



Impact of Heat Stress on Informal Sector Women Workers

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Abstract

The frequency, duration and magnitude of extreme temperature events are increasing globally. By the end of the century, the frequency of heatwaves is projected to increase by 30 times the current frequency in India and the duration of heatwaves is expected to increase 92 to 200-folds. While India is accustomed to high temperatures, a large number of fatalities resulting from recent heatwaves have highlighted the importance of this public health risk. Health impacts of heat are more severe in urban areas, where residents are exposed to higher and nocturnally sustained temperatures, due to Urban Heat Island effect. Women and men experience climate change differently, **as gender inequalities persist around the world, affecting the ability of individuals and communities to adapt.** Women are more likely than men to be affected by climate change. Their exclusion in decision making and adaptation behaviour adds to their vulnerability, which often makes them less aware of adaptation strategies and mitigation measures. A woman generally has a lower sweat rate than the male counterpart with equal fitness, size and acclimatization. This lower sweat rate increases the chances of a rise in body temperature in the women. The poor economic status of the women further adds to their vulnerability to heat stress. The study conducted on marginalized women from different occupations in the city of Delhi assesses how heat impacts them and what mitigation methods they adopt and the respective mitigation strategies they would want the Government to advocate regarding Heat Stress. The study takes into account the health conditions, economic factors, and living conditions of women and how the heat impacts them. It will help in understanding the link between climate change and gender and how it affects everyone differently owing to the vulnerabilities and inequalities existing in society. It also enabled the understanding of what initiatives are expected and needed to be taken by the government regarding the problems faced due to heat stress. The results would help in evolving policy lessons for a gender-sensitive heat stress action plan for cities.

Keywords; Heat Stress, Gender, Marginalized Women, Heat Stress Action Plan

1. Introduction

The last 50 years have witnessed a hike in the frequency of hot days, warmer nights and heatwaves¹. South Asia, according to the Intergovernmental Panel on Climate Change (IPCC) projections², is likely to experience warming above the global mean. Coupled with poverty in South Asia, the impact can be severe. Future projections of temperature indicate a steady increase across the three periods (the 2030s, 2050s, 2080s), with anomalies reaching 4-5°C for high emission scenarios by 2080.

The frequency, duration and magnitude of extreme temperature events are increasing globally (WHO, 2019). By the end of the century, the frequency of heatwaves in India is projected to increase by 30 times the current frequency whereas, the duration of heatwaves is expected to increase 92 to 200-folds. While India is accustomed to high temperatures, a large number of fatalities resulting from recent heatwave events have highlighted the importance of its public health risk. Heatstroke is the second most common contributing cause of accidental deaths due to natural causes. There have been 25,716 deaths from 1992 to 2016 due to heatwaves in India³. The country recorded a 61 per cent increase in heat-related mortality between 2004 and 2013 (NRCB, 2014).

Health impacts of heat are more severe in urban areas, where residents are exposed to higher and nocturnally sustained temperatures, due to Urban Heat Island (UHI) effect (CCA, 2016)⁴. Since the majority of workplace settings are influenced by outdoor temperatures in developing countries, it can be expected that both indoor and outdoor workers will experience increased heat stress due to climate change and related factors.

Climate Change and Climate Variability, in other words, increasing temperature and changing pattern of precipitation/ rainfall with temporal changes are likely to affect people, exerting pressure on the livelihood of vulnerable groups. It is not possible to isolate climate change-induced heat stress with the health of the vulnerable groups. Anything beyond 37.3°C causes severe heat stress in the human body, especially among vulnerable populations which are highly exposed to sun or are working in hot conditions. Moreover, the poor people who cannot afford shelters with basic living quality, and those who are lonely and cannot access cooling systems are highly vulnerable to heat stress and related illness. Also, the persons with chronic illness and pre-existing medical conditions (such as obesity, cardiovascular and neurological diseases) are at increased risk of heat stress (NIOH, 2009).

Women and men experience climate change differently, as **gender inequalities persist** around the world, **affecting the ability of individuals and communities to adapt**. Through the studies conducted on Gender inequality, it is often inferred that women are more likely than men to be affected by climate change. Their exclusion in decision making and adaptation behaviour adds to their vulnerability, which often makes them less aware of adaptation strategies and mitigation measures. Also, as reported by the National Institute of Occupational Safety and Health (NIOSH) the heat tolerance of women is lesser than that of men. A woman generally has a lower sweat rate than that of a male counterpart with equal fitness, size and acclimatization. This lower sweat rate increases the chances of a rise in body

¹IPCC (fifth assessment report of Working Group I, 2014#)

²Fourth Assessment Report (AR4) (IPCC 2007#)

³ De Sherbinin, A.; Schiller, A., and Pulshiper, A. (2007) The vulnerability of global cities to climate hazards. *Environment and Urbanization*, Vo. 19, issue 1, pp39-64.

³ Guidelines for Preparation of Action Plan – Prevention and Management of Heat-Wave 2017 by NDMA and GoI

⁴Climate Council of Australia (CCA), (2016): The Silent Killer: Climate Change and the Health Impacts of Extreme Heat.

temperature in women (CCOHS, 2019). Also, pregnant women are among those most likely to become overheated. Pregnant women who have a body temperature above 102.2 degrees Fahrenheit (39°C) are at greater risk for heatstroke, heat exhaustion and dehydration. This may result in dizziness in pregnant women, leading to significant complications, including early labour or placental abruption, which might necessitate early deliver⁵. Due to overheating the problem like natural periods or lower blood pressure and fainting in pregnant women can be exacerbated. Moreover, pregnant and postpartum women and their infants are uniquely vulnerable to the health impacts of heat stress, due to the many physiologic and social changes associated with pregnancy.

The heat stress vulnerability of women from economically weaker sections of the society further increases due to resource crunch and their poor adaptive capacities. Female mortality due to heatstroke shows an increasing trend since 2011, in the age group of below 14 years whereas male mortality has been reducing continuously. Low-income women are disproportionately vulnerable to the ill-effects of climate variability and change, in part because of gender inequalities (e.g., unequal political, social, economic and cultural rights; lower levels of access to resources, information and education; and lower levels of participation and influence in shaping policies and decision making processes at all levels, including the household).

Vulnerability and stress are known to have a differential impact based on several considerations, gender being a critical one. Ignoring this critical consideration within the context of this initiative might result in a Heat Action Plans that are skewed against women or, in the least, fails to have an expected impact on women. So far, limited studies have been conducted to understand and quantify the ramifications of how heat stress affects health, work productivity and livelihoods of women from economically and socially marginalized populations. This study has been conducted only on women to assess how heat impacts them and what mitigation methods they adopt and the respective mitigation strategies they would want the Government to advocate regarding Heat Stress.

The study aims at incorporating a gender-sensitive approach which can bring policy lessons for evolving a gender-sensitive Heat Stress Action Plan for the cities. It exclusively takes women into the account, to analyse the increasing temperature effects and to understand the currently adopted women-centric coping mechanisms. Specifically, socially, economically, politically, or otherwise marginalized people are vulnerable to climate change and also to some adaptation and mitigation responses. The study included women from marginalized groups in the city of Delhi engaged in various occupational activities like hawker/vendor, labourer/daily wage earners, maid/sweeper, construction workers and likewise across the market places and slum locations across Delhi.

The heightened vulnerability of women is the product of intersecting social processes that result in inequalities in socioeconomic status and income. It also affects them and adds to the vulnerability in terms of the exposure, and it is often observed that the women are at a comparative disadvantage in such cases. Therefore, the objective of this study is to highlight the sensitization of adaptive methods of climate change and regarding the heat-related problems in women.

⁵ <https://www.heart.org/en/news/2019/07/01/summer-heat-brings-special-health-risks-for-pregnant-women>

2. Methodology

2.1. Study location

This study has been conducted across marketplaces and slum location in Delhi. With a population of more than 16.8 million, the city of Delhi has more than 10 per cent of its population residing in slum areas. In the year 2016, an orange alert was issued in Delhi and parts of the national capital region (NCR) after temperatures touched 47°C. During the summer months of April, May and June, temperatures can rise to 40-45°C in the city.

Also, our study on climatological variations in Delhi for the period (2010-2018) shows that the mean monthly value of maximum temperature for the month of March, April, May and June has increased over the period. The study infers that the month of March is getting heated at a relatively faster rate than the rest of the summer months in Delhi, which further means that the summers are expected to set early in the city with early incidences of heatwaves. This means that the vulnerability of the city residents to heat stress will increase. Especially, the people living in slums/ squatter settlements and those working in hot conditions become highly susceptible to heat stress and related illness during summers.

Twelve locations within the city were selected for this study, based on the market location and slum settlements. Out of these twelve locations, ten were marketplaces (Malviya Nagar, Rajapuri, Dwarka, Sector 4, Dwarka, Sector 5 and 6, Dwarka, Sarojini Nagar, Janpath, Karol Bagh, Lajpath Nagar, Palam, Connaught Place, Delhi Haat (INA) and Kamla Nagar Market, North Delhi) and two were slum pockets; Sikreti Bagh Slum (Model Town) and New Sanjay Camp (Okhla).

The particular locations/areas were selected as they were evocative of the real-life struggles that the women face on a daily basis. These struggles range from climatic conditions to socio-economic conditions and provide a clear picture of the struggles and needs of the marginalised section of society. Further field surveys were carried out to understand the problems faced by women due to heat stress in summers and their awareness regarding coping methods regarding the same.

2.2. Methodology

To study the impact of the heat stress on health, work productivity and livelihoods of women involved in high heat exposure vulnerable groups a Qualitative Research Method followed by the semi-structured interview technique in the city of Delhi has been adopted. A detailed questionnaire was structured to capture the information related to; socio-demography, food and drinking water practices, illness and health-seeking behaviours, heat stress mitigation knowledge and practices, the impact of heat stress on livelihood and working condition characteristics during a heatwave in the various locations within the city.

The Multi-level stratified sampling method was used while conducting surveys. **The survey included women from low income working groups with occupational patterns such as; hawker/vendor, labourer/daily wage earners, maid/sweeper, construction workers and others like; housewives.** The adapted methodology helps in capturing the data complexities that can be incorporated into generated conclusions, it also provides a scope for open-ended discussions with the subjects which are essential for capturing the current issues.

A Psychrometer was used at each field site to measure the Relative Humidity through the use of a dry bulb thermometer and a wet-bulb thermometer. A total of 126 women workers were surveyed across twelve different locations within the city.

3. Results

3.1. General Information

The survey indicated a majority of the women respondents (37%) belonged to the age group 18 to 28, followed by those aged between 29 to 38 years. Around 17 per cent of the respondents were in the category 39 to 48 years and only 7% were in the category of 49 to 58 years (figure 2).

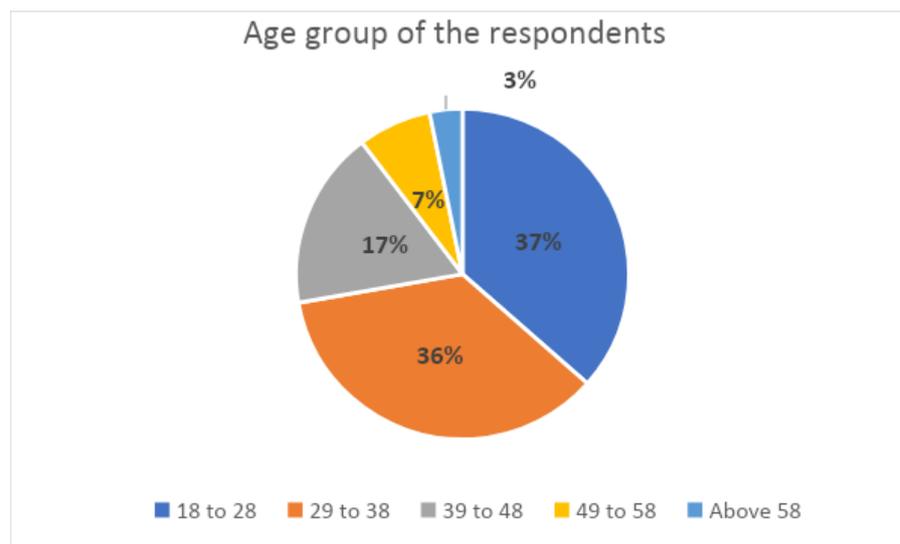


Figure 1; Age Group of the Respondents

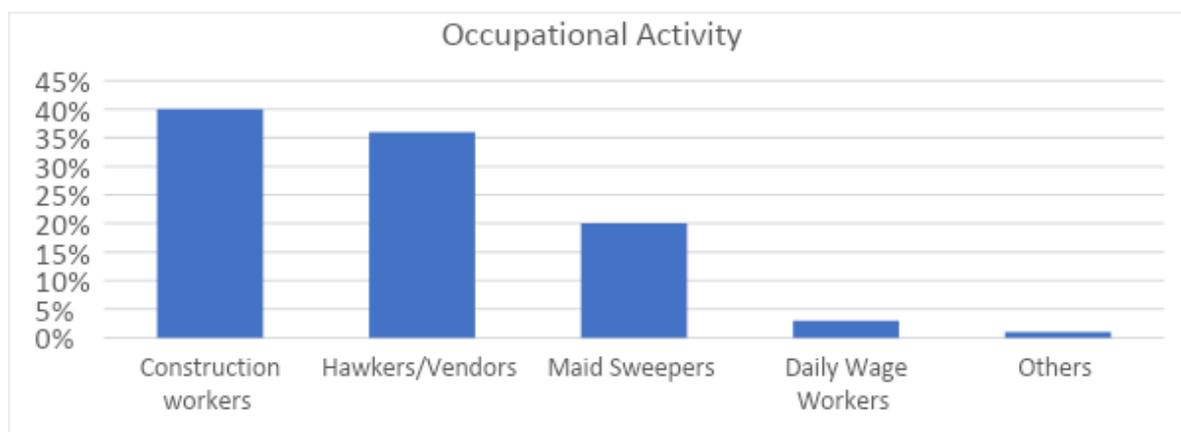


Figure 2; Occupation of the Respondents

Most of the respondent (40%) worked as construction workers, followed by those working as hawkers/vendors (36%). The proportion of respondents working as maids/ sweepers is 20%. Only a few (3% and 1%) worked as daily wage workers or involved in other occupational activities (figure 3).

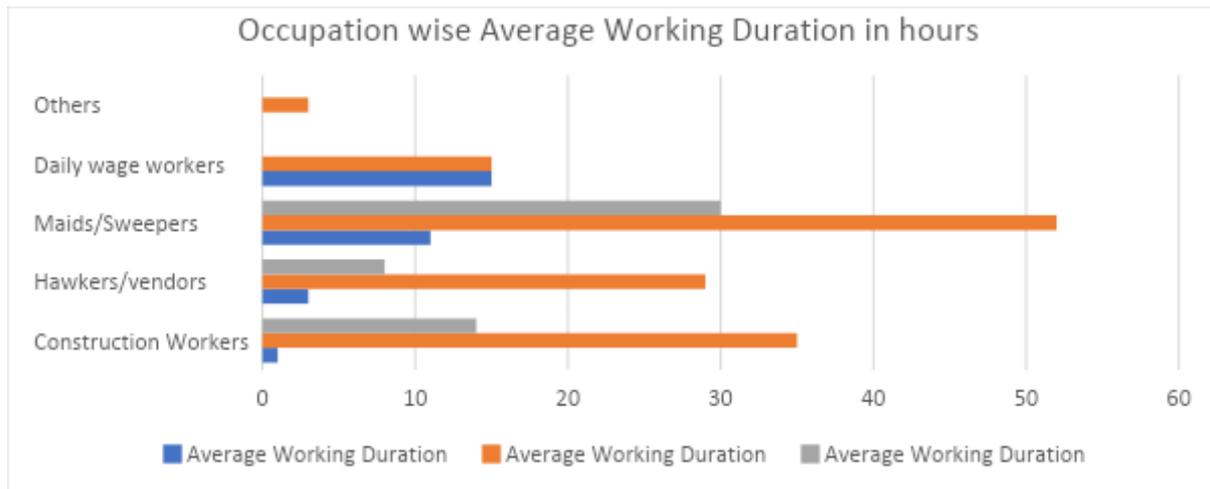


Figure 3; Occupation wise average working duration of respondents

As shown in figure- 4, the majority of the respondents are working between 3 to 9 hours. It was found that construction workers (35%) have to work for 7 to 9 hours in a day, around 14 per cent of them are also working for about 10 to 12 hours in a day. 52% of the maids/sweepers work for 7 to 9 hours and 30 % work for 10 to 12 hours. The average working duration for the majority of the hawkers and vendors is 7 to 9 hours. 15% of the daily wage workers are able to devote 3 to 6 hours to work while the rest 15 per cent work for an average of 7 to 9 hours a day.

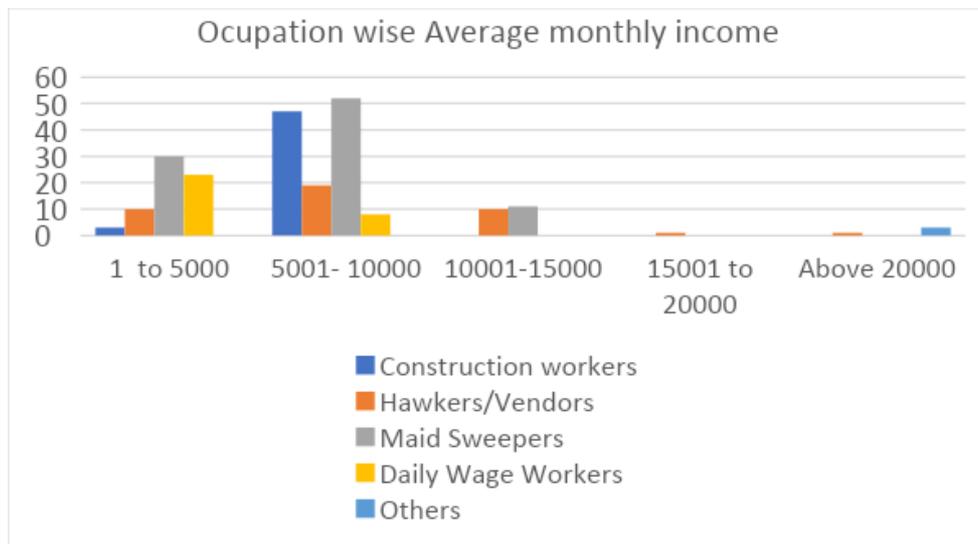


Figure 4; Average monthly income of the respondents

As shown in figure 5 majority of the respondents have an average salary between INR 5001- 10,000. Around 52 % of the maids and 47% of the women working as construction workers have an average monthly salary between Rs 5000 to 10000. Around 30 % of the maid sweepers and 23% of the daily wage workers, 10 per cent of the Hawkets and Vendors and a few of the construction workers are earning only up to Rs 5000 per month. Only 10 % of the Hawkets/vendors and 11 % of the maid sweepers reported having a monthly income between 10001-15000.

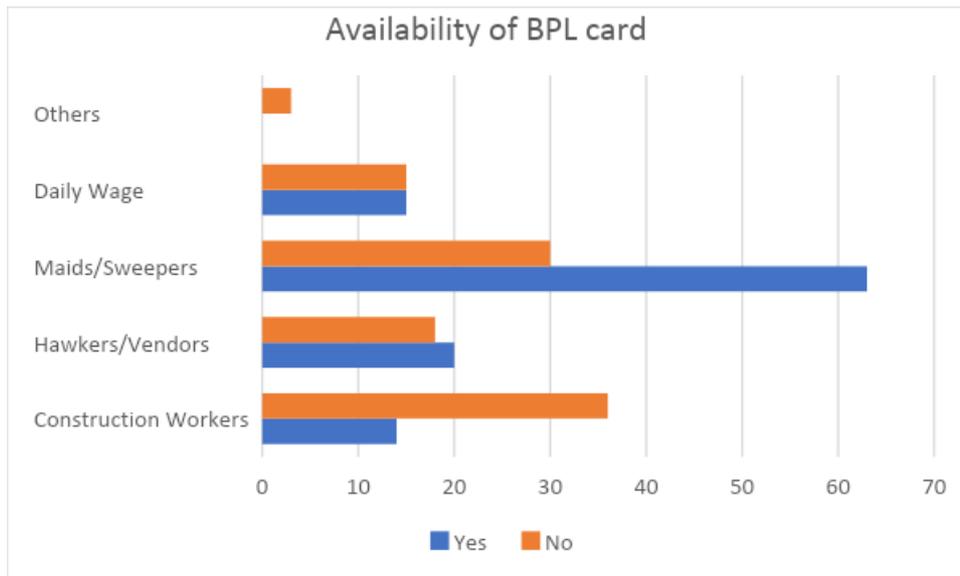


Figure 5; Availability of BPL Card

Most of the respondents possess BPL cards (63% maids, 20 % hawkers/vendors, 15% daily wage workers and 14% construction workers).

3.2. Housing and Workplace details

Around 35% of the women lived on the ground floor followed by 25% living on the third floor. The rest of them (20% and 17%) lived on the first floor and second floor. Only a few (3%) lived on the fourth floor (figure 7).

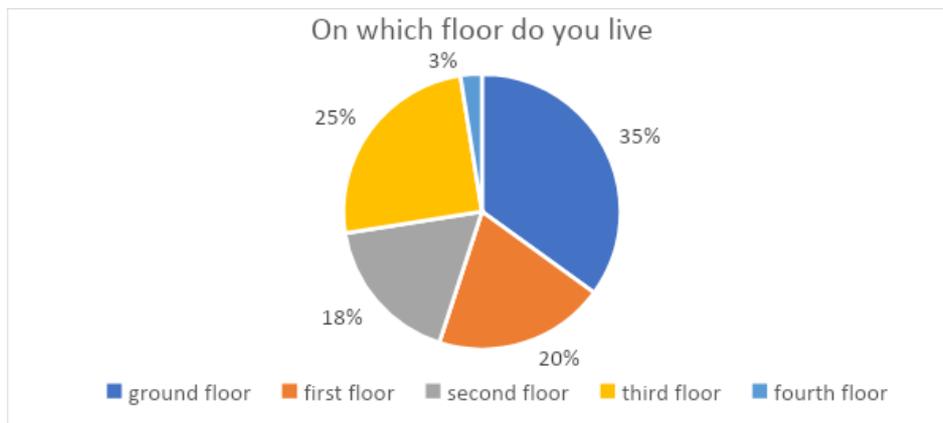


Figure 6; floor occupied

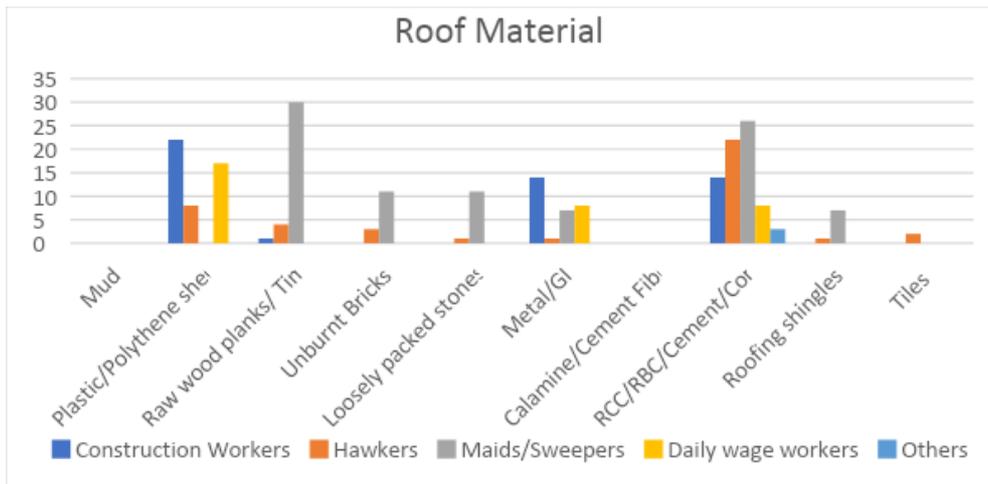


Figure 7; Type of roof Material

Majority of the respondents have RCC/RBC/Concrete Sheets followed by plastic/polythene sheeting and Metal GI and asbestos sheets as the roofing material (figure 8). Around 22 per cent construction workers, 17% daily wage workers and 8% hawkers have plastics/polythene sheeting as the roof material. Around 14 per cent of the construction workers, 8% of the daily wage workers and 7% of the maids/sweepers are having Metal/GI sheets as the roofing material. Rest of the respondents reported having raw wood planks, unburnt bricks, loosely packed stones and Calamine/Cement fibre as the roof material (figure 8).

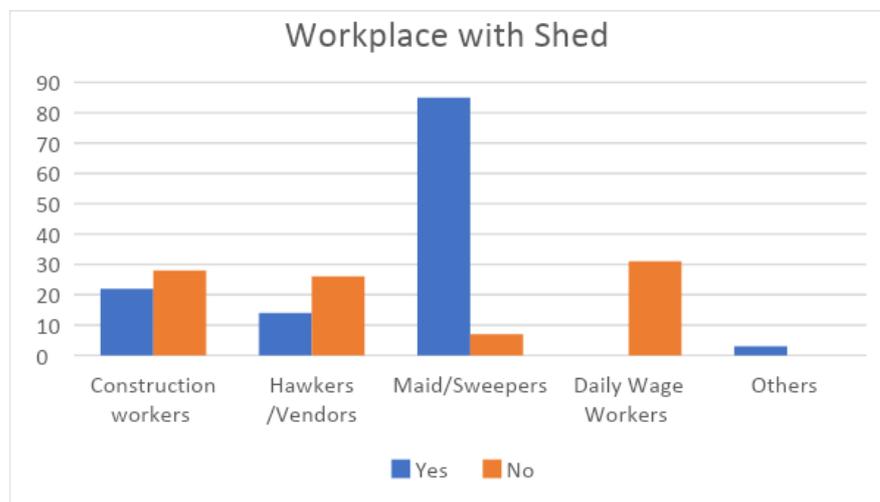


Figure 8; Workplace with Sheds

Around 28% of the construction workers, 26% of the Hawkers/Vendors, 31% of the daily wage workers and 7% of the maid/sweepers don't have sheds at their workplace which increases their vulnerability to heat stress.

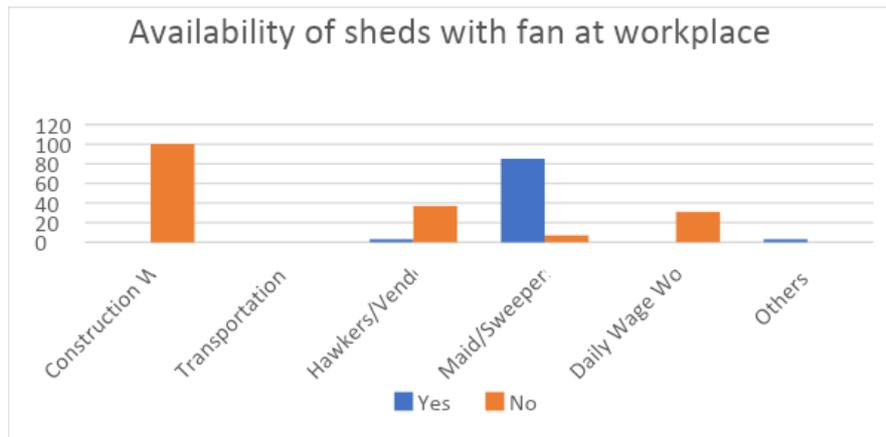


Figure 9; Availability of sheds with a fan at workplace

All the construction workers (100%), 37% of the hawkers/vendors, 31% of the daily wage workers and 7% of the Maids/Sweepers denied having the availability of fans at their workplace- figure 10.

3.3. Access to drinking water

Almost all the daily wage workers reported having access to the public source of drinking water (figure 10). Whereas, the main source of drinking water of the majority of the construction workers (84%), Hawkets/Vendors (80%), Sweepers/maids (68%) is Private. This is because most of them cannot afford to buy bottled water and there is no easy access to public water facilities for these people.

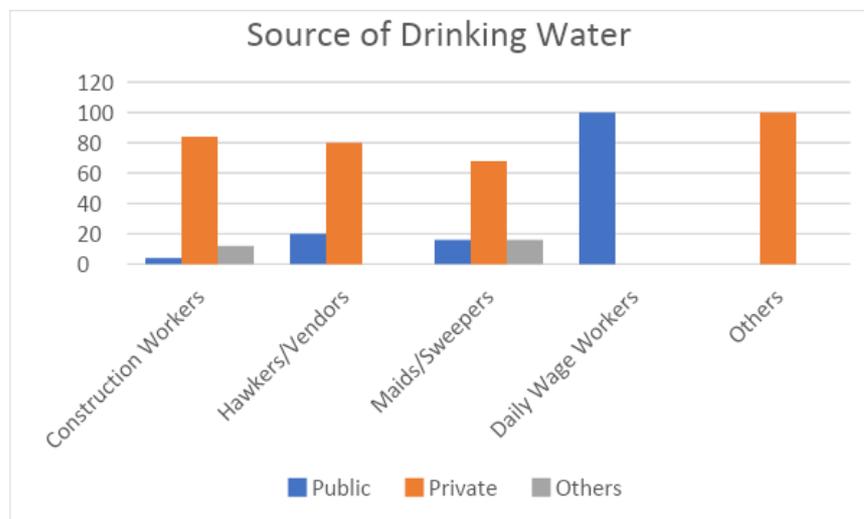


Figure 10; Access to drinking water

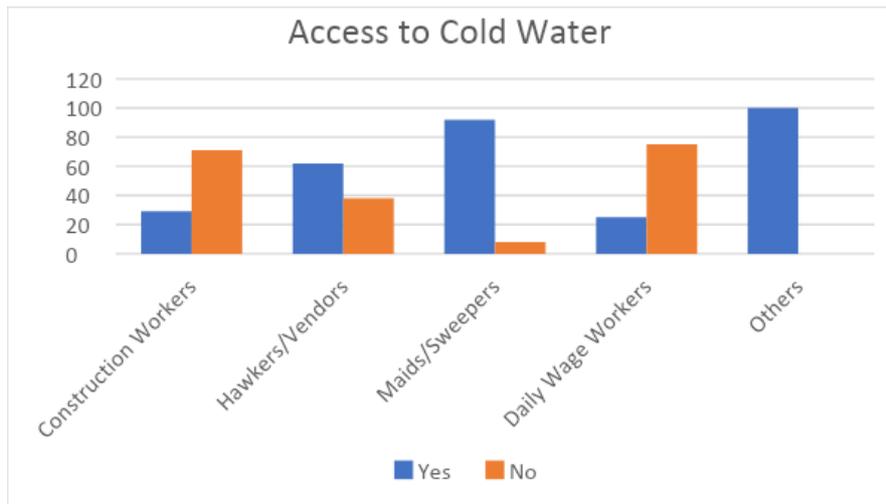


Figure 11; Access to Cold Water

Majority of the respondents (around 62% of the hawkers/vendors, 92 % of the maids/sweepers, 29% of the construction workers and 25% of the daily wage workers) have access to cold water at their workplace. Whereas, the majority of the construction workers (71%), and daily wage workers (75%) reported that they don't get cold water at their workplace (figure 11).

3.4. Health and Treatment

Most of the respondents did not have any medical history, some reported to have suffered from Diabetes (23% Maids/Sweepers, 17% Hawkers/Vendors and 2% construction workers). A few of the surveyed persons (11% Hawkers and 8% Vendors) reported that they suffer from Blood Pressure and 4% reported a history of Migraine. (figure 12). The direct exposure to the sun makes the symptoms of these illness worse but they are helpless since they have to work outdoors regardless of the weather.

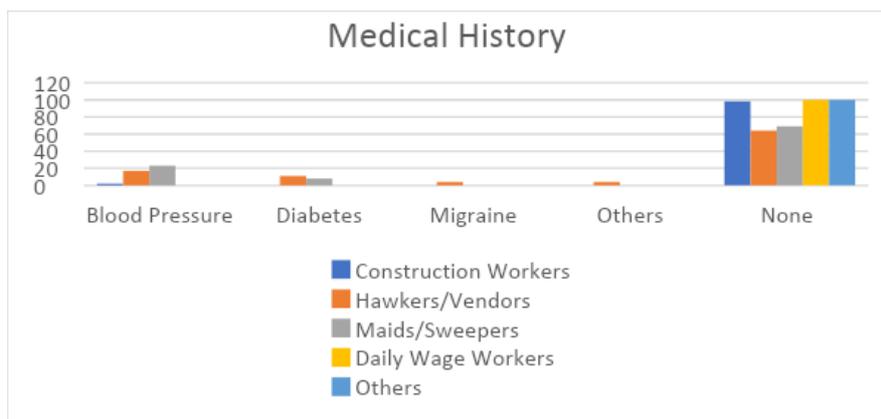


Figure 12; Medical History of Respondents

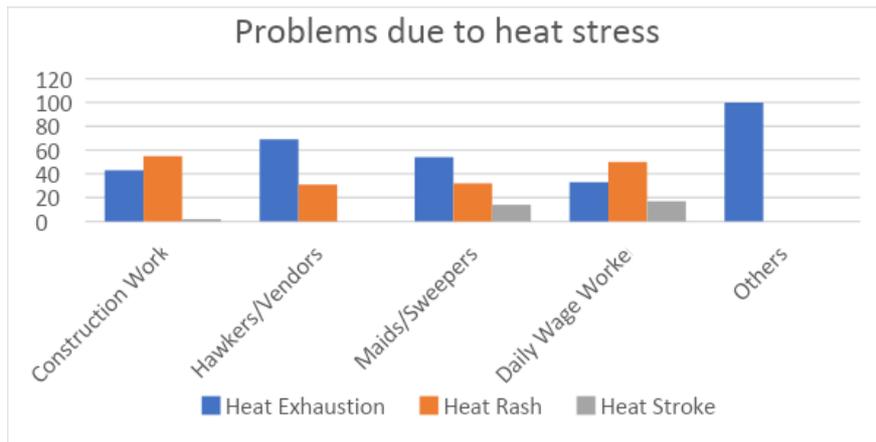


Figure 13; Problems faced by respondents due to heat stress

Most women are prone to heat exhaustion (69% Hawkers/Vendors, 54% Maids/Sweepers and 33% Daily Wage Workers) followed by heat rash (55% construction workers, 50% Daily wage workers, 32% maids/sweepers and 31% hawkers/vendors). It is noted that a few of the respondents (figure 13) have also suffered from heatstroke; 17% daily wage workers, 14% maids/sweepers and 2% construction workers. Since these women spend a long duration of the day in the sun, it increases the chances of developing these problems faced due to heat stress.

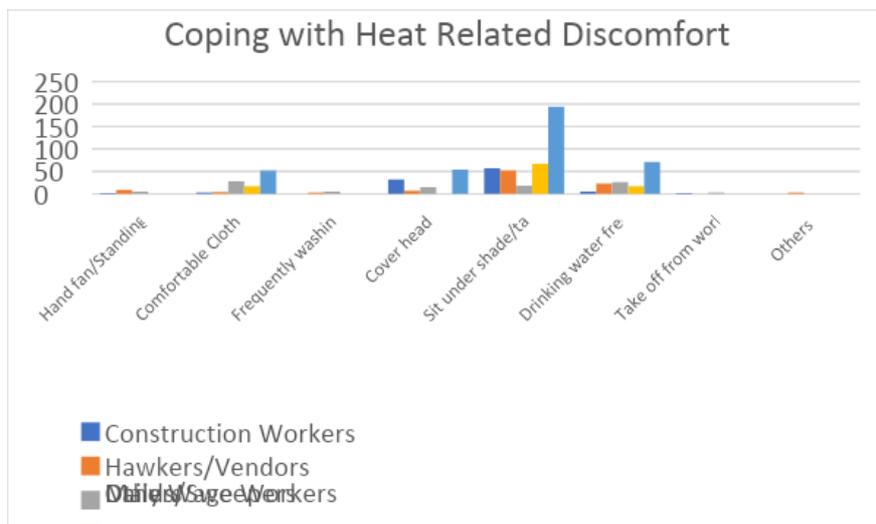


Figure 14; Coping with heat-related discomfort

The most convenient way to cope with heat-related discomfort is to sit under shade, as the majority of the women in different occupational categories are doing the same. This is followed by drinking water frequently, covering heads and wearing comfortable clothing. The rest of the surveyed population (15% and 15%) copes with heat by drinking water and covering their head. The rest reported using a hand fan/standing fan. A few of the women (2% construction workers and 3% sweepers/maids) stated that they take off from the work during high heat period in order to combat with heat stress (figure 14).

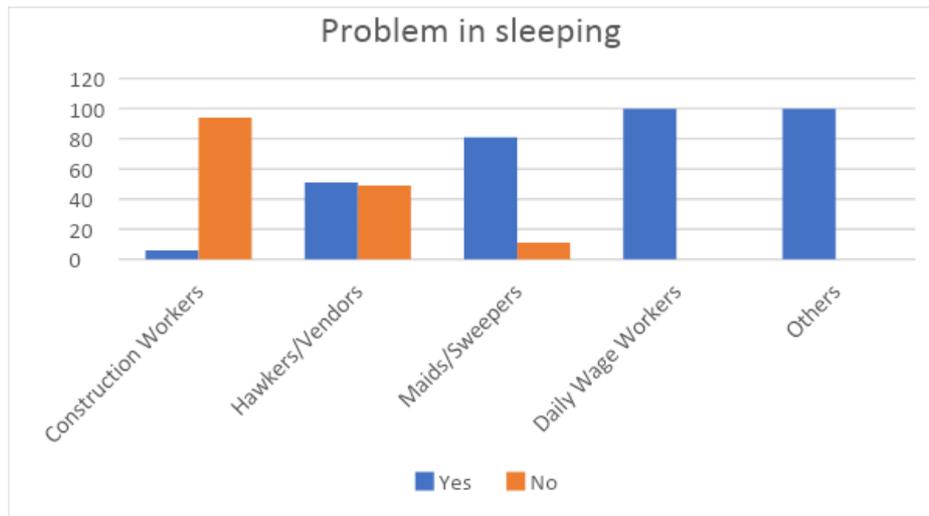


Figure 15; Problem faced while sleeping

Most of the women (100% daily wage workers, 81% Maids/Sweepers, 51% hawkers/vendors and 6 per cent construction workers) reported that they face problem in sleep during summers- figure 15. This is because a majority of the houses are incomplete structures packed closely to one other, which enables little or no ventilation. The rest of the surveyed population reported no problem in sleep.

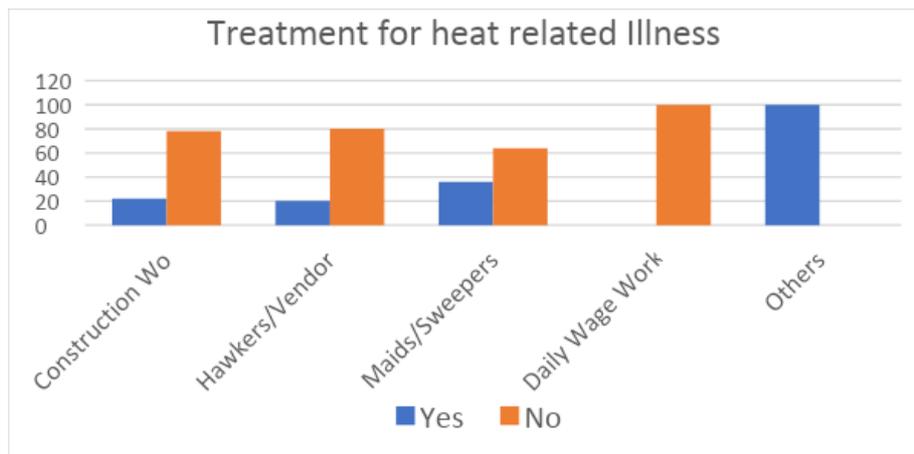


Figure 16; Treatment for heat-related illness

Majority of the respondents (100% daily wage workers, 80% Hawkers/Vendors, 78% Construction workers and 64% Maids/Sweepers) reported that they do not take any kind of treatment for heat-related illness from any source due to financial constraints. They prefer natural remedies like applying fuller's earth and turmeric paste on the affected areas. A few of the women (36% maids/sweepers, 22% construction workers and 20% vendors/hawkers) reported that they seek medical advice on falling sick due to heat in summers (figure 16).

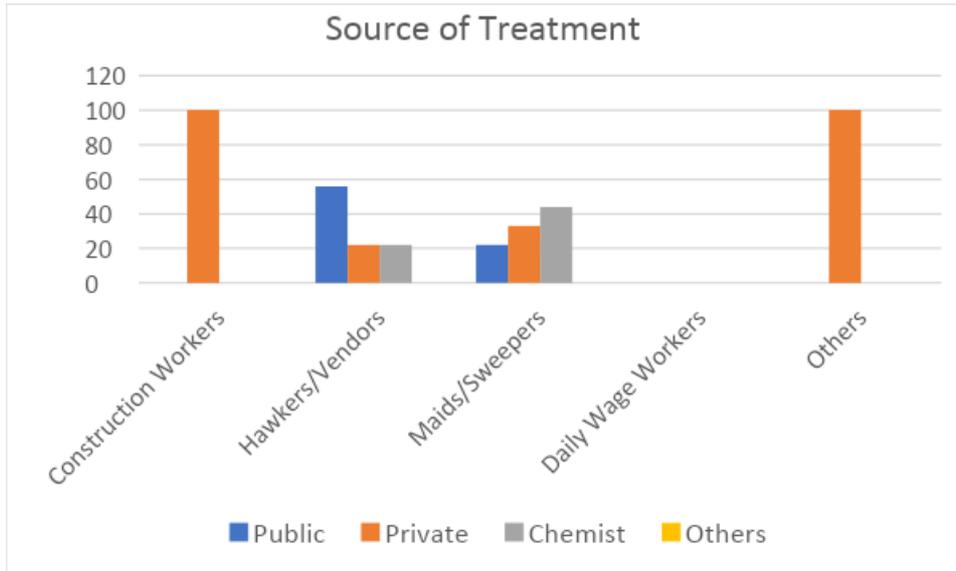


Figure 17; Source of treatment

Out of the few respondents who reported that they seek advice/treatment, a majority (100% construction workers, 22% hawkers/vendors, 33% maids/sweepers and 100% those involved in other occupational activities) normally take treatment from the private clinics. A few of them (44% Maids/Sweepers and 22% Hawkets/Vendors) take medicines from the local chemist in their area, while the rest of the women workers seek treatment from public health centres (figure 17).

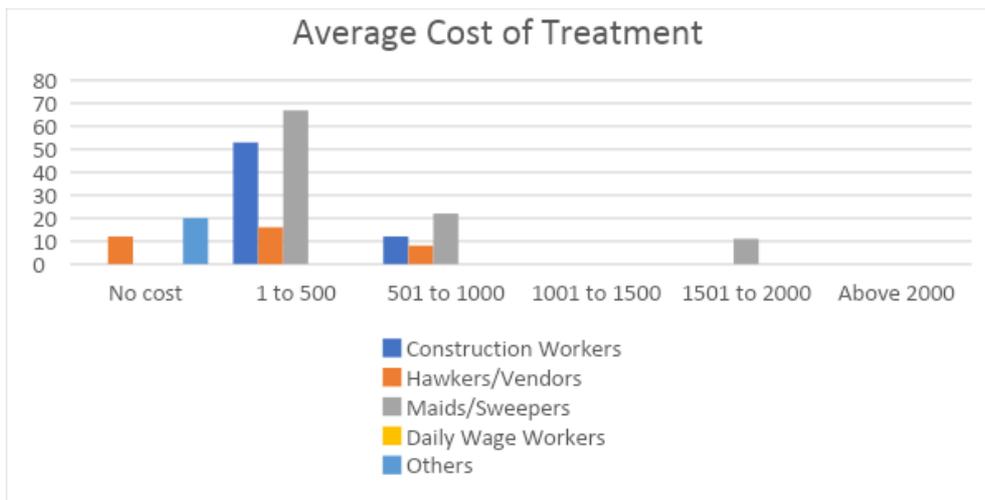


Figure 18; Average cost of Treatment

Most of the respondents (53% construction workers, 67% Maids/Sweepers and 16% hawkers/vendors) reported that they spend between INR 1-500 for the treatment of heat-related illness figure-18. While 22% Maids/Sweepers, 12% of construction workers and 8% hawkers/vendors reported that their average cost of treatment is between INR 501 to 1000. A few of the maids /sweepers (11%) reported that they have to bear the high cost of treatment (between INR 1501-2000) when they fall ill due to heat-related illness.

3.5. Heat Alerts and Awareness

As per the majority of the responses (34% construction workers, 21% hawkers/vendors, 16% maids/sweepers and 100% those involved in other occupational activities) Radio/TV is the most preferred mode of communication to get heat alerts. This is followed by SMS/Call which is the second most favoured mode of communication for getting heat alerts.

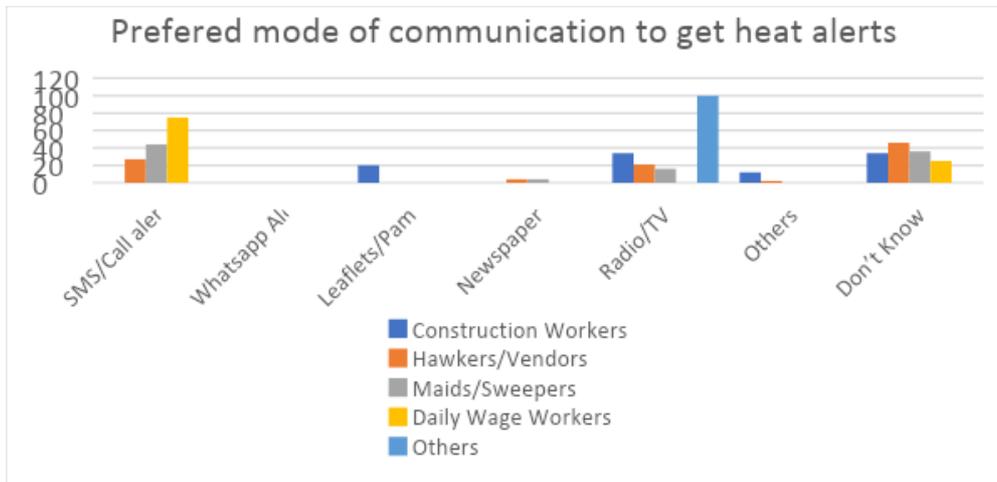


Figure 19; Preferred mode of communication

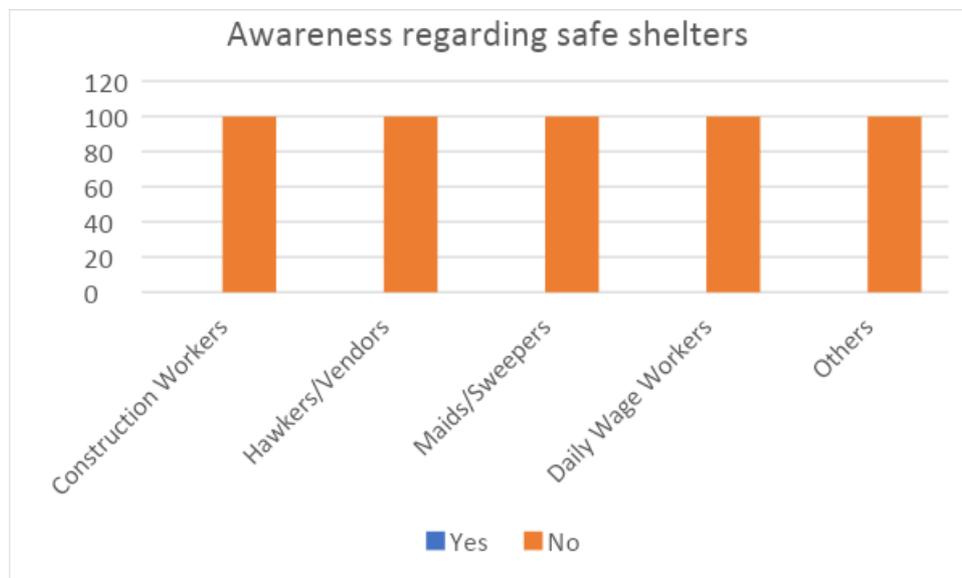


Figure 201; Awareness regarding safe shelters

None of the respondents had awareness about the availability of safe shelters. This shows the poor level of awareness amongst the vulnerable sections of society (figure 20).

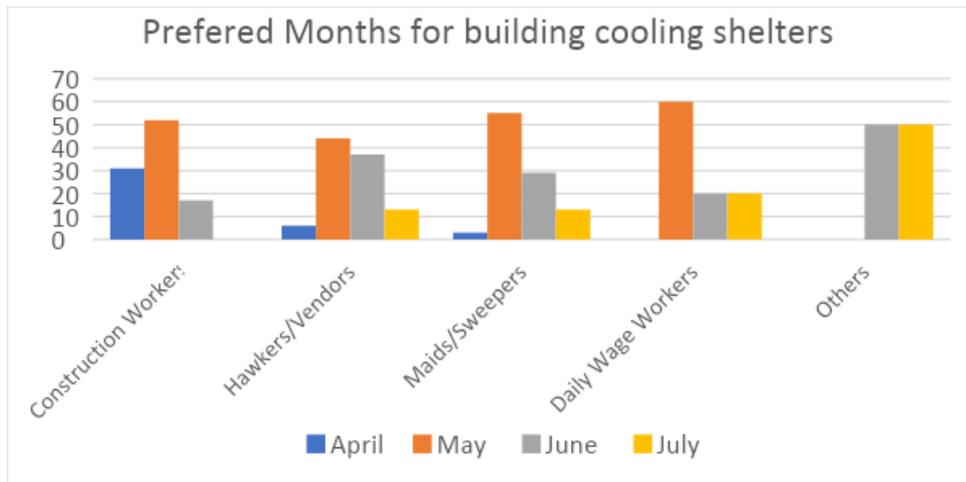


Figure 21; preferred months for cooling shelter

Except for a few of the women workers (20% hawkers/vendors), all others requested that the Government should build cooling shelters to get some relief from the heat stress. Majority of the women respondents stated that the cooling shelters should be built in the months of May and June. This is because there is direct heat exposure faced by all of them and cooling shelters would be a great way to overcome that discomfort (figure 21).

3.6. Productivity and economic losses due to heat stress

Most of the construction workers (69%) have to spend 7 to 9 hours per day in direct sun, whereas a few of them (4%) have to face direct heat from the sun for 4 to 6 hours while working (figure 22). Around 73% of the hawkers/vendors have an exposure of around 4 to 6 hours. Almost 50% of the daily wage workers and 100% of the women workers involved in other occupation activities have a direct sun exposure of 4 to 6 hours and 7 to 9 hours respectively. This shows that these women have a high vulnerability to heat stress and related illness.

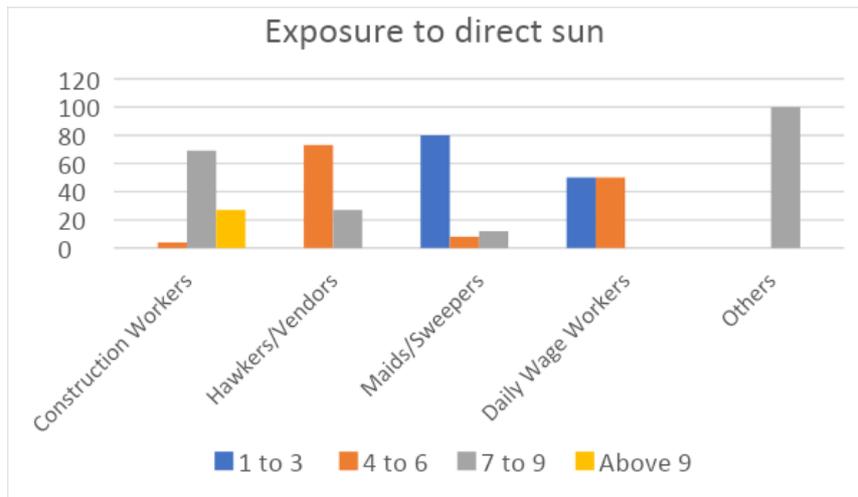


Figure 22; Exposure to direct sun

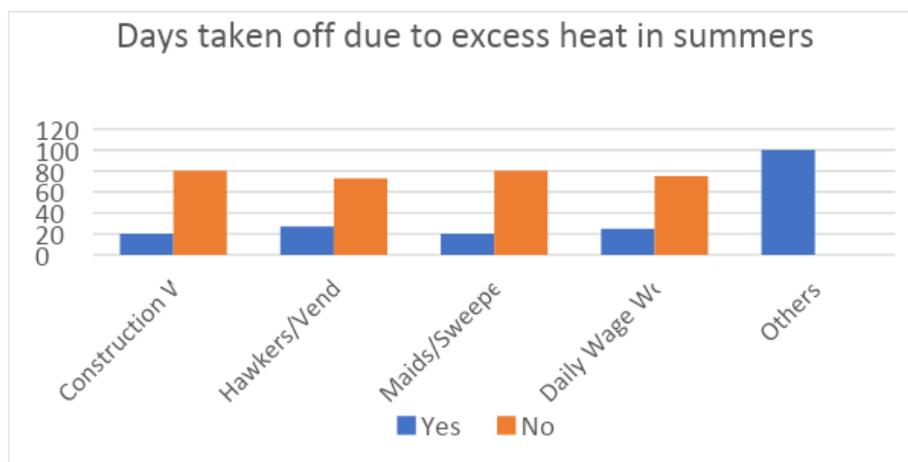


Figure 23; Days taken off due to excess heat in summers

Many of the respondents (27% Hawkers/Vendors, 25% daily wage workers, 20% each construction workers and maids/sweepers and 100% those involved in other occupational activities) reported that they have taken off from their work due to extreme heat. A majority of the women have not taken days off due to summer/excess heat since most of them have low economic conditions and do not opt to lose a day of work (figure 23).

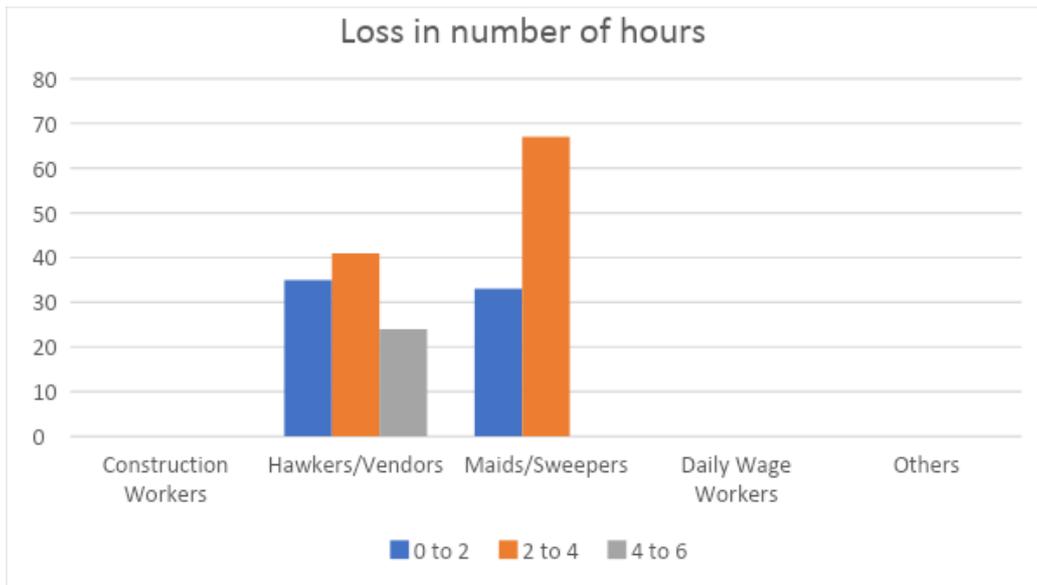


Figure24; Loss in number of hours

A majority of the respondents (67% maids/sweepers and 41% hawkers/vendors) reported that there is a loss of 2 to 4 hours (figure 24) from their average working hours followed by 0 to 2 hours (35% hawkers/vendors and 33% Maids/Sweepers). This is because very few people visit the market during the afternoon in the summer season which results in little or no business for the vendors and also it becomes difficult for the sweepers/maids to work during peak summer hours (figure 30).

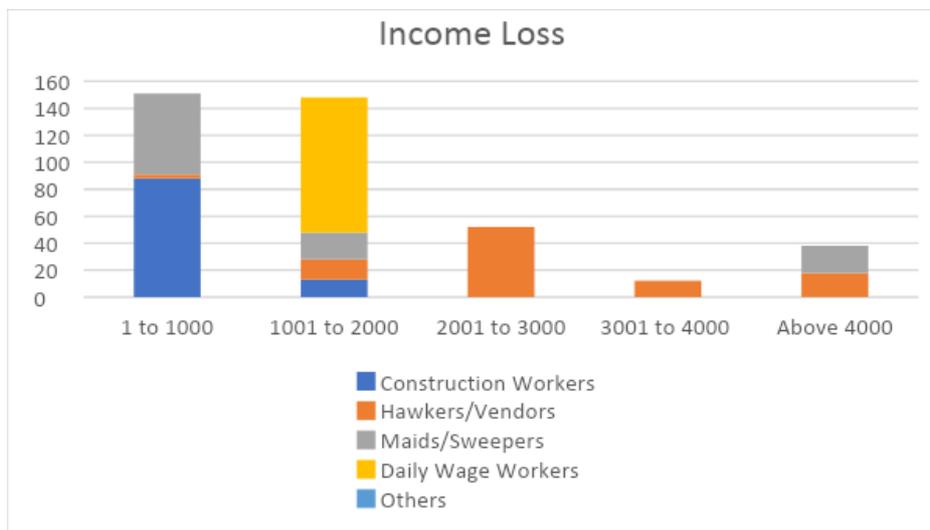


Figure 25; Loss of income

A majority (100% of the daily wage workers, 20% of the maids/sweepers, 15% of the hawkers and vendors and 13% of the construction workers) of the respondents face a monthly income loss between Rs 1001 to 2000, followed by INR 1 to 1000 (88% construction workers, 60% maids/sweepers and 3% of the hawkers/vendors). Around 52% of the hawkers/vendors face loss between INR 2001 to 3000, 12% reported a loss of 3001 to 4000, followed by 18% hawkers/vendors reporting a monthly income loss of above INR 4000 (figure 25).

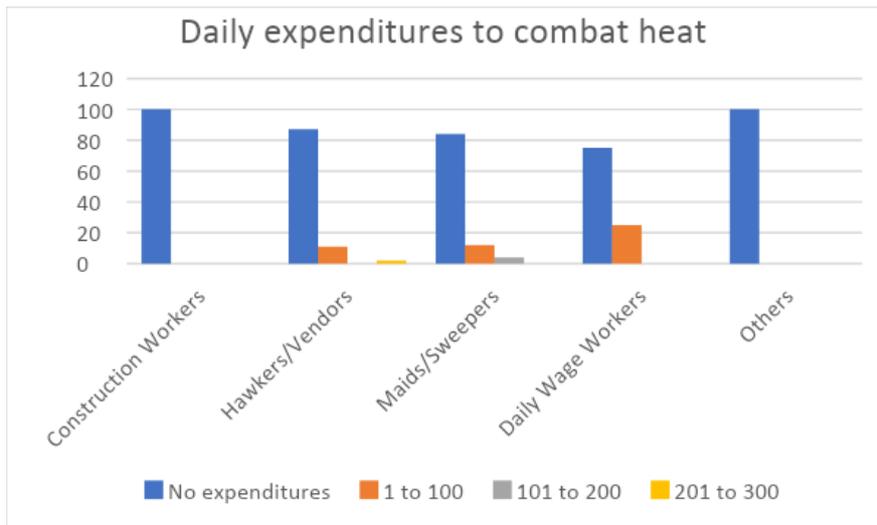


Figure 26; Daily expenditures to combat the heat

A majority of the women workers reported that they don't spend extra to combat heat stress (figure 26). A few of the respondents (25% daily wage workers, 12% maids/sweepers and 11% hawkers/vendors) reported that they spend between INR 1 to 100 per day- figure 32. Also 4% maids/sweepers and 2% hawkers/vendors reported spending between INR 101 to 200 and INR 201 to 300 on daily basis day on cold drinks, chaas and other things to combat heat stress.

3.7. Mitigation measures to be adopted by the Government

The common mitigation measures opted by the Government are to set up water booths and provide clean drinking water (87% and 75% respectively) since the unavailability of water is a major concern common amongst all of the respondents. 38% of the surveyed population have reported that there is a need for sheds to be built to enable people to seek shade during extremely hot days. 25% of the women have reported the need for washrooms to be set up since there are very few proper toilets set up for women. 10% of the surveyed population have reported that the electricity facilities need to be improved since there is a frequent shortage of electricity which has resulted in no electricity for days on end in some areas (figure 27).

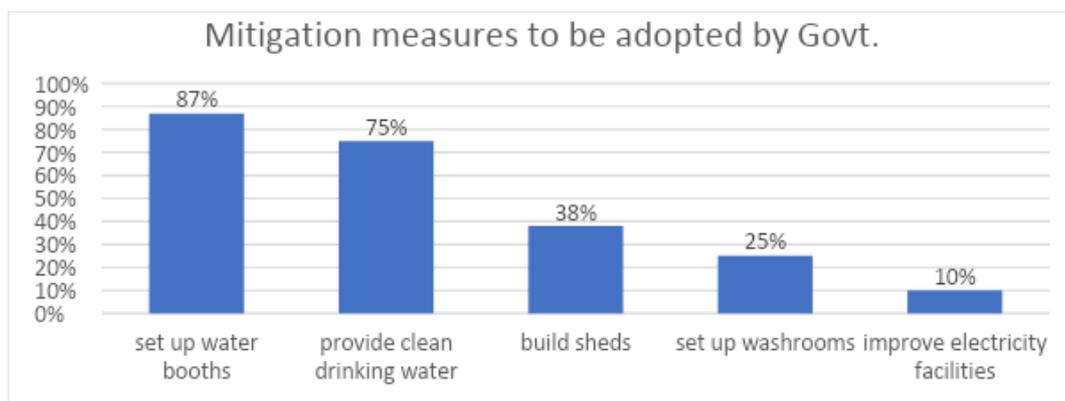


Figure 27; Mitigation measures to be adopted by Govt.

4. Discussion

Through this study, it is inferred that women are extremely vulnerable to the impact of Heat Stress due to their socioeconomic disadvantage which acts as a driving force. A majority of the surveyed population work outdoors like construction workers, vendors, hawkers, daily wage workers and sweepers with direct exposure to the sun. The duration of this exposure for the majority of the workers lies between 4 to 9 hours.

Many of the women have reported facing heat-related illnesses like heat exhaustion, heat rash and heat strokes but not all of them resort to medical advice. They prefer using natural remedies rather than spending money on consultation and medicines. Dehydration and Fatigue is a common problem found amongst the sample population. This is largely due to the lack of sufficient drinking water at their workplace, also unavailability of cold water at workplace during extreme cold is a problem faced by the surveyed women.

A majority of the respondents resides in slum areas where there is a common area for access to water and toilet facilities. The residents of those areas have complained about the irregular supply of clean water which makes it extremely difficult since they are dependent on that water for drinking, cooking, and bathing. Frequent power cuts and inadequate supply of electricity is another commonly reported problem in these areas. New Sanjay Camp, at Okhla Phase II, reported having no power for consecutive three days during a particular heatwave period.

A majority of the women have reported that they face problem in sleep due to warmer nights in summer. Most of these women live in slum areas where the houses are closely packed to each other, enabling little or no ventilation. The problem is further exaggerated to some extent due to the presence of metal GI, asbestos sheets as the roofing material. Many of the respondents occupy only one room, with only a fan, which adds to the discomfort experienced by them. They wait for the temperature to fall, which is often after 2 or 3 a.m. in order to get some sleep. The incomplete infrastructure of these houses with no proper roofs makes the house warmer and many of them prefer sleeping outside. However, the women are restricted from doing so and have to sleep inside the house while the male members of the family sleep outside on extremely hot days.

The workplace for the majority of the women is located outdoors which makes them more vulnerable to the impact of heat stress due to direct sun exposure on a daily basis. Due to financial constraints, these women are forced to work every day since they cannot afford to lose out on a day's income. A very few respondents reported that they have taken days off from work due to extreme hot weather conditions, whereas the rest said that they do not have an option of doing so. Some also stated that they are habitual to this weather since they have worked in agricultural farms in their village and have had sun exposure for long hours. The mitigation measures adopted by the women working outdoors include drinking water, covering their heads, seeking shade under trees, and wearing comfortable clothing.

Through this, it can be inferred that the degree to which people are affected by heat stress is partly a function of their social status, gender, poverty, power and access to and control over resources.

5. Conclusion

The study was based on the data collected from 126 women workers in the market places and slums of the city of Delhi, through the Qualitative Research and Semi-Structured Interview technique. There was a common questionnaire on "High Exposure Vulnerable Groups" for all the respondents and their answers and suggestions were further analysed and reported. This study helped in bringing to light the

fact that women are not entirely aware of the hazards of climate change and its effects since none of the respondents were aware of the cooling shelters provided by the government, nor did they have much knowledge regarding what mitigation strategies could be adopted. A majority of the respondents did not seek medical treatment for heat-related illnesses due to low economic conditions and habit. They resorted to natural remedies like wearing wet clothes or applying fuller's earth or turmeric on their body.

The socio-economic disadvantage prevalent amongst most of the respondents, added to their vulnerabilities since a majority of them did not have adequate access to water, for both bathing and drinking/cooking. Unavailability of water was a concern which was common amongst all the respondents since a majority of them said that the Government should set up water booths around the city and ensure that there is an adequate supply of water in the slum areas. Most of the respondents complained about insufficient water and said that the government should focus on this issue by ensuring that there is an adequate and regular supply of clean water in slum areas and that there should be water booths set up across the city so that everyone has access to potable water.

This study took into account the health conditions, economic factors, and living conditions of women and how the heat impacts them. It helped in understanding the link between climate change and gender and how it affects everyone differently owing to the vulnerabilities and inequalities existing in society. It also enabled the understanding of what initiatives are expected and needed to be taken by the government regarding the problems faced due to heat stress. The study results would help in evolving policy lessons for a gender-sensitive heat stress action plan for cities.

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