Do You Need to Pay for Quality Care? Exploring Associations Between Bribes and Out-of-Pocket Expenditures on Quality of Labor and Delivery Care in High Volume Public Health Facilities in Uttar Pradesh, India

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Abstract

This paper examines the prevalence of bribe requests, total out-of-pocket expenditures (OOPEs), and associations between bribe requests and total OOPEs on the experience of quality of care and maternal complications during childbirth among 2,018 women who delivered in public facilities in Uttar Pradesh, India using cross-sectional survey data. Nearly half (43%) of women were asked to pay a bribe and 73% incurred OOPEs. Bribe requests were significantly associated with lower odds of receiving all health checks upon arrival to the facility (aOR=0.49; 95% CL: 0.24-0.98) and during labor and delivery (aOR=0.44; 95% CL: 0.25-0.76), lower odds of receiving health checks after delivery (aOR=0.44; 95% CL: 0.31-0.62), and higher odds of experiencing maternal complications (aOR=1.45; 95% CL: 1.13-1.87). Although it is mandated that maternity care be provided for free in public facilities in India, these findings suggest that OOPEs are high, and bribes/tips contribute significantly. Interventions centered on improving person-centered care, particularly guidelines around bribes, are needed.

Background

The proportion of births occurring in institutional facilities has increased dramatically in recent years, particularly in Africa and Asia (Diamond-Smith and Sudhinaraset, 2015). In India, improvements in facility deliveries has been largely credited to national health campaigns like Janani Suraksha Yojana (JSY) (Lim et al., 2010). Launched in 2005, JSY is a conditional cash transfer program that provides financial incentive for women to deliver in institutional facilities. According to JSY's guidelines, eligible women who deliver in a public or accredited private health facility receive the equivalent of about $10 United States Dollars (USD) (Ministry of Health and Family Welfare, Government of India, 2018). In 10 "high focus" states—Uttar Pradesh, Uttarakhand, Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh, Himachal Pradesh, Rajasthan, Orissa, and Jammu & Kashmir—all pregnant women are eligible to participate in the JSY program, and benefits for institutional delivery ranges from about $14 USD in urban areas to $20 USD in rural areas (Ministry of Health and Family Welfare, Government of India, 2018).

Within 5 years of JSY's introduction, the proportion of institutional deliveries increased from 20% to 49% (Randive et al., 2013). This proportion is even higher in Uttar Pradesh (UP), one of the 10 "high focus" states of JSY and site of the present study, where currently 60% of deliveries take place in institutional health facilities (Office of the Registrar and Census Commissioner, 2016). Still, these improvements have yet to result in the expected decreases in national and state-level maternal mortality ratios (MMR), a primary objective of the JSY program. In UP, recent data estimates the MMR to be 201 deaths per 100,000 live births (Sample Registration System, 2018a), a ratio significantly higher than that of the national and regional averages (Sample Registration System, 2018b; World Health Organization et al., 2015). Further, while the MMR in UP has decreased by more than 50% in 10 years, it remains one of the highest of any state in the country (Sample Registration System, 2018a). These sluggish reductions in MMR provides the impetus for a shift from focusing solely on increases in institutional delivery to the provision of quality maternal health care as a key mechanism for improving maternal health outcomes.

Person-centered maternity care (PCMC) is defined as the provision of care during pregnancy and childbirth that is respectful and responsive to each woman's individual needs, values, and preferences (Afulani et al., 2017; Institute of Medicine, 2001). PCMC emphasizes a more comprehensive approach to maternity care that moves beyond the provision of essential services alone, and instead, includes dimensions such as communication, respect and dignity, and emotional support (Institute of Medicine, 2001). These dimensions of PCMC have been shown to determine patients' perceptions of and satisfaction with the quality of care received and can also affect clinical outcomes (Groene, 2011; Larson et al., 2014; Sixma et al., 1998; Srivastava et al., 2015; Sun et al., 2000).

There is increasing evidence of the poor treatment of women during childbirth occurring in both private and public healthcare facilities in India, including experiences of abuse and discrimination, the provision of treatment without consent of the mother, and abandonment (Hulton et al., 2007; Raj et al., 2017; Sudhinaraset et al., 2016b). Another aspect of poor PCMC that is particularly salient in India is the request for bribes and informal payments. While it is mandated that reproductive and child health services be provided for free at public facilities in India, qualitative evidence suggests it is common for facilities to request bribes and other informal payments for medicines, medical tests, or equipment (Bruce et al., 2015; Sudhinaraset et al., 2016a, 2016a; Vellakkal et al., 2017).

Especially among India's poorest women, the anticipation of bribes and other informal payments during childbirth may deter women from choosing a facility delivery and encourage home deliveries (Bruce et al., 2015; Mohanty and Srivastava, 2013; Vellakkal et al., 2017). In this way, requests for informal payments may counter the mission of the JSY program. Further, qualitative studies have demonstrated a belief among women that the payment of a bribe will translate to the receipt of better, more timely care (Bohren et al., 2014; Sudhinaraset et al., 2016a). As a result, women may feel obligated to provide the payment as a means of protecting and ensuring the health of their baby. Unfortunately, there exists little quantitative data on just how common it is for women to be asked to make informal payments during childbirth, nor is there quantitative data which provides insight into the demographic characteristics of women who are most likely to be targeted for informal payments. Moreover, there are no published studies which examine the association between requests for informal payments and associated out-of-pocket expenditures (OOPEs) and quality of maternal care indicators. Increasing our understanding of when and among whom bribes and other informal payments, occur, as well as how these payments relate to quality of care, will have important program and policy implications.

To that end, this study fills a critical gap in the literature by investigating: 1) the prevalence of requests for bribes; 2) whether women who are asked to pay bribes differ in their sociodemographic characteristics; and 3) if women who are asked to pay bribes experience better or worse care and outcomes during labor and delivery. This paper also summarizes total OOPEs on informal payments and examines differences in mean OOPEs by sociodemographic characteristics and labor- and delivery-related quality of care indicators and outcomes.

Methods

Facility Selection

The facility sample used in this study was drawn from 727 government hospitals and clinics across Uttar Pradesh. About 10 facilities were selected from each of Uttar Pradesh's 75 districts to include all high-volume health facilities in each district. These facilities included district hospitals, community health centers, and primary health clinics that reported 200 or more deliveries per month during the previous quarter. These facilities were then classified into quartiles based on clinical quality score criteria and then ranked by geographic zone and level of care. Following this stratification, 40 geographically representative facilities from the top and bottom quartiles were selected for study inclusion.

Delivery Patient Survey

A survey was administered to approximately 50 patients at each study site from August to October 2017. Information was collected on patient sociodemographic characteristics, bribe requests, types of health checks received, experiences of complications, and costs incurred during labor and delivery. Women were eligible to participate if they were 18 years or older and delivered within 48 hours. Patient recruitment and informed consent processes occurred in the post-natal ward, and informed consent was obtained from all patients in the study. Patients were able to continue with the interview at their bed or in another private space within the facility. All interviews were conducted in Hindi by trained enumerators (with 5% of all surveys back-checked) and took an average of 45 minutes to complete.

Variables

Being asked to pay a bribe or tip and total OOPEs incurred during childbirth were the primary variables of interest. Bribe requests were assessed by asking, "Did the doctors, nurses, or other staff at the facility ask you or your family for money other than the official cost?" Tip requests were assessed by asking, "Were you asked to give a tip by any health worker after delivery?" Both questions included "Yes" or "No" response options. A binary variable was created where a response of "Yes" to either question was considered to indicate that a woman had been asked to pay a bribe or tip during or after labor and delivery. Total OOPEs was calculated by summing the reported amount paid by patients for transportation to the health facility for delivery, labor and delivery care, medicines, medical tests, and tips. Missing values for any of these costs were set to 0, and the total expenditures, reported in Indian National Rupees (INR), were converted to USD using the 2017 conversion rate of 1 USD to INR 65.1 (Reserve Bank of India, 2018).

Other variables of interest included various individual-level sociodemographic characteristics (e.g., age, education, occupation, caste) and labor- and delivery-related quality of care indicators and outcomes. Women were asked if they had received benefits of the JSY program ("Yes" or "No"; responses of "Do not know" were categorized as "No"). Facilities were categorized into one of four levels of care: primary health clinic (PHC), community health clinic (CHC), first referral unit community health center (FRU-CHC), and district hospital (DH). Quality of care received upon arrival to the facility and during labor and delivery was assessed by asking women if a health provider checked their blood pressure, checked their pulse, timed contractions, listened to the baby's heartbeat, and performed a vaginal examination. To assess the quality of care received after delivery, women were asked if a health provider checked their blood pressure, checked their pulse, examined their abdomen, examined their perineum, checked for bleeding, examined the baby, checked to ensure breastfeeding was going well, and asked if urine and stool were being easily passed. Responses were used to create ordinal variables assessing the number of health checks performed at each stage of labor and delivery ("None," "Few," "Most", or "All"). Experience of complications was assessed by asking women, "At any time just during the delivery did you suffer from any problems?" and "At any time during labor and after delivery did you suffer from any problems?" Each question had response options of "Yes" or "No." A binary variable was created where a response of "Yes" to either question was considered to indicate that a woman had experienced complications during or after labor and delivery.

Data Analysis

Data were analyzed using descriptive, bivariate, and multivariate statistics using StataSE 15.1 (StataCorp, 2017). Pearson's chi-square, t-tests, and one-way analysis of variance (ANOVA) were used to examine differentials in being asked to pay a bribe or tip and mean OOPEs by sociodemographic characteristics, facility level of care, and labor and delivery quality of care indicators and outcomes. Multinomial logistic regression was used to further examine the associations between requests for bribes or tips and OOPEs and each of the three quality of care indicators (i.e. number of health checks performed). Multiple logistic regression was used to examine the associations between requests for bribes or tips and OOPEs on the experience of complications during labor and delivery. All logistic regression analyses controlled for facility level of care and key sociodemographic characteristics. For the logistic regression analyses examining the association between bribes and OOPEs on the number of health checks performed after delivery, the "Most" and "All" categories were collapsed as the number of women who received all health checks after delivery was too small to conduct meaningful analyses.

Results

Among the 2,018 women who completed the survey, more than 40% of were asked to pay a bribe or tip during childbirth. Sociodemographic characteristics stratified by bribe or tip request, as well as results of chi-square tests, are presented in Table 1. Monthly income was found to be associated with a request for bribe or tip; a higher proportion of women who were asked to pay a bribe had a monthly household income of $150 or more (26.0 % versus 21.5%, $p<0.001$). Being asked to pay a bribe or tip was not found to be associated with any other sociodemographic characteristics.

Table 1

Labor- and delivery-related characteristics stratified by bribe or tip request, as well as results of chi-square and t-tests, are provided in Table 2. Three-quarters of women reported to have received benefits from JSY, and no differences were detected between women who were asked to pay a bribe or tip and those who were not. More than one-third of all women delivered in a district hospital. Women who were asked to pay a bribe or tip were significantly more likely than those who were not to have delivered in a CHC (31.5% versus 20.1%; $p<0.0001$). Mean OOPEs incurred during labor and delivery were significantly higher among women who were asked to pay a bribe or tip compared to those who were not ($8.18 versus $3.82; $p<0.0001$). In general, women who were asked to pay a bribe or tip received fewer health checks during all stages of labor and delivery (all with a $p<0.0001$) and were also more likely to experience complications (20.5% versus 15.2%; $p<0.01$) compared to women not asked to pay a bribe or tip.

Table 2

Approximately 73% of women incurred OOPEs during labor and delivery. A total of 549 (27.2%) women reported paying for transportation costs, 930 (46.1%) for delivery care, 438 (21.7%) for medications/medicines, and 449 (21.2%) for tips to health workers; paying for medical tests was rare, reported by only 17 (0.8%) of women (data not shown). A breakdown of where women are spending the most money during childbirth is shown in Figure 1. The largest burden arises from delivery and tip costs (accounting for 61% and 23% of total expenditures, respectively). Among the 1,467 women who reported incurring some cost during labor and delivery, the mean (SD, range) amount paid (in USD) in OOPEs was $7.82 ($7.18, $0.15-$111.00; data not shown).

Figure 1

An examination of differentials in mean OOPEs by sociodemographic and delivery-related characteristics and outcomes are presented in Table 3. Mean OOPEs were highest among those in the youngest age group and increased as level of education increased (both with a $p<0.01$). A similar trend was found by wealth quintile, whereby mean expenditures increased as wealth increased ($p<0.0001$). Women residing in urban regions of UP had higher expenditures than

those in rural regions ($p<0.01$). No differences in mean OOPEs were found by occupation, religion, or caste.

Significant differences in mean OOPEs were found between level of facility; expenditures were highest among women who delivered in district hospitals and lowest among women who delivered in primary health clinics ($7.16 versus $2.51, respectively; $p<0.0001$). Significant differences in mean OOPEs were also detected by the number of health checks performed upon arrival to the facility, during labor and delivery, and after delivery. In general, expenditures decreased as the number of health checks performed increased (all with a $p<0.0001$). For example, women who received all health checks during labor and delivery paid an average of $3.51 in OOPEs versus women who received no health checks who paid an average of $6.43. Mean OOPEs were also significantly higher among women who experienced complications compared to those who did not ($6.50 versus $5.51, $p<0.05$).

Table 3

Table 4 provides results of the multinomial logistic regression analyses examining associations between requests for bribe or tip and OOPEs on labor- and delivery-related quality of care indicators, as well the results of the multiple logistic regression analysis examining the association between requests for bribe or tip and OOPEs on maternal complications. After controlling for facility level of care, women's sociodemographic characteristics, and OOPEs, women who were asked to pay a bribe or tip had significantly lower odds of receiving all health checks upon arrival to the facility (aOR=0.49; 95% CL: 0.24-0.98), lower odds of receiving all health checks during labor and delivery (aOR=0.44; 95% CL: 0.25-0.76), and lower odds of receiving most or all health checks after delivery (aOR=0.44; 95% CL: 0.31-0.62). Compared to women who were not, women who were asked to pay a bribe or tip had higher odds of experiencing complications during or after delivery (aOR=1.45; 95% CL: 1.13-1.87). Controlling for facility level of care, women's sociodemographic characteristics, and requests for bribes or tips, total OOPEs were no longer associated with any labor- and delivery-related quality of care indicator nor the experience of complications.

Table 4

Discussion

Our findings corroborate results from previous qualitative studies conducted in India which have documented the experiences of women being asked to pay bribes or for other services beyond the official or formal fees. Of concern, we also found that the second largest burden of delivery-related costs arose from the payment of tips. Studies conducted globally have suggested that requests for bribes typically occur among poorer, less educated women or women of lower social status (Bohren et al., 2014; Rahmani and Brekke, 2013; Sudhinaraset et al., 2016b; Warren et al., 2017). Research describing why women of lower socioeconomic status may be especially vulnerable to providers' requests for bribes is limited. One review from Southeast Asia suggested that the mistreatment of women in healthcare settings occurs because providers likely represent

socially advantaged groups, and thus, are unable to separate their discriminatory attitudes and behaviors from their provision of care as health professionals (Målqvist et al., 2012). Nevertheless, our results did not show significant differences between women who were asked to pay bribes and those who were not across most sociodemographic characteristics measured. This lack of difference, however, does not mean payment of bribes is not a problem. Having to pay a bribe or make other informal payments when accessing care during childbirth may be particularly detrimental to India's poorest women. These additional, informal payments may result in families being unable to anticipate the true costs associated with pregnancy and delivery. This can be a source of financial and emotional stress and can place a greater financial burden on families who may have to borrow money from family and/or sell household goods to pay for childbirth (Modugu et al., 2012; Sudhinaraset et al., 2016a). Thus, delivering in a health facility in India may be a source of and perpetuate cycles of health inequities for women.

While we did not find significant differences in requests for bribes across sociodemographic characteristics, we did find differences in mean OOPEs across several sociodemographic characteristics. Our findings suggest that women with higher education and wealth pay more in out-of-pocket delivery expenditures. This has been found in other studies as well. For example, using nationally representative data from 2004 and 2008, Mohanty and Srivastava (2013) found that expenditures increased with increasing educational attainment and wealth index in both public and private facilities in India. This study also found that the mean OOPEs on delivery in UP was $23 USD (Mohanty and Srivastava, 2013), compared to the mean amount found in our analyses of about $8 USD. This suggests that costs associated with delivery may be decreasing in UP, perhaps as a direct result of the JSY program which was still in its nascent stages during the data collection period of the study by Mohanty and Srivastava.

Bribes may impact a woman's perception of the quality of care received, which in turn can impact her likelihood of recommending that facility to others within her social network, as found in other studies from UP (Sudhinaraset et al., 2016a). Thus, the negative consequences associated with women being asked to pay bribes, or make other informal payments, during childbirth may extend to others within her household, family, and community. Qualitative studies also demonstrate that women believe the payment of a bribe will translate to health workers providing improved, more timely care (Bohren et al., 2014; Sudhinaraset et al., 2016a). However, our results suggest that those who are asked to pay bribes or tips receive poorer care, as we found that higher proportions of women who are asked to pay a bribe or tip receive fewer health checks at every stage of labor and delivery and are more likely to experience maternal complications. These relationships held in multivariable analyses even after controlling for level of care, women's sociodemographic characteristics, and total OOPEs. It is possible that being asked to pay a bribe is indicative of the quality of the facility where labor and delivery took place. Facilities where these practices are common may be more likely to provide poorer clinical care in general or be ill-equipped to provide quality clinical care due to, for example, staff or equipment shortages.

Our findings should be considered within the context of our study's limitations. First, while the study identifies whether women were requested to pay a bribe or tip, we do not know the timing of when requests occurred. In one systematic review on the mistreatment of women during childbirth globally, the authors found that health workers were perceived to ignore women until a bribe was paid, at which point, the health workers would then become attentive to the woman's needs (Bohren et al., 2014). Conversely, one qualitative study conducted among recent mothers

living in slum communities in UP found that women reported being denied labor and delivery care altogether if they refused to pay a bribe or make other informal payments (Sudhinaraset et al., 2016a). Thus, it may also be possible that the associations found between requests for bribes or tips and the receipt of fewer health checks and increased proportion of complications is suggestive of a woman's refusal or inability to provide a bribe. In other words, the refusal to pay a bribe or tip may be met with poorer quality of care in the form of fewer health checks being performed, which then leads to increased risk of complications. Additional research is needed which captures when requests for bribes are commonly made in the labor and delivery timeline and then quantitatively examines the direct impact of payment (or refusal) of bribes on quality of care and maternal outcomes during childbirth.

Another limitation of the study is the generalizability of the results. While our results are representative of public health facilities in UP state, they may not be generalizable to private facilities, which make up 18% of deliveries in the state (Office of the Registrar and Census Commissioner, 2016), or to other states in India. Also, inaccurate recall of requests for bribes and tips, payments for various delivery-related costs, health checks received, and complications experienced may have introduced error in our measurements. Although, given that interviews were conducted within 48 hours of delivery, we expect the impact of recall bias to be limited. Further, questions on requests for bribes and tips are centered on health workers and did not specifically ask about requests for bribes or tips from other facility personnel, such as guards and receptionists, who have been previously documented as also making demands for payments from women and their families during delivery (Bohren et al., 2014). Importantly, the definition of bribes and tips may differ between women and be context-specific given that women are asked to self-report these practices. Therefore, these results may underestimate the request of bribes and tips.

This study has several programmatic and policy implications. First, providers and staff at health facilities should be trained on the provision of person-centered care, particularly guidelines around bribe and tip requests. The qualitative arm of this study conducted with health providers has reflected that there is a very fine line between what is considered a tip and what is considered a bribe. As an expression of their joy and contentment, family members willingly pay some amount to health workers and providers, which may be considered a cultural norm. While it may be common in India for women to give a tip out of genuine gratitude, providers should be trained to not ask women for tips as it may be misconstrued as a bribe request. Second, facilities may need quality improvement interventions focused on improving transparency among providers and staff. This may include facility managers working with staff to develop a culture of transparency – actions that should specifically include not accepting bribes and signage that reminds women and staff that tips are not necessary at that facility. Third, programs should focus on improving women's expectations of care, including knowing their rights as patients in a health facility. Community programs should inform women and their families about associated costs of going to local health facilities, including written pamphlets that clearly lay out costs of care. Importantly, women should be educated that informal payments do not necessarily result in improved quality of care. We also found that the average amount of OOPEs paid during labor and delivery accounts for a significant proportion of the JSY conditional cash transfer. Therefore, to continue increasing institutional deliveries in India, it is important to lower costs of medical expenditures, particularly among the poorest populations. Alternatively, assistance programs which help the poorest women and their families cope with both formal and informal

delivery-related expenditures may also help to reduce the negative impacts of high maternal care costs.

References

Afulani, P.A., Diamond-Smith, N., Golub, G., Sudhinaraset, M., 2017. Development of a tool to measure person-centered maternity care in developing settings: validation in a rural and urban Kenyan population. Reproductive Health 14, 118. https://doi.org/10.1186/s12978-017-0381-7

Bohren, M.A., Hunter, E.C., Munthe-Kaas, H.M., Souza, J.P., Vogel, J.P., Gülmezoglu, A.M., 2014. Facilitators and barriers to facility-based delivery in low- and middle-income countries: a qualitative evidence synthesis. Reprod Health 11, 71. https://doi.org/10.1186/1742-4755-11-71

Bruce, S.G., Blanchard, A.K., Gurav, K., Roy, A., Jayanna, K., Mohan, H.L., Ramesh, B.M., Blanchard, J.F., Moses, S., Avery, L., 2015. Preferences for infant delivery site among pregnant women and new mothers in Northern Karnataka, India. BMC Pregnancy Childbirth 15, 49. https://doi.org/10.1186/s12884-015-0481-8

Diamond-Smith, N., Sudhinaraset, M., 2015. Drivers of facility deliveries in Africa and Asia: regional analyses using the demographic and health surveys. Reprod Health 12, 6. https://doi.org/10.1186/1742-4755-12-6

Groene, O., 2011. Patient centredness and quality improvement efforts in hospitals: rationale, measurement, implementation. Int J Qual Health Care 23, 531–537. https://doi.org/10.1093/intqhc/mzr058

Hulton, L.A., Matthews, Z., Stones, R.W., 2007. Applying a framework for assessing the quality of maternal health services in urban India. Soc Sci Med 64, 2083–2095. https://doi.org/10.1016/j.socscimed.2007.01.019

Institute of Medicine, 2001. Crossing the quality chasm: A new health system for the 21st century. National Academy Press, Washington, D.C.

Larson, E., Hermosilla, S., Kimweri, A., Mbaruku, G.M., Kruk, M.E., 2014. Determinants of perceived quality of obstetric care in rural Tanzania: a cross-sectional study. BMC Health Services Research 14, 483. https://doi.org/10.1186/1472-6963-14-483

Lim, S.S., Dandona, L., Hoisington, J.A., James, S.L., Hogan, M.C., Gakidou, E., 2010. India's Janani Suraksha Yojana, a conditional cash transfer programme to increase births in health facilities: an impact evaluation. The Lancet 375, 2009–2023. https://doi.org/10.1016/S0140-6736(10)60744-1

Målqvist, M., Hoa, D.T.P., Thomsen, S., 2012. Causes and determinants of inequity in maternal and child health in Vietnam. BMC Public Health 12, 641. https://doi.org/10.1186/1471-2458-12-641

Ministry of Health and Family Welfare, Government of India, 2018. Janani Suraksha Yojana: Background [WWW Document]. National Health Mission. URL http://nhm.gov.in/nrhm-components/rmnch-a/maternal-health/janani-suraksha-yojana/background.html (accessed 10.31.18).

Modugu, H.R., Kumar, M., Kumar, A., Millett, C., 2012. State and socio-demographic group variation in out-of-pocket expenditure, borrowings and Janani Suraksha Yojana (JSY)

programme use for birth deliveries in India. BMC Public Health 12, 1048. https://doi.org/10.1186/1471-2458-12-1048

Mohanty, S.K., Srivastava, A., 2013. Out-of-pocket expenditure on institutional delivery in India. Health Policy Plan 28, 247–262. https://doi.org/10.1093/heapol/czs057

Office of the Registrar and Census Commissioner, 2016. Annual health survey report- a report on core and vital health indicators, Part 1. Ministry of Home Affairs, Government of India, New Delhi.

Rahmani, Z., Brekke, M., 2013. Antenatal and obstetric care in Afghanistan – a qualitative study among health care receivers and health care providers. BMC Health Services Research 13, 166. https://doi.org/10.1186/1472-6963-13-166

Raj, A., Dey, A., Boyce, S., Seth, A., Bora, S., Chandurkar, D., Hay, K., Singh, K., Das, A.K., Chakraverty, A., Ramakrishnan, A., Shetye, M., Saggurti, N., Silverman, J.G., 2017. Associations Between Mistreatment by a Provider during Childbirth and Maternal Health Complications in Uttar Pradesh, India. Matern Child Health J 21, 1821–1833. https://doi.org/10.1007/s10995-017-2298-8

Randive, B., Diwan, V., Costa, A.D., 2013. India's conditional cash transfer programme (the JSY) to promote institutional birth: Is there an association between institutional birth proportion and maternal mortality? PLOS ONE 8, e67452. https://doi.org/10.1371/journal.pone.0067452

Reserve Bank of India, 2018. Reference Rate Archive [WWW Document]. URL https://www.rbi.org.in/scripts/referenceratearchive.aspx (accessed 9.2.18).

Sample Registration System, 2018a. Maternal Mortality Ratio (MMR) (per 100000 live births) [WWW Document]. Office of Registrar General, India. URL http://niti.gov.in/content/maternal-mortality-ratio-mmr-100000-live-births (accessed 8.31.18).

Sample Registration System, 2018b. Special Bulletin on Maternal Mortality in India 2014-16. Office of Registrar General, India, New Delhi, India.

Sixma, H.J., Kerssens, J.J., Campen, C.V., Peters, L., 1998. Quality of care from the patients' perspective: from theoretical concept to a new measuring instrument. Health Expect 1, 82–95.

Srivastava, A., Avan, B.I., Rajbangshi, P., Bhattacharyya, S., 2015. Determinants of women's satisfaction with maternal health care: a review of literature from developing countries. BMC Pregnancy Childbirth 15, 97. https://doi.org/10.1186/s12884-015-0525-0

Sudhinaraset, M., Beyeler, N., Barge, S., Diamond-Smith, N., 2016a. Decision-making for delivery location and quality of care among slum-dwellers: a qualitative study in Uttar Pradesh, India. BMC Pregnancy and Childbirth 16, 148. https://doi.org/10.1186/s12884-016-0942-8

Sudhinaraset, M., Treleaven, E., Melo, J., Singh, K., Diamond-Smith, N., 2016b. Women's status and experiences of mistreatment during childbirth in Uttar Pradesh: a mixed methods study using cultural health capital theory. BMC Pregnancy and Childbirth 16, 332. https://doi.org/10.1186/s12884-016-1124-4

Sun, B.C., Adams, J., Orav, E.J., Rucker, D.W., Brennan, T.A., Burstin, H.R., 2000. Determinants of patient satisfaction and willingness to return with emergency care. Ann Emerg Med 35, 426–434.

Vellakkal, S., Reddy, H., Gupta, A., Chandran, A., Fledderjohann, J., Stuckler, D., 2017. A qualitative study of factors impacting accessing of institutional delivery care in the context of India's cash incentive program. Soc Sci Med 178, 55–65. https://doi.org/10.1016/j.socscimed.2017.01.059

Warren, C.E., Njue, R., Ndwiga, C., Abuya, T., 2017. Manifestations and drivers of mistreatment of women during childbirth in Kenya: implications for measurement and developing interventions. BMC Pregnancy and Childbirth 17, 102. https://doi.org/10.1186/s12884-017-1288-6

World Health Organization, UNICEF, UNFPA, World Bank Group, United Nations, 2015. Trends in maternal mortality: 1990 to 2015.

Tables

Table 1. Demographic characteristics of women delivering across level of care in Uttar Pradesh, India, stratified by request for bribe or tip, N (%)

Characteristic	**Total N=2,018**	**Asked to pay bribe or tip**		***p-value*[1]**
		No N=1,155	**Yes N=863**	
Age (years)				0.59
18-24	990 (49.1)	572 (49.5)	418 (48.4)	
25-30	860 (42.6)	493 (42.7)	367 (42.5)	
31-46	168 (8.3)	90 (7.8)	78 (9.0)	
Education				0.97
None	564 (28.0)	316 (27.4)	248 (28.7)	
Some primary or primary	377 (18.7)	217 (18.8)	160 (18.5)	
Eight	387 (19.2)	223 (19.3)	164 (19.0)	
Secondary or vocational	441 (21.9)	256 (22.2)	185 (21.4)	
College or higher	249 (12.3)	143 (12.4)	106 (12.3)	
Occupation				1.00
Unemployed or homemaker	1,905 (94.4)	1,091 (94.5)	814 (94.3)	
Agricultural labor	40 (2.0)	23 (2.0)	17 (2.0)	
Casual labor	38 (1.9)	22 (1.9)	16 (1.9)	
Salaried worker	18 (0.9)	10 (0.9)	8 (0.9)	
Self-employed in petty trade	17 (0.8)	9 (0.8)	8 (0.9)	
Place of residence				0.14
Rural	1,725 (85.5)	999 (86.5)	726 (84.1)	
Urban	293 (14.5)	156 (13.5)	137 (15.9)	
Religion[2]				0.65
Hindu	1,675 (83.1)	955 (82.8)	720 (83.5)	
Muslim	341 (16.9)	199 (17.2)	142 (16.5)	
Caste				0.45
Other backward class	1,112 (55.1)	632 (54.7)	480 (55.6)	
Scheduled caste/tribes	574 (28.4)	340 (29.4)	234 (27.1)	
General	332 (16.5)	183 (15.8)	119 (17.3)	
Monthly Income (US dollars)				<0.001
Less than $50	447 (22.2)	294 (25.5)	153 (17.7)	
$50-$99	709 (35.1)	398 (34.5)	311 (36.0)	
$100-$149	390 (19.3)	215 (18.6)	175 (20.3)	
$150 or more	472 (23.4)	248 (21.5)	224 (26.0)	
Wealth Quintile				0.32
Poorest	404 (20.0)	236 (20.4)	168 (19.5)	
Poorer	404 (20.0)	220 (19.1)	184 (21.3)	
Middle	403 (20.0)	226 (19.6)	177 (20.5)	
Richer	404 (20.0)	226 (19.6)	178 (20.6)	
Richest	403 (20.0)	247 (21.4)	156 (18.1)	

Characteristic	Total N=2,018	Asked to pay bribe or tip: No N=1,155	Asked to pay bribe or tip: Yes N=863	*p-value*[1]
Parity (including this delivery)				0.54
1	706 (35.0)	407 (35.2)	299 (34.7)	
2	609 (30.2)	351 (30.4)	258 (29.9)	
3	393 (19.5)	213 (18.4)	180 (20.9)	
4+	310 (15.4)	184 (15.9)	126 (14.6)	

Percentages may not add to 100 due to rounding.
[1] p-values are for Pearson Chi-square tests
[2] Missing: n=2

Table 2. Labor and delivery characteristics of women delivering across levels of care in Uttar Pradesh, India, N (%)

Characteristic	**Total N=2,018**	**Asked to pay bribe or tip**		
		No N=1,155	**Yes N=863**	**p-value[1]**
Received Janani Suraksha Yojana (JSY) program benefits	1,528 (75.7)	879 (76.1)	649 (75.2)	0.64
Level of facility				<0.0001
Primary health clinic	202 (10.0)	153 (13.3)	49 (5.7)	
Community health center	504 (25.0)	232 (20.1)	272 (31.5)	
First referral unit community health center	609 (30.2)	356 (30.8)	253 (29.3)	
District hospital	703 (34.8)	414 (35.8)	289 (33.5)	
Total out-of-pocket medical expenditures (in US dollars); mean (SD)	18.35 (12.6)	3.82 (6.27)	8.18 (7.24)	<0.0001
Number of health checks performed upon facility arrival				<0.0001
None	57 (2.8)	32 (2.8)	25 (2.9)	
Few (1-2)	1,171 (58.0)	599 (51.9)	572 (66.3)	
Most (3-4)	613 (30.4)	395 (34.2)	218 (25.3)	
All	177 (8.8)	129 (11.2)	48 (5.6)	
Number of health checks performed during labor and delivery				<0.0001
None	184 (9.1)	95 (8.2)	89 (10.3)	
Few (1-2)	1,313 (65.1)	692 (59.9)	621 (72.0)	
Most (3-4)	392 (19.4)	270 (23.4)	122 (14.1)	
All	129 (6.4)	98 (8.5)	31 (3.6)	
Number of health checks performed after delivery				<0.0001
None	774 (38.4)	373 (32.3)	401 (46.5)	
Few (1-3)	982 (48.7)	591 (51.2)	391 (45.3)	
Most (4-7)	246 (12.2)	177 (15.3)	69 (8.0)	
All	16 (0.8)	14 (1.2)	2 (0.2)	
Experienced complications during or after labor and delivery	353 (17.5)	176 (15.2)	177 (20.5)	<0.01

Percentages may not add to 100 due to rounding.

[1]p-values are for Pearson Chi-square tests (categorical variables) and t-test (means

Table 3. Differentials in mean (standard deviation) out-of-pocket expenditures (in US dollars) during delivery by selected sociodemographic and delivery-related characteristics

Characteristic	**Total N=2018**	***p-value*[1]**
Age (years)		<0.01
18-24	6.23 (7.26)	
25-30	5.19 (6.99)	
31-46	5.01 (5.68)	
Education		<0.01
None	5.03 (6.17)	
Some primary or primary	5.07 (6.21)	
Eight	5.76 (6.14)	
Secondary or vocational	6.46 (8.64)	
College or higher	6.63 (7.99)	
Occupation		0.14
Unemployed or homemaker	5.71 (7.07)	
Agricultural labor	5.07 (5.80)	
Casual labor	4.75 (4.87)	
Salaried worker	3.63 (4.05)	
Self-employed in petty trade	9.27 (11.33)	
Place of residence		<0.01
Rural	5.50 (7.02)	
Urban	6.81 (7.08)	
Religion[2]		0.45
Hindu	5.64 (7.06)	
Muslim	5.95 (6.98)	
Caste		0.06
Other backward class	5.80 (7.55)	
Scheduled caste/tribes	5.15 (6.04)	
General	6.22 (6.83)	
Monthly Income (US dollars)		<0.05
Less than $50	5.02 (5.96)	
$50-$99	5.50 (6.98)	
$100-$149	6.05 (8.20)	
$150 or more	6.30 (6.99)	
Wealth Quintile		<0.0001
Poorest	4.23 (4.69)	
Poorer	5.86 (8.33)	
Middle	5.62 (7.03)	
Richer	6.48 (7.16)	
Richest	6.24 (7.11)	
Parity (including this delivery)		<0.0001
1	6.67 (7.86)	
2	5.44 (7.36)	
3	5.25 (5.81)	
4+	4.49 (5.41)	

Characteristic	**Total N=2018**	***p-value*[1]**
Level of Facility		<0.0001
Primary health clinic	2.51 (3.71)	
Community health center	4.50 (5.01)	
First referral unit community health center	6.02 (6.87)	
District hospital	7.16 (8.57)	
Received Janani Suraksha Yojana (JSY) program benefits		0.10
Yes	5.54 (6.63)	
No	6.15 (8.18)	
Number of health checks performed upon facility arrival		<0.0001
None	4.25 (5.70)	
Few (1-2)	5.96 (7.02)	
Most (3-4)	5.96 (7.57)	
All	3.39 (4.92)	
Number of health checks performed during labor and delivery		<0.0001
None	6.43 (10.78)	
Few (1-2)	6.12 (6.64)	
Most (3-4)	4.60 (5.89)	
All	3.51 (6.78)	
Number of health checks performed after delivery		<0.0001
None	6.27 (6.65)	
Few (1-3)	5.70 (7.24)	
Most (4-7)	4.10 (7.31)	
All	0.97 (2.17)	
Experienced complications during or after labor and delivery		<0.05
Yes	6.50 (7.02)	
No	5.51 (7.04)	

Percentages may not add to 100 due to rounding.
[1] p-values are for t-test (binary) and ANOVA (more than two categories)
[2] Missing: n=2

Table 4. Logistic regression adjusted odds ratios (95% confident intervals) of labor and delivery quality of care indicators and maternal complications by requests for bribes and total out-of-pocket expenditures among women delivering across levels of care in Uttar Pradesh, India[1]

Predictor variables	All health checks performed upon facility arrival[2]	All health checks performed during labor and delivery[2]	Most or all health checks performed after delivery[2]	Experienced complications during or after delivery[3]
Asked to pay bribe or tip	0.49 (0.24-0.98) *	0.44 (0.25-0.76) †	0.44 (0.31-0.62) ‡	1.45 (1.13-1.87) †
Total out-of-pocket expenditures	1.00 (0.93-1.07)	0.96 (0.91-1.00)	0.97 (0.94-1.00)	1.01 (0.99-1.03)

aOR (95% CI)

[1]All models control for level of care and women's age, education, wealth quintile, resident status, parity, and religion.

[2]Analyzed using multinomial logistic regression; Outcome is in relation to women who received no health checks at each stage of labor and delivery.

[3]Analyzed using multiple logistic regression.

*$p < 0.05$; †$p < 0.01$; ‡$p < 0.001$

Figure

Figure 1. Where are women spending the most money during childbirth?: Delivery-related costs as a percentage of total out-of-pocket expenditures