Maternal health challenges of pregnant women living on construction sites in Mumbai, Navi Mumbai, and Thane: A mixed-methods study

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Abstract

Background: Of the estimated 30 million construction workers in India 51% are women, however, there are no studies on pregnant women living on construction sites in the Indian population.

Objective: The present study was conducted to collect information on health access and challenges of pregnant women living on construction sites in Mumbai, Navi Mumbai, and Thane.

Material and Methods: Participants were pregnant women living on construction sites, and were recruited from 13 construction sites. A mixed methods study, using both quantitative survey and focus group discussions, was conducted to understand the usage of ANC, delivery, and PNC, and financing aspects to pregnancy-related healthcare utilization among these women.

Results: In the survey, a total of 72 pregnant women were interviewed. The average age of respondents was found to be 22 years (±49SD). A total of 76% of these women had utilized the health facilities for their antenatal checkups (ANC) with majority (65%) utilizing private health facilities. Among women who had a delivery within last 2 years, borrowings from other family members and contractors, and use of current savings, was the most common form of financing of both ANC and delivery expenses. 16 women were found to be working at the time of data collection during their current pregnancy, and during the FGDs, it was mentioned that the women tend to work till seventh month of pregnancy.

Conclusion: These findings underscore the need for considering various contextual factors in ensuring better living and maternal health access services for such women living on construction sites.

KEY WORDS: Maternal health, pregnant women, construction sites, mixed methods research

Introduction

The construction industry is the second largest employer of labor in India, after agriculture^[1] and consists of both organized and unorganized workforce. Neither their job nor their work at a particular site is permanent or of a perennial nature. When construction starts at any place, these workers

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are hired on daily or monthly or may be on contract basis for longer period, around a year or more in some cases. The duration and security of their employment depend upon the kind of employment they enter into. Once their work at a particular site is completed, they need to start to look for other such opportunities, thus neither the work site is fixed nor is the employment permanent.

Being part of the unorganized sector, they often lose while bargaining for fair wages. Many are not paid proper wages; even the agreed wages are not paid in time. [2] After the construction work is over, substantial due remains with the builders or the contractors, who are always on the lookout for usurping these wages. Moreover, their working time and hours are not well regulated. They do not get overtime rates for excess work. They work under very hazardous conditions. The working conditions and the facilities provided at the sites are far from satisfactory. Safety conditions and measures are

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hardly met. In case of accident, there is, in general, no provision for financial and medical aid. It is left to the workers themselves or to their co-workers and families living with them to arrange for the treatment. Albeit there exists Employee State Insurance Corporation (ESIC) coverage but this has not been accessible to most construction workers.* Apart from these, there are also no or limited facilities, no availability of drinking water, toilets, and health clinics within and near the construction sites.^[3] Almost all these workers live within the construction sites or in nearby slums. The surroundings are totally unhygienic with no proper infrastructural facilities such as availably of toilet, potable water and drainage, electricity, etc. They also do not get access to use of ration cards, and banking services.

Of the estimated 30 million construction workers in India 51% are women. [4] However, unlike other industries where they are increasingly employed in semi-skilled and skilled occupations, women in the Indian construction industry are engaged almost exclusively as casual manual laborers. Most of them are head-load workers, carrying bricks, cement, sand, and water from one place to another. Some also engage in cleaning, digging, mixing mortar or breaking stones. It is not uncommon to see groups of women carrying loads of bricks weighing up to 35–40 kg on their heads construction sites in India. Most the lucrative trades such as carpentry, masonry, plumbing, and electrical work are largely male-dominated, and rarely do these women have the opportunity to acquire these skills.

Several studies[5-7] have pointed out that the assessment of the coverage of disadvantaged populations with reproductive and child health challenges should receive priority. Several studies in India have focused on the living conditions, health and maternal health challenges of women living in construction sites. These studies used various study designs, either qualitative or quantitative, or conducted review. Some studies[8,9] focused on the challenges on migrants in general and not specific to those in the construction industry. Few studies did focus on health challenges faced by women either working or living on construction sites. Tielaprolu et al[10] reported the women construction workers exposure to risk factors, prevalence of work related musculoskeletal disorders (WRMSDs). Devi and Kiran^[11] conducted a review of status of female workers in the construction workers which mentioned of the health challenges they faced. Specific to maternal health challenges we found only three studies[12-14] detailing the status of female workers living or working in constructions sites. However, none of these studies focused on pregnant women living on construction sites. In the present study we focus on pregnant women living on construction sites in Mumbai, Navi Mumbai, and Thane, in order to understand the antenatal, pregnancy and postnatal challenges that these women face. Our basic objective was to collect information on the health access and

challenges of pregnant women living on construction sites with regards to maternal health services utilization.

Material and Methods

This was a mixed methods study conducted in 2009–10, and was conducted in those sites where Mumbai Mobile Crèches (MMC)† was active. A total of 13 construction sites were selected in Mumbai Metropolitan Region. Of these sample sites, nine were selected from Mumbai region, two from Navi Mumbai and remaining from Thane. The primary sampling units (PSUs) were the pregnant women living on the construction site. All pregnant women were selected for the purpose of data collection and focus group discussions (FGD), thus enabling to achieve data saturation. On the basis of discussions with MMC field staff it was estimated that in any given month during that period there are around 100 pregnant women in around 13 sites where MMC were working. A total of 72 pregnant women were selected for interview and remaining women were selected for the FGDs.

The present study used a "Mixed Method"[‡] research framework^[15] and focused on qualitative and quantitative components. Mixed method was used because of its logical and perceptive appeal, which provides a link between the qualitative and quantitative paradigms. Under mixed methods approach, sampling designs were bifurcated according to (a) the time orientation of the components and (b) the relationship of the qualitative and quantitative samples. Under former category, concurrent design§ was used. In quantitative phase, interviews through close ended questionnaires were administered to PSUs, and at the same time, in qualitative phase, FGD were also conducted. In the latter category, the relationship of the qualitative and quantitative samples was categorized as parallel samples.

Our study used a mixed method triangulation convergence model design. [16] This design allowed for simultaneous collection of both quantitative and qualitative data but also permitted separate analysis of the two components prior to comparing their respective results. The rationale for choosing this approach was to allow our qualitative findings to elucidate the quantitative data. [16]

With the objective of testing the questionnaire and template of focus-group discussions to be used for the study, informal discussions and interviews were conducted. Informal discussions were conducted among seven pregnant women residing at Powai (Mumbai) construction site in December 2009 and interviews were conducted among sixteen pregnant women residing in construction sites in Mumbai Metropolitan

^{*}http://www.indianrealtynews.com/real-estate-india/gurgaon/gurgaon-construction-workers-not-covered-under-esic-bene-fit-schemes-survey.html.

[‡]A mixed-method approach systematically integrates two or more evaluation methods, potentially at every stage of the evaluation process, usually drawing on both quantitative and qualitative data.

[§]Quantitative and Qualitative approaches are used at the same time. When a concurrent sampling design is utilized, data stemming from the sample selected for one phase do not inform the data stemming from the sample selected for the other phase.

area. These construction sites had presence of MMC centers however, these sites were not part of the actual data collection and FGDs. Feedback from the pilot tests were taken into consideration and necessary changes were made accordingly to the questionnaire and FGD template.

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all individual participants included in the study.

Data collection and analysis

The information required for the study was collected at two different levels. At the first level, data was collected with the help of questionnaires from pregnant women. At the same time and second level, FGD were conducted. The study was approved by institutional ethics committee, permission was obtained from building contractors and project owners. Prior to the administration of the questionnaire or initiation of the FGD, verbal consent was obtained from the respondents and participants in the interviews and group discussions respectively.

Three FGDs were performed in the study by researchers in the presence of two staff members of MMC (who acted as facilitators). The first FGD was conducted in Thane among seven pregnant women. The second FGD involved ten pregnant women in Navi Mumbai, and third FGD was carried out among three pregnant women in Mumbai areas (Invitations were sent to 11 women but only three turned up).

Questionnaire included questions on basic information like age, religion, education, native place etc. and specific information like age at marriage, onset of pregnancy, details antenatal check-ups, etc. The quantitative data was analysed using software IBM SPSS version 20 while qualitative analysis was done using MS Excel.

Results

In the quantitative survey, a total of 72 pregnant women were interviewed. Of these, the maximum numbers of respondents were residing in Mumbai (n=40) followed by Thane (n=21) and Navi Mumbai (n=11). Majority (i.e., 54%) of the construction laborers were found to be migrating from within the state, i.e., Maharashtra, with one respondent migrating from Nepal. In terms of time spent on the current construction site, we found 58% of the women residing for less than one year, with most of them between 1 and 2 years, and around 15% residing for 4 years or more.

The average age of respondents was found to be 22 years (± 49SD). About 85% of the women were in the age group of 15–25 years. The average age at marriage was found to be 17 (± 3SD) with the maximum and minimum age at marriage

ranging between 10 and 25 years. All respondents immediately started living with their husband after their marriage.

The average family size was estimated to be about nine members at respondent's place of residence. Further bifurcating, average adult members were six and an average of two children within a family. On comparing the average family size in their place of residence with the average family members on construction site, it was found that on the construction site the number of family members living was four with average number of adults and children per family of three and one respectively. Regarding the education status among the surveyed women, 39% women were illiterate, and of the total literate, 30% and 27% had attended primary (1st–5th grade) and middle school (6th–8th grade) respectively, while rest of them studied till secondary (9th–12th grade). It is interesting to note that Thane had the majority of the respondents who had not attended school and, there were no respondents who studied beyond 10th grade.

Usage of antenatal care facilities

The survey reveals that all respondents were pregnant between 2 and 9 months; most (49%) being between 3 and 5 months pregnant. A significant percentage (76%) of these women had used the health facilities for their antenatal checkups (ANC) with majority (65%) utilizing private health facilities. During ANC, the gynecological examinations such as weight check, blood pressure, internal examination, blood test, sonogram/ultrasound, and urine test were done. Urine examination was performed in 89% cases followed by weight check (60%). Only approximate 13% reported to have internal examination. Fifty-six percent women had received iron tablet or folic tablets or syrup, however only 35% among them had consumed them for three or more months. It is significant to note here that none of the pregnant women reported visit by any government health personnel since the time of being identified as pregnant.

During focus group discussions (FGD), out of 20 pregnant women, five had not undergone any antenatal check-up and mentioned that they would go to village for checkup. The others had examined themselves by nearby doctors and preferred private hospitals. It was also found that most of the respondents preferred delivery at home, instead of government and private hospital; the reason being that of financial constraints. Some of the pregnant women asserted that they had not visited hospitals for ANC as they do not have knowledge regarding ANC, and of the facilities providing these services. They also affirmed of going to their villages for delivery and that their preference would be that the delivery done by midwives.

In order to understand the relations between worker characteristics and ANC usage, we conducted Chi-square test of independence. The results examining the relation between the workers living at construction site for at least a minimum period of one year and current usage of ANC, found no statistical association between the variable. [Chi-square (1, 72) = 2.47, p > 0.05]. However, the tests for examining the relation between workers attended school and current usage of ANC was found to be significant [Chi-square (1, 72) = 9.41, p < 0.01].

Table 1: Socio-demographic profile of pregnant women

Socio-demographic characteristics	Place of residence (N)				
	Mumbai	Navi Mumbai	Thane	Total	
	40	11	21	72	
Age groups of respondents (%)					
15–20	33	27	62	40	
21–25	43	73	33	45	
26–30	17	0	5	11	
> 30	7	0	0	4	
Age groups at marriage (%)					
10–14	20	0	10	14	
15–20	60	100	90	75	
21–25	20	0	0	11	
Education status (%)					
Literate	65	64	52	61	
Primary	31	0	46	30	
Middle	23	57	18	27	
Secondary	46	43	36	43	
Household size in place of residence (no. of members per household)	10	7	7	9	
Adult	6	5	5	6	
Child	3	2	2	2	
Household size at construction site (no. of members per household)	4	3	4	4	
Adult	2	3	3	3	
Child	2	1	1	1	
Number of years of living on construction site (%)	Mumbai	Navi Mumbai	Thane	Total	
Up to 1 year	45	64	67	58	
1–2 years	23	28	9	22	
2–3 years	0	9	10	5	
4 years or more	32	0	14	15	

This would mean that women who attended schools were more likely to go for ANC checkups than who did not attend school. In order to further test the statistical association between the variables, Phi and Cramer's V were performed, and we found that the strength of association between the variables to be "very strong", Phi and Cramer's V = 0.362, p < 0.01. Lastly, Chi-square test of independence performed to examine the relation between workers education level and current usage of ANC showed the relation to be significant, Chi-square (1, 72) = 11.76, p < 0.05. Workers who were educated were more likely to go for ANC checkups than who did not attend school. Further tests to check the statistical association between the variables, Cramer's V was performed, and the strength of association between the variables was found to be "very strong", Cramer's V = 0.404, p < 0.05.

Costs and financing of antenatal care and delivery

In order to understand the cost of delivery of these women we inquired about the last pregnancy details from the currently

pregnant women. Out of 72 pregnant women, 31 women had an episode of pregnancy within the last two years. Among them, 61% mothers had attended at least one ANC in their last pregnancy, and mostly (52.6%) being done in private hospitals. The average total cost spent on ANC was □1499. There is significant difference in average cost of ANC in Thane and Mumbai, respectively (Table 2). The highest numbers of deliveries were conducted at home (42%) followed by government hospital (32%) and private hospital (25%) (Table 2), with majority being normal deliveries. The average amount spent on delivery across all types of health facilities was □3523. Borrowings from other family members and contractors, and use of current savings, were the most common form of financing of both ANC and delivery expenses. However, it is to be noted that the support from employer is in the form of advances or loans (in most cases with no interest). Among 31 pregnant women, 68% mothers had an outcome of both the mother and child being healthy at the time of birth, 23% had a sick child and 10% had still births.

Table 2: Mean cost () of ANC and delivery expenditure across locations and type of health facility

	Mumbai	Navi Mumbai	Thane	Total	Government hospital/clinic	Private hospital/clinic	Home
Mean cost of ANC	2100	535	813	1499	710	2210	_
Standard error of mean	967	355	113	578	222	1054	_
Median	700	320	850	700	640	1100	_
Mean cost of delivery	2684	10,384	900	3523	910	11,214	801
Standard error of mean	693	9904	258	1615	253	5636	152
Median	1550	460	700	800	455	5300	700

During FGD, we found that there was a custom of these women returning to their native places to conduct their delivery. Another reason cited was the prevalent culture that the first delivery expenses have to be borne by the woman's parents. Many women even in their subsequent delivery mentioned that the preference to return back to their mothers for their delivery (although the expenses would be borne by the husband) since they felt that their mothers would take better care of them than their in-laws.

Employment during pregnancy

Our quantitative survey identified 16 women to be working at the time of data collection, during their pregnancy. About 32% worked on the construction site itself, while 42% resorted to domestic work in nearby residential homes, and the rest did other kind of work such as cleaning work in buildings or offices. Almost all the women worked between 25 and 30 days in a month, though very few mentioned of working for 6 days per month. During the FGDs, the working women mentioned that they tend to work till seventh month of pregnancy. The main reason expressed is that the meager income of the male members (who are unskilled in most cases) remains the main reason for these women to take up employment of some kind. Another reason cited was as mentioned by one of the respondents that 'there is no one to cook food for our husband so we go as late as possible'. They also mentioned that a many of them were suffering from problems such as blurred vision, convulsions, and excessive fatigue.

Discussion

This study conducted among pregnant women living in 13 construction sites of Mumbai Metropolitan Region using qualitative as well as quantitative research methods offers unique insight into the maternal health challenges faced by such a vulnerable group.

With regards to antenatal care utilization, in our study, about 76% of the pregnant women had utilized the health facilities for their antenatal checkups. Majority had visited private doctors for checkup for their current pregnancy as well during their last pregnancy. These findings are in line with the NFHS-3 reported figure of private sector utilization for ANC care in Maharashtra at 88%.^[17] The lack of public health facilities within the construction

site and the knowledge of such facilities (One member cited, "I preferred private doctor as I did not know about government hospital") nearer to such sites seems to be another reason for the use of private care facilities for antenatal care.

An important public health issue to be noted that all the women mentioned that no public health personnel visited the construction site since the time they were pregnant. For such migrants, it is the visit of ANM or AWW that provides the much needed health education during pregnancy. This has an impact on the antenatal care on such women as is evident from our study that only 56% women received iron and folic acid and less than 35% had completed the entire course of 90 days duration. This finding is higher than that reported in NFHS-3 where 19% of urban poor women had consumed IFA for 90 days or more. [18] These findings highlight the need for submitting the list of such women by the construction office to the nearest ANC so as to ensure visits by government personnel to such areas.

Our study findings point out to the use of borrowings and/or savings as a major source of financing for their ANC and delivery expenses. These findings of lack of the reach of social security schemes, such as Janani Suraksha Yojana, and are in line with findings on migrant workers by other studies. A survey^[19] done among construction workers in Delhi reported as many as 96% of women reported receiving no maternity relief whatsoever. Another study^[8] in Kerala done in 2011 found that migrant laborers were not covered by the 'Comprehensive State Health Insurance Scheme', as they are not eligible for state specific schemes. Although in recent times there has been some movement on the portability of such schemes, its use among construction workers is yet to be seen as per our findings.

It was found that 22% of the women interviewed were working during their pregnancy period. With the majority of these women in the reproductive age group it is common that the hard work, poor living conditions and the demands of childbearing leave them in poor health. This is evident in our study as well where during the quantitative survey 67% of the women mentioned being suffering from fatigue and others from other health issues such as night blindness, blurred vision and vaginal bleeding. Poverty seems the main factor, along with providing food for their husbands, for such women to work in such fragile health conditions, such as during pregnancy. Along with access to other social security schemes, government schemes like Janani Sishu Suraksha Karikram (JSSK) or Dr. Muthulakshmi Reddy Maternity Benefit Scheme in Tamilnadu where financial

payments linked to antenatal care use and institutional delivery during ANC, delivery and PNC are provided could go a long way to ensure that such women need not work in such harsh working conditions during their pregnancy.

Limitations and strengths

This is the first documented study on the health status and challenges faced by pregnant women living on construction sites in India. For this study, the sample size was small, as only pregnant women living in constructions sites in Mumbai, Navi Mumbai, and Thane were selected for the study. On the other hand, the strength of this study lies in its methodology. Mixed methods research was used and data was triangulated for providing more in-depth analysis and form a more complete understanding of the topic of interest. Further, survey and FGDs were conducted by the staffs who are working in the field once proper training was provided by the research team. Being already aware about construction worker's living conditions and health problems due to their working with them, these workers were able to bring valuable insights during the questionnaire development, and also while facilitating the FGDs.

Conclusion

Notwithstanding the limitations of this study, the uniqueness of using the mixed methods should be considered as the study results will contribute to a better understanding by policy makers and practitioners of maternal health challenges faced by pregnant women and women in general living on construction sites in urban areas. Furthermore, these insights can also be used to shape the health policy for vulnerable populations as envisaged in the recent National Health Policy 2015. However, a larger study across several construction sites should be conducted to understand the specific maternal health challenges faced by such women across various construction sites in the country in order to address the needs of various stakeholders (Central Government, State Government, Construction Board, NGOs, etc.) for such information so that a national level policy and strategy can be formed.

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