainage system of Patna is disrupting day by day due to unscientific land use system in the city. Mainly in the central region of the city, the decrease in amount of open surfaces, which has created submergence, due to ongoing high rises of population, creates hazards. So, this area suffers badly from water logging after even a small downpour. Not only in the central region of the city but in different areas of Patna, water logging is a persistent problem. This creates a hazardous situation, mainly in the urban areas. Through this research work, researchers are trying to identify the location extent of the city, its areas*

affected by water logging, and to find out the main causes and results that have led it to be hazardous. It analyses and charts the main water-logged zones, situation of canals and channels which are helping to pass out storm water flow from different parts of the city. At the same time, we are analyzing the water logged areas with their varying depths, roads which are affected, the traffic situation and the number of people affected by this water logging. We are also analyzing the government's plan to counter the problem of water logging such as setting up new pump stations, development of sewage system etc. Which help the people to get rid of the devastating situation hampering the socioeconomic situation of the city.

Key words: *Water logging, Drainage, Hazardous.*

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Introduction :

Patna is the capital town of the Indian state of Bihar. At present, Bihar is rising to emerge as a powerful state in all terms and respects. The Bihar government is dedicating a large portion of its time trying to seek suggestions from the citizens on how to make Patna a 'SMART CITY'. The waterlogging in the state capital could have offered the officials some clues into the immediate need of the people, before embarking on fantasy. It is more than likely to stay in the dusty government files than become a reality. Waterlogging includes with it many other problems like:- Health concerns, hidden man holes, hygiene concerns etc. The entire city, even the VIP areas, plunges into rain water after a heavy shower. In many areas, water enters homes, as residents struggled to move their belongings to higher plains. Public, government, Patna Municipal

Corporation if they work together can bring out creative and innovative ideas and take initiatives to avoid this problem of easy waterlogging. And this will result in an important and effective step towards Patna as a 'SMART CITY'.

Objectives :

1. To collect adequate data on the waterlogging problem in Patna.
2. To know about the major problems faced by people residing in the areas affected by waterlogging.
3. To draw the attention of the government and authorized officers towards the pathetic condition.
4. To create awareness among those people regarding cleanliness.
5. To give suggestions to improve the condition of Patna during the monsoon.

Hypotheses :

The following hypotheses were formulated about the conditions of waterlogging in Patna:-

1. Bad drainage system causes waterlogging.
2. Use of plastic bags causes waterlogging in Patna.
3. Compact areas of Patna lead to a disposal problem, causing waterlogging.
4. Low soil filtration causes waterlogging.
5. Lower areas of Patna easily get water-logged.
6. Irregular cleaning of chambers causes waterlogging.

Area of Study :

During the field work, waterlogging in different areas was being studied by the researchers and basic data was also collected. These areas are-

- Lohanipur (Patna)
- Mithapur (Patna)
- Patliputra (Patna)
- Kankarbagh (Patna)

Sample Unit : People affected by water-logging.

Sample Size : 100

Sample Method : Purposive Sampling Method.

Tools and Techniques :

The following research tools were used for the methods of data collection:-

- **Interview :** The respondents were minutely interviewed about the problems, and the suffering they face, while living in areas affected by waterlogging. And on this, basic data has been collected.
- **Schedule :** A set of structured questions were prepared and asked of the respondents while interviewing them. This schedule was constructed to get an insight into the lifestyle and socio-economic condition of the people living in areas affected by waterlogging.
- **Case Study :** In order to have a deep understanding of the problem and to bring out an authentic project report, the descriptive case study has been used.

Procedure of Data Collection :

The process of data collection was done over a period of 15 days from various areas affected from waterlogging problems in Patna. A structured schedule comprising 21 questions was prepared by the research workers and put to the respondents who have to answer those questions being in face to face contact with researchers. The respondents were free to give the answers in their own mother tongue, which were later recorded in the blank spaces by the interviewer.

Results and Discussion :

The research work entitled, "A Study of Urban Problem: Waterlogging in Patna" has been carried out on the basis of empirical study. The entire information of data collected from respondents has been carefully analyzed. Keeping in mind, the views of 100 respondents, certain data analysis has been done by the research workers. The results also explain the validity of the hypothesis formulated in the very beginning of the research. The data analysis has been represented with the help of pie charts, graphics and tabular presentation.

Hypothesis No. 1 : Bad drainage system causes waterlogging (Table 1).

Hypothesis No. 2 : Use of plastic bags causes waterlogging in Patna (Table 2).

Hypothesis No. 3 : Compactness in the areas leads to disposal problems, causing waterlogging (Table 3 and Fig. 1).

Hypothesis No. 4 : Low soil filtration causes waterlogging (Table 4 and Fig. 2).

Hypothesis No. 5 : The Low level of some areas of Patna causes waterlogging (Table 5).

Hypothesis No. 6 : Irregular cleaning of chambers causes waterlogging (Table 6).

Findings :

Some important findings of the Research surveys are as follows :

1. Almost 90% of the people in the selected area of survey are facing the waterlogging problem.
2. Due to water logging various diseases, such as, skin infection, typhoid and mosquito-borne diseases are occurring in the waterlogged area which is affecting the social aspect of the state.
3. There is poor waste management in the locality, that is, the garbage is thrown here and there, which causes blockage of drainage and hence, waterlogging is occurring in the area.
4. The drainage system is not well maintained and is not cleaned regularly due to which waterlogging is occurring in the area.
5. Besides this, the population density of the area selected is very high, due to which the people are staying in a very congested area. Compact areas create problems in the drainage of water and hence, waterlogging occurs.
6. The area selected for the survey is a low lying area. Water from the high areas comes towards these low land areas and water gets accumulated. Hence, it results in waterlogging.
7. The water absorption and filtration power of the soil in the area is very low, due to which the water level increases over the land, resulting in water logging.
8. Unplanned growth of the cities is also one of the reasons for waterlogging. The buildings, drainage, roads etc. are not built in a planned way.

Conclusion :

Waterlogging is a problem which almost every state of India faces. The local people face this challenge, which affects the socio-economic and political aspect of the state and people. This situation takes place mainly during the rainy season, in both rural and urban areas. The research done on "A Study on the Urban Problem: Waterlogging in Patna", focuses on the pathetic condition of the areas facing this problem.

On the basis of the hypothesis tested in this Research, the conclusion reached is that waterlogging is the outcome of the unplanned structure of the city, poor waste management, dysfunctional drainage system, low land area, heavy rainfall etc.

Hence, in order to bring improvement in the pathetic condition of such areas, some feasible efforts need to be put together by Patna Municipal Corporation (PMC), the public and the government. Government should take some necessary steps in the cleanliness of the area and the public, being aware, must take the necessary steps to prevent such a situation. Therefore, everyone's contribution is necessary to make Patna a well-developed city.

Suggestion :

The research report conducted on '**A Study of the Urban Problem: Waterlogging in Patna**', highlights various social problems in the life of the public. Keeping in mind their pathetic living conditions, certain suggestions can be given, which are as follows:-

- Waterlogging can be controlled by planting trees, bushes, plants on the water table.
- A proper drainage system also help to control waterlogging and the choice of crops, seeding, fertilization and weed control, also control the waterlogging.
- Preventing the loss of water by percolation through field channels and fields.
- Augmentation of clean water by introducing artificial open and underground drainage grid. It may also be achieved by improving the flow conditions of existing natural drainages.
- Quick removal of rain water by surface or open drains is a very effective method of preventing the rise in water table and consequent waterlogging of the tract.

LIST OF TABLES

Table 1. Table showing the condition of drainage of the area of the respondents facing water logging problem.

Area	Normal Drainage	Over Flooded
LOHANIPUR	5	20
RAJENDRANAGAR	12	13
MITHAPUR	10	15
KANKARBAGH	7	18

Table 2. Use of Plastic bags causes water logging in Patna

Area	Yes	No
LOHANIPUR	23	2
RAJENDRANAGAR	20	5
MITHAPUR	22	17
KANKARBAGH	15	13

Table 3. Compactness in the area leads to disposal Problems, Causing water logging

Area	Yes	No
LOHANIPUR	22	3
RAJENDRANAGAR	20	5
MITHAPUR	8	17
KANKARBAGH	12	13

Table 4. Low soil filtration causes water logging

Area	Good	Bad
LOHANIPUR	5	20
RAJENDRANAGAR	3	22
MITHAPUR	10	15
KANKARBAGH	12	13

Table 5. The low level of some area of Patna causes water logging

Area	Yes	No
LOHANIPUR	22	3
RAJENDRANAGAR	19	6
MITHAPUR	15	10
KANKARBAGH	17	8

Table 6. Irregular cleaning of chambers causes water logging

Area	Yes	No
LOHANIPUR	23	2
RAJENDRANAGAR	20	5
MITHAPUR	16	9
KANKARBAGH	18	7

LIST OF FIGURES

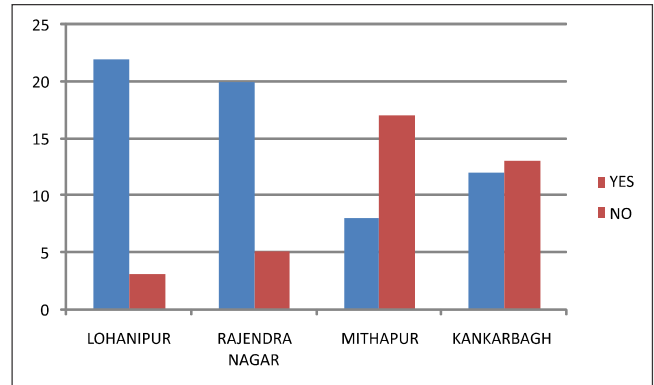


Fig. 1

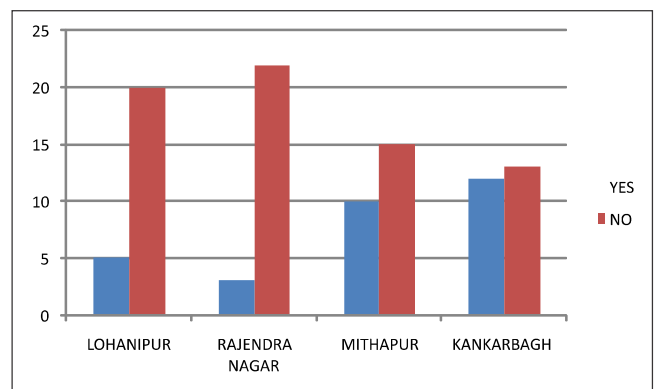


Fig. 2

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