VI. Perceptions, Impacts & Coping mechanism to Climate Change

VI.1 Health

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| Health DataDiseases related to quality of air: Eight chronic asthma patients, Conjunctivitis 33, Pnemonia-1,wheezing 1,Water related diseases : Typhoid 18, Dysentery 3, Diarrhea 4, Hepatitis A: 1Vector borne diseases: Malaria 4, Dengue, 7, Chikungunya 73Infections: Fevers 23, four reported it as common among their children, Cold & cough 7 with three reporting it as common among children, worms 1,Others: Lice 3, Skin 3, sugar 2, BP 1, Heart 2, jaundice 1, chicken pox 1, cancer 1 |

There are several environmental factors which dramatically influence the health of the marginalized urban population. Among the people interviewed too, the incidence of chikungunya was startling. In 2011, while the interviews were being conducted the incidence of asthama and conjunctivitis in Parappana Agrahara was abnormally high.

The most significant cause seems to be the poor sanitation facilities, and dampness, heat and congested conditions of their habitat. These are conditions that get exacerbated due to climate change effects like heavy precipitation, extremes of temperature which add to conditions

like overflow of sewerage, broken water and sewerage pipes, accumulation of water and degeneration of water bodies, contamination of open drains or collection of solid waste.

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| Chikungunya

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| --- | --- | --- | --- | --- |
|  | **KSG** | **EWS**  | **PA** |  |
|  | **M** | **F** | **M** | **F** | **M** | **F** | **T** |
| **2006** |  |  |  |  |  | 1 | 1 |
| **2008** | 1 | 1 | 1 | 4 |  |  | 7 |
| **2009** | 19 | 23 | 8 | 9 | 3 | 6 | 68 |
| **2010** | 5 | 16 | 4 | 9 |  |  | 34 |
| **2011** |  |  |  | 1 |  |  | 1 |
|  | 25 | 49 | 13 | 23 | 3 | 7 |  |

Dengue

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **KSG** | **EWS**  | **PA** |  |
|  | **M** | **F** | **M** | **F** | **M** | **F** | **T** |
| **2006** |  |  |  | 2 |  |  | 2 |
| **2008** |  |  |  |  |  |  |  |
| **2009** | 1 | 1 |  |  |  |  | 2 |
| **2010** |  | 1 |  | 2 |  |  | 3 |

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In the KS Garden slum, even in the elevated houses, dampness seeps through the floors, making most particularly children vulnerable to colds, and chest infections. 35 year old K26, for instance, lives in a low lying house. Even in the slightest of rain, her house is affected and the walls get damp. K26 works as a house keeping staff in the Bangalore Club. As her job brings her in close contact with dust and water, her living conditions make her very prone to cold, cough and fevers.

A large open storm water drain runs close to this slum. There is a lot of stagnant grey to blackish water in the drain which makes it an ideal breeding ground for mosquitoes. Indeed, the community has also had a recent outbreak of Chikungunya over 2008 and 2009, with very few individuals spared from infection.

Chikungunya affected more number of females across all three locations. People in KS Garden are the most affected, perhaps because of overcrowding, and possibly because of the way in which the sewage is connected. Multiple members in a single household have been affected. For example, all the family members of K10 were affected. 3 females and 2 males were affected from the family of K29. 3 females and 3 males were affected from the family of K48. 2 females and 3 males were affected from the family of K49.

The newspapers had reported outbreak of Chikungunya in June 2008 in Bangalore. Since then, every year there have been reported cases of Chikungunya and Dengue[[1]](#endnote-2).

Within EWS Quarters too, the situation is no different. A large open drain which runs close to this slum is also used as a waste dump yard. Further many residences have had to resort to having individual toilet connected to soak pits outside their house. Since they have to be cleaned regularly, they are not properly sealed. Most families also dump their grey water nearby. Thus this leads to a concentrated breeding of disease vectors. As in KS garden, in EWS too there was a major outbreak of Chikungunya.

In the fringe of Parappana Agrahara there is practically no drainage system. Many houses simply let their sewage into a neighboring empty plot of land, if not directly into the lake. A few houses have built soak pits. The effects of such practices are only getting worse as more and more plots are developed. Now that the area has been brought into the BBMP, there is an expectation of a sewerage and drainage system. But till then the situation is fast degenerating, what with extremely high levels of sewage, both grey and black into the lakes. The highly eutrophic effect from the nitrogenous sewage has resulted in 4 to 5 feet matte of thick weeds on the surface of the lake. The lake has also become a breeding ground for mosquitoes. 24 year old P8 who works as a *pourakarmika* (sweeper) with the BBMP, says that due to the rigors of her job, her nose gets clogged and that she often has cough and chest related difficulties. This is exacerbated as at her home, she is plagued by mosquitoes and has to use mosquito coils to repel mosquitoes through the night. She feels that as long as the sewage water from the jail is let into the lake, the mosquitoes will not reduce in their numbers around this area. So bad is the situation that many residents feel that instead of trying to re-vitalise the lake, it should be filled up, much like other lake areas in the centre of the land hungry city. P4 seems to be the lone dissenting voice and she feels that the vegetation cover of the area needs to be improved and that the mosquito menace would be curbed only if the lake is revived and the sewage inflow into the lake from the jail is stopped.

Another important health hazard is the gradual increase in heat. While Bangalore, which was known for its salubrious climate, seems to be victim of the heat island effect caused by increasing construction, climate change is likely to make it worse. The biggest sufferers would be people living in these makeshift tin sheds, as they are in EWS quarters, as they feel the heat more acutely, and have reported very high incidence of heat stroke. E6 for example cannot use the fan because the bamboo where is fan was fixed has started to crumble. All family members suffer from rashes on the skin due to excessive heat. Therefore they sleep outdoors at night which again makes them targets for the mosquitoes.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Traditional medicines for common ailments

|  |  |  |  |
| --- | --- | --- | --- |
|  | KS | EWS | PA |
| Using various combinations of home remedies for common ailments | 9 | 7 | 10 |
| Prefer seeing a doctor | 1 |  | 1 |
| Take Over the counter medicines |  |  | 1 |
| No response | 45 | 47 | 33 |

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Issues of health are closely tied to belief systems, and folk remedies. In order to test whether some of the changes of health status are attributed to extraneous origins and whether people have continued to take recourse to folk medicines, with what result, the respondents were asked to about religious beliefs affecting the health. It was generally found that except for Chicken Pox, most people clearly attributed degeneration of health to environmental and job conditions. In the case of Chicken Pox, there were a few families who paid obeisance to a Mother Goddess. Most persons did not say that they consulted a doctor at the onset of any ailment. Some did take recourse to herbal remedies. A few of the respondents resort to use of traditional remedies particularly various forms of *kashayams* indicating that resilience could be built around self-treatment. For example, K3 considers consuming de-worming tablets as a remedy for most common ailments, suggesting that her experience is that most of the ailments are relating to feacal contamination. K24 on the other hand specifically mentioned taking ENO for most common ailments, which suggest that they have to do with stomach-related ailment and flatulence.

Most waited out the first few days, before consulting a doctor. This indicated that the costs and accessibility could be a determining factor. All this, albeit in a limited way suggests that a public health system which is free and efficient, and local is needed.

VI. 2 Perceptions of Climate Change

All respondents, without exception had no understanding of climate change. There is however the perceptions that these are environmental changes. In the study we elicited their perception of temperature changes and rainfall patterns, ground water levels as perceived by water in the borewells. Other issues like flooding or water logging, and changes in water quality and quantity, provided us with an insight to their perception of issues which are major long term indicators on impact of climate change.

Some of the people had specific perceptions of environmental change. P3 of Parappana Agrahara says “15- 20 years ago, the area used to witness what we call “*Jadi male*”, which is characterised by continuous drizzles over 2-3 days. This phenomenon which used to occur at least 4-5 times in a year is completely missing now. She says that today the rain pours heavily and then stops completely”. Most migrants from harsher climates do perceive the changes as manageable. E4 in EWS quarters is from Uttar Pradesh. He did not find Bangalore weather conditions to be extreme either in terms of temperature or rainfall. He is more concerned with the vulnerability that the tin sheds bring, when the place heats up in summer and the roofs tend to blow off in storms.

P30 does tend to compare the clean green atmosphere in her villages with the rapid changes in her neighbourhood as the lake is now overflowing with sewage, impacting the health of the people living near it. She remembered the pristine beauty of the lake, which used to overflow with rains. She remembers a time when fishing was a widespread practice among the community in the waters of the lake. She says that while fish still thrive beneath the weeds, many have been killed due to the extensive pollution of the lake waters.

Today rains have decreased. She also notes that when in the olden days one open well sufficed for the entire village, today-two bore wells as well as the tankers that occasionally come into the village are not enough to satisfy the water demands of the community.

The following is a tabulation of descriptions of respondent’s perceptions about temperature variations in temperature changes over a period of 20-30 years

|  |  |  |  |
| --- | --- | --- | --- |
| **Range of responses** | **KS** | **EWS** | PA |
| Increased heat, making it impossible to remain indoors and causing frequent disorders | 26 | 41 | 6 |
| Increased but manageable heat, with spells of rain in summer | 2 | 1 | 13 |
| Increased cold | 2 | 0 | 1 |
| No significant change | 2 | 2 | 0 |
| Did not observe | **24** | **3** | **23** |

A significant number of respondents when asked to describe the changes said that they did not observe any changes, except in EWS where the increased heat is palpable as they live in tin sheds.

**PERCEPTION TO CHANGES IN RAINFALL:**

We also asked the respondents if they had noticed any change in the rainfall patterns over 20-30 years. The following table details the responses received.

|  |  |  |  |
| --- | --- | --- | --- |
|  **Rainfall Patterns** | **KS** | **EWS** | **PA** |
| Increased rainfall | 3 | 3 | 4 |
| Increased Erratic Rainfall | 12 | 2 | 4 |
| Increased rainfall with heavy winds |  | 22 |  |
| Decreased rainfall | 1 |  | 7 |
| Decreased rainfall – lesser intensity and no fixed patterns | 2 | 1 | 1 |
| Increase in non-seasonal and summer rainfall | 2 | 1 | 3 |
| No change | 1 | 1 | 1 |
| Did not notice any particular change  | 1 | 1 | 1 |
| No response | **32** | **39** | **23** |

K21 has identified that June rains are now erratic.

K11 says flooding is due to overcrowding & concretization.

K20 feels that because of erratic rains new illnesses have been seen and is also a problem for the homeless. Because of overcrowding there is no free flow of wind.

P3 says that 15-20 yrs ago there used to be *Jadi-Male* which is rains (drizzle) over 2-3 days continuously for 4-5 times a yr this is missing completely now.

P30 says that the lake was overflowing when it used to be regular and each shower had a name.

Kumaresh from KS Garden at the Stakeholders meeting mentioned that earlier there used to be *Jadimale*(a continuous drizzle lasting over 2-3 days).

All respondents from EWS Quarters, who for reasons already mentioned experience the ravages of weather, more acutely noted that there has been an increased in the rains accompanied by heavy winds. At the time of the survey, the team met a gentleman whose hand was injured because of the flying sheet in storms, and a young mother of a week-old infant who went into shock because of the same event.

**PERCEPTIONS TO CHANGES IN EVENTS OF FLASH FLOODING:**

Flooding and water logging, in Bangalore is generally attributed to urban interference with natural drainage. K11spoke of concretization of pavements, while K21 said that chambers and sewerage line were responsible for reducing flows and the degeneration of the lake systems of the city. These are exacerbated by the poor housing as experiences by leaky roof and walls and low lying terrains on which the poor in the slum have settled down.

The incidence of water logging within communities and the city as a whole made us also ask the respondents if they have noticed any changes in the patterns of flooding over time.

|  |  |  |  |
| --- | --- | --- | --- |
| **Range of responses** | **KS** | **EWS** | **PA** |
| Increased  | 10 | 42 | 0 |
| Decreased  | 11 | 3 | 0 |
| No change | 2 | 0 | 0 |
| Did not notice | **30** | **2** | **0** |

All residents of Parappana Agrahara did not notice any water logging as the village is at a higher elevation and the two depressions form the Parappana Agrahara Lake and the Kudlu Lake. The deterioration of the lake however could cause major flooding issues in the village in the future. When asked about such a hypothetical scenario, the villagers said that the immediate concern was the mosquitoes that breed in the lakes and that they would prefer filling up and reclaiming the land rather than review the lake.

**PERCEPTION TO CHANGES IN QUANTITY OF WATER**

|  |  |  |  |
| --- | --- | --- | --- |
| **Availability of water** | **KS** | **EWS** | **PA** |
| Less water available as of now | 10 | 5 | 6 |
| Less water available compared to previous times | 4 | 1 | 7 |
| Now water available is more  | 4 | 3 | 2 |
| previously people has to go a distance to bring water, now it is easier since waterpipes are closeby  | 4 | 0 | 5 |
| No response | **33** | **44** | **25** |
| Buying water, caste issues | 0 | 1 | 1 |

E25 used to buy water from close by area since there where not many taps.

P3 inspite of water being present in wells, was not allowed to use it because they belonged to a lower caste.

E40 observes that they felt water was more now because earlier there were few wells, so there was less water, now there are plenty of borewells and Kaveri water.

K13 who feels less water is available now is because rich people use more water.

K20 also feels that water is less now compared to previous times when they used to travel a distance to fetch water, which was more abundant.

Most of the respondents who were women were acutely aware of the water situation in most areas. Within KS Garden the issue seems to have worsened when the pipes have been laid down for water and the residents feel that the water made available to them via these channels is not adequate. 31 respondents of a total of 55 have stated this as a change they have noticed over the years with respect to water quantity. Within EWS Quarters, the water availability seems to have been a persistent problem and 41 respondents mentioned it as such in our study. A majority of people in Parappana Agrahara feel that there is no point in worrying about changes; rather it would be more prudent to find ways and means to make do with what is currently available.

Changes in the depth of bore wells in the community:

|  |  |  |  |
| --- | --- | --- | --- |
| **Range of responses** | **KS** | **EWS** | **PA** |
| Has become deeper with lesser quantities of water available. | 0 | 0 | 7 |
| Increased numbers of bore wells required now to meet water demands of the entire community | 0 | 0 | 11 |
| No particular change noticed | **55** | **54** | **23** |

Within EWS Quarters and KS Garden none of the respondents had noticed any particular change in depth of borewell water. Only persons from Parappana Agrahara were aware of the borewell issue. This is perhaps because the borewell as the only current source of water and are still quite rural in their outlook. But getting increasing urbanized, many residents translated the lowering of the borewell water level to “more bore wells are needed to satisfy the demands of the entire village”.

**PERCEPTIONS TO CHANGES IN QUANTITY OF WATER**

|  |  |  |  |
| --- | --- | --- | --- |
| **Quality of Water** | **KS** | **EWS** | **PA** |
| Salty water over the years , a thick deposit of salt on vessels | 0 | 0 | 7 |
| Bad odour, worms and muddy water | 11 | 9 | 1 |
| Contamination of Sewage  | 7 | 13 | 0 |
| water is sweet |  |  | 2 |
| rainwater filled lakes. Now sewage , effluents are let into lake. Lots of fish have been killed due to chemicals. Fishing industry is affected | 0 | 0 | 1 |
| all open wells have dried up or covered | 0 | 0 | 1 |
| No response | **37** | **32** | **32** |

P30 observes that previously rain water filled the Parappana lake, but now sewage, effluents are let into the lake, due to which lots of fish have been killed.

P3 observes that many of the open wells have dried up or covered.

E21, E22, K13 and others have observed worms in water and bad odour in water.

There seems to be deteriorating water quality. In EWS and KS Garden where the communities have access to piped water, the perception is that contamination by sewerage causes such contamination. In Parappana Agrahara, the issue is salinity of water from the bore well.

**Reasons attributed to the changes:**

|  |  |  |  |
| --- | --- | --- | --- |
|  **Range of response** | **KS** | **EWS** | **PA** |
| Due to transition from secure concrete homes to kutcha tin sheds | 5 | 49 | 0 |
| Improper maintenance of supply infrastructure – water tanks not cleaned regularly etc.  | 2 | 0 | 0 |
| Diversion of cleaner resources to richer segments of society | 2 | 0 | 0 |
| Increased overcrowding – People have settled on every available piece of land therefore there is no air circulation or space for run off of rain water. Large numbers of vehicles plying on the roads.  | 4 | 1 | 3 |
| Converting open space into a concrete jungle – that does not allow for ground water recharge and by that renders the local environment hotter and ups the chances of floods | 2 | 0 | 0 |
| Cutting down of trees in the area and surroundings – creating space for more development  | 4 | 2 | 13 |
| Climate has changed drastically post the tsunami of 2004 | 1 | 0 | 0 |
| Weather patterns in control of the Almighty, what we can do is see how best to cope with what has been made available to us | 4 | 1 | 0 |
| Local environment feels colder after migration from warmer regions of the country | 1 | 0 | 0 |
| Cannot tell | **41** | **1** | **27** |

A large majority of people from both KS Garden as well as Parappana Agrahara were unable to state a definite cause to the changes. These were also the people who had not noticed any change. In EWS Quarters, a community that has been affected by corruption, bureaucratic dealings linked with their housing issues, attributed these changes to governance issues.

VI. 3 Impacts & coping mechanism to climate change

Most of the indirect adverse effects of climate change are such that they cannot be mitigated through individual action – more frequent water logging for instance or the increase in disease vectors and the more direct exacerbation of existing problems like mixing of sewage with fresh water or rain water.

An example is the increasing contamination of ground water, based on which the quality of water in the borewells which the CMC and BWSSB have resorted to in order to supply water to the poorer areas. A recent report of the CAG (Comptroller and Auditor General of India) for the year ended March 31, 2010 says that the existing sewage network covers only 40% of Bangalore Metropolitan Region (BMR) and the sewage treatment plants receive only 47% of the sewage generated, "The remaining 53 per cent was discharged directly into storm water drains and lakes, contaminating water bodies and groundwater".

Another issue is that Corporations are more comfortable with centralized systems of delivering water, sanitation, and the building rules prohibit any other forms of decentralized black water disposal. Several models like DEWATS (Decentralised Waste Water Treatment System) or Dry Latrines are implementable particularly in the newer areas brought under the Corporation. A case in point is Parappana Agrahara, some households want to set up septic tanks, as the larger centralized sewerage, will take a long time coming.

Further, the problems with centralized systems are that they are generally inadequate. In KS garden for example inadequate sewerage facilities can create disasters in times of stress like higher rainfall and clogging of drains, accumulation of water.

Thus those having so called better sewerage facilities do use more higher means of coping with floods, like placing temporary barricades on the entrance of home to restrict inflow of water- 7 rank, raising the level of the doorstep using cement -8, and raising the level of the entire home to prevent future flash floods rank 9. Very few peak at 10 which means they do not require to do anything for flooding. The highest incidence is Parappana Agrahara, as overall there is an outlet of the drainage into the lake, due to more open spaces, as well as the fact that open defecation takes place outside the habitation area.

EWS which is an example of poorly maintained facilities is worse affected with the only exception being a household with high income as well as a relatively new occupant on open land in the periphery.

Most people have somehow coped with the impacts of climate change, and they relate to it as they do to all kinds of environmental and social impacts. While it cannot be said to be “adaptation” to the perturbations, these measure nonetheless indicate the manner in which individual households tend to respond as well as point to more specific proximate action that can be taken.

|  |  |  |  |
| --- | --- | --- | --- |
| **Coping with heavy rains** | **KS** | **EWS** | **PA** |
| No strategy in place | 4 | 14 | 0 |
| Placing vessels, barricading etc | 33 | 6 | 0 |
| Tarpaulins and shamiana | 0 | 10 | 0 |
| Bailing out water | 15 | 22 | 0 |
| Not affected by floods | 3 | 2 | 43 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Coping with Floods** | **KS** | **EWS** | **PA** |
| Bail out the water | 15 | 2 | 2 |
| Send children away to drier houses | 1 | 2 | 0 |
| modification to house | 5 | 5 | 1 |
| Use of Jute to remove dampness | 5 | 0 | 0 |
| Use of tarpaulins on roofs | 0 | 13 | 0 |
| No floods observed | 3 | 0 | 4 |
| No response | **26** | **32** | **38** |

The following households have modified their houses to avoid the floods.

E28, E29, E30, E2 have elevated their door step, and cemented the floor.

Leakage through the roof is avoided by collecting water, they have placed tyres on the roof so that the tin sheets dont fly off. E21 has put a *shamiana* to avoid the water from the leaking roof.

K37, K39, K42, K43 have constructed a small wall 1ft at the doorstep to prevent water from entering, house has been repaired, floors are cemented.

K55's house is leaking so they have kept plates where tiles are broken.

K31 just bails out water. A family in KS garden places large vessels on their roof. The water is then bailed out or used for cleaning. In EWS Quarters, a family has extended their tin shack with a wall of hollow blocks and asbestos roof. They have also built a toilet with a soak pit very recently. They use this extended room during rains especially in the night.

E28’s husband works with decorators, which provides *Shamianas* on hire. Some of the cloths from discarded *Shamianas* have been used inside four of the tin shed in EWS neighborhood, to reduce the summer heat, and protect them from rain. She collects rain water at one end of the sheet and uses it for washing.

E4 says that they have to stay outdoors and children are not able to study due to the excessive heat. K33 used cotton buds in her ears to “keep out the cold”. She is also used to betel leaf eating, which provides heat (because of the *chuna* used). Likewise, most of the people we spoke did not have specific strategies for coping with the cold. The responses typically varied between “we do not do anything about it” to “we use sweaters, shawls and other warm clothing” or “We drink a lot of tea and coffee to bear with cold”. One family at KS Garden, has fitted their home with a 500W incandescent bulb.

|  |  |  |  |
| --- | --- | --- | --- |
| **Coping with Heat** | **KS** | **EWS** | **PA** |
| Have Cold drinks, butter milk, cold foods | 4 | 4 | 8 |
| Frequent Baths  | 5 | 0 | 0 |
| Use Electrical Appliances like Fans | 11 | 0 | 3 |
| Stay Outside | 1 | 23 | 1 |
| Use Shamiana or Tarpaulin | 0 | 6 | 0 |
| No action taken | 3 | 0 | 3 |
| No response | 25 | 22 | 33 |
| Very hot during the summers inside the tin shack; cannot use the fan | 0 | 1 | 0 |

E21, E27,E28, E31 have used a *shamiana* inside the house.

Similarly E22, E23 have used Tarpaulins to cope with the heat.

|  |  |  |  |
| --- | --- | --- | --- |
| **Coping with cold** | **KS** | **EWS** | **PA** |
| Drink/tea/coffee | 6 | 9 | 5 |
| Use of sweaters and blankets | 19 | 13 | 6 |
| Use of bulbs | 1 | 2 | 0 |
| Use of Shamiana | 0 | 2 | 0 |
| No action taken | 0 | 1 | 0 |
| No response | **29** | **27** | **34** |

The measures to prevent disasters are also make shift. For example the response of those interviewed on measures adopted to prevent fatal disasters during flash floods.

|  |  |  |  |
| --- | --- | --- | --- |
| **Range of responses** | **KS** | **EWS** | **PA** |
| Sending children to drier homes | 4 | 0 | 0 |
|  Preventing children from stepping outdoors during the rains | 9 | 13 | 0 |
| Children will still play in the rains, so we cannot stop them. | 8 | 0 | 0 |
| No measure adopted | 34 | 33 | 43 |

Measure taken to secure children and family members from excessive dampness of walls and flooring monsoons.



|  |  |  |  |
| --- | --- | --- | --- |
| **Range of responses** | **KS** | **EWS** | **PA** |
| Placing tarpaulins on the floor/wall and roofs of homes | 0 | 13 | 0 |
| Wiping away the water using spare cloth | 0 | 0 | 1 |
| Using Jute and gunny bags to absorb the water | 3 | 1 | 0 |
| Renovating the house to reduce the dampness | 4 | 3 | 1 |
| Placing plates on the roof to prevent inflow of water | 1 | 0 | 0 |
| No such measure adopted |  |  |  |
| No problems of intensive flash flooding | 0 | 0 | 4 |

1. Chikungunya outbreak confirmed, Times of India, Jun 25, 2008

(http://articles.timesofindia.indiatimes.com/2008-06-25/bangalore/27750275\_1\_chikungunya-cases-fever-and-joint-pain-hospitals)

Ostrich-like, govt denies dengue is here, Deccan Herald, July 31, 2011

(http://www.deccanherald.com/content/85287/ostrich-like-govt-denies-dengue.html)

Gastro on the rise; dengue & chikungunya loom in Bangalore, Daily News & Analysis, June 18, 2011 (http://www.dnaindia.com/print710.php?cid=1556289 )

Doctors warn against dengue, chikungunya, Deccan Herald, June 27, 2011

(http://www.deccanherald.com/content/172085/doctors-warn-against-dengue-chikungunya.html) [↑](#endnote-ref-2)