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Women's experiences of mistreatment during childbirth and their satisfaction with care: findings from a multicountry community-based study in four countries

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ABSTRACT

Introduction Experiences of care and satisfaction are intrinsically linked, as user's experiences of care may directly impact satisfaction, or indirectly impact user's expectations and values. Both experiences of care and satisfaction are important to measure so that quality can be monitored and improved. Globally, women experience mistreatment during childbirth at facilities; however, there is limited evidence exploring the mistreatment and women's satisfaction with care during childbirth.

Methods This is a secondary analysis of a cross-sectional survey within the WHO study 'How women are treated during facility-based childbirth' exploring the mistreatment of women during childbirth in Ghana, Guinea, Myanmar and Nigeria. Women's experiences of mistreatment and satisfaction with care during childbirth was explored. Multivariable logistic regression modelling was conducted to evaluate the association between mistreatment, women's overall satisfaction with the care they received, and whether they would recommend the facility to others.

Results 2672 women were included in this analysis. Despite over one-third of women reporting experience of mistreatment (35.4%), overall satisfaction for services received and recommendation of the facility to others was high, 88.4% and 90%, respectively. Women who reported experiences of mistreatment were more likely to report lower satisfaction with care: women were more likely to be satisfied if they did not experience verbal abuse (adjusted OR (AOR) 4.52, 95% CI 3.50 to 5.85), or had short waiting times (AOR 5.12, 95% CI 3.94 to 6.65). Women who did not experience any physical or verbal abuse or discrimination were more likely to recommend the facility to others (AOR 3.89, 95% CI 2.98 to 5.06).

Conclusion Measuring both women's experiences and their satisfaction with care are critical to assess quality and provide actionable evidence for quality improvement. These measures can enable health systems to identify and respond to root causes contributing to measures of satisfaction.

Key questions

What is already known?

- Evidence has shown that experiences of care and satisfaction are intrinsically linked, as a user's experiences of care may directly impact satisfaction, or indirectly impact a their expectations and values.
- In the context of maternal health, women's experiences of care during labour, childbirth and early postnatal period influence their satisfaction with care, as well as impact their future care-seeking behaviours.
- Dissatisfaction with childbirth experiences is a key reason for lower utilisation of facility-based childbirth in low-income and middle-income countries.

What are the new findings?

- In our study, we explored the relationship between women's experiences of mistreatment during childbirth and satisfaction, using a community-based cross-sectional survey conducted with 2672 postpartum women in Ghana, Guinea, Myanmar and Nigeria.
- We found that while experiences of mistreatment were common, women also commonly reported being satisfied.
- Women who reported experiences of mistreatment were more likely to report lower satisfaction with care: women were more likely to be satisfied if they did not experience verbal abuse or had short waiting times, and women who did not experience any physical or verbal abuse or discrimination were more likely to recommend the facility to others.

INTRODUCTION

Globally, an estimated 295 000 maternal deaths occurred in 2017, of which 66% occurred in sub-Saharan Africa and 5% in South-East Asia.[1] Improving access to

Key questions

What do the new findings imply?

- Measuring both women's experiences and their satisfaction with care are critical to holistically assess quality and provide actionable evidence for improvement across the continuum of maternity care services.
- Assessing women's experiences of care, including whether they were mistreated during childbirth, provides important information about a woman's interactions with the health system and health providers that may be missed if only satisfaction is measured.
- These experience of care measures are considered 'process measures' that can enable health systems to identify and respond to root causes contributing to measures of satisfaction.

facility-based childbirth where skilled health personnel are available to provide good quality care is key to reducing maternal deaths in high-burden countries.[2 3] A wide range of individual, community and health system factors contribute to health facility utilisation for childbirth, such as geographical accessibility, cost, perception of quality, cultural expectations and personal preferences.[3] WHO framework for quality of care highlights the importance of considering quality of care as both the 'provision of care' (evidence-based practices, actionable information systems, functional referral systems) and 'experience of care,' (effective communication, respect and dignity, emotional support), which are underpinned by competent and motivated human resources and availability of essential physical resources.[4] Efforts to improve healthcare quality should thus address both the care provision and care experience domains, though historically maternal health programmes have largely focused on improving provision of care.[5]

Experiences of care and satisfaction are intrinsically linked, as a user's experience of care may directly impact satisfaction, or indirectly impact a user's expectations and values.[5] Both experiences of care and satisfaction are important to measure so that quality can be monitored and improved. User experiences of care are process measures that typically reflect interpersonal experiences such as effective communication, emotional support and respect and dignity.[5] These domains of user experiences can be challenging to measure, as they are inherently subjective, influenced by facility-level and patient-level characteristics, and occur within country and health system contexts that also influence user expectations and values.[5] Relatedly, user satisfaction is an outcome measure that reflects whether the care provided has met the user's expectations and values.[5] Satisfaction can be influenced by shifting needs throughout care and individual health outcomes. In settings where people have low expectations of care or low confidence in the health system, satisfaction measures may be difficult to interpret as they may not capture poor experiences of care that have become normalised, or provide actionable areas for targeted quality improvement.

In the context of maternal health, previous evidence has shown that women's experiences of care during labour, childbirth and early postnatal period influences their satisfaction with care; negative care experiences are associated with reduced intention to seek maternity care in the future.[6 7] Women describe dissatisfaction with care during childbirth as a key reason for lower utilisation of health facilities for childbirth in low-income and middle-income countries (LMICs).[8 9] Conversely, research exploring factors influencing women's satisfaction found that positive communication by healthcare providers (such as respect and empathy) were significantly associated with increased women's satisfaction.[10–12] Likewise, provider behaviour has been documented as a major contributing factor to women's satisfaction with care in LMICs, reflecting the expectation of respectful and non-abusive treatment.[13]

Recent studies have demonstrated that women across the world have experienced mistreatment during childbirth at facilities,[14–20] which is a critical part of user experience measures. In 2019, a WHO multicountry study used two validated instruments (direct labour observation and postpartum community survey) to measure mistreatment during childbirth.[21 22] The community survey with 2672 women found that younger and less educated women were the most vulnerable for mistreatment, and that over 35% of women reported experiencing physical abuse, verbal abuse or stigma and discrimination.[21] Despite improvements in measuring mistreatment and satisfaction, there is limited evidence exploring women's experiences of mistreatment during childbirth and their satisfaction with care.[8 23 24] This study explored the relationship between women's self-reported experiences of mistreatment during childbirth and their satisfaction with care in Ghana, Guinea, Nigeria, and Myanmar. We hypothesised that women who experienced mistreatment during childbirth less likely to be satisfied with the care they received. We reported women's satisfaction during their childbirth in health facilities and explored whether different types of mistreatment are associated with women's overall satisfaction with the care they received and if they would recommend the health facility to other women.

METHODS

Study design and setting

This is a secondary analysis of the WHO multi-country study How women are treated during facility-based childbirth, designed to develop and validate two tools (labour observation and community-based survey with postpartum women) to measure the mistreatment of women during childbirth in health facilities in four countries (Ghana, Guinea, Myanmar and Nigeria). We conducted a formative phase consisting of systematic reviews[6 25] and primary qualitative research[26–31] in order to iteratively develop two measurement tools: direct observations of labour and childbirth, and a follow-up community-based

survey with women.[21 22] This analysis focuses on the postpartum community-based survey data only. Twelve health facilities were purposively selected (three per country), as described in the main analysis.[21] Health facilities were included in the study if they were not included in the formative phase, were a secondary-level facility or higher, had at least 200 births per month, had a well-defined community catchment area. Recruitment and data collection took place in Nigeria from September 2016 to February 2017, in Ghana and Guinea from August 2017 to February 2018, and in Myanmar from October 2017 to February 2018.

Participants and sample size

Women were eligible for enrolment in the health facility if they were admitted for childbirth, were ≥15 years, provided written informed consent and were able to participate, resided in the predefined facility catchment area after birth (defined for each health facility) and provided sufficient contact information for follow-up. Women were not eligible if they were admitted for reasons other than childbirth, were a first-degree relative of a facility employee (mother, sister, daughter, cousin), were distressed or otherwise unable to reasonably provide consent, or lived outside the predefined catchment area for that health facility.

Sample size calculations have been previously described.[21 22] In summary, we prespecified a sample size of 169 women per health facility (507 women total) in Nigeria. We used preliminary analysis of the prevalence of mistreatment in Nigeria to specify a sample size in Ghana, Guinea and Myanmar of 209 women per health facility (627 per country), based on ±5% precision, 80% sensitivity, 5% type 1 error (two tailed), 30% prevalence and 30% lost to follow-up between recruitment and survey administration. In this study, 3806 women screened, 389 excluded due to not eligible and eligibility could not be established. Among 3714 eligible women, 745 women were excluded and 2672 included in this analysis.[21]

Study procedures

All women admitted to the health facility during the study period were assessed for eligibility. Those who met the eligibility criteria and agreed to participate were enrolled, and contact information was obtained. For the postpartum survey, women were contacted to schedule a time up to 8 weeks post partum for a private interview with trained female data collectors who were had a social science or public health background, but were not clinicians or care providers. Recruitment continued until the planned per-facility sample size was reached.

Measurement and management

The community survey tool is publicly available and captures information on a woman's sociodemographic information, obstetric history, birth experiences (including mistreatment, vaginal examinations, companionship and pain relief), childbirth outcomes, childbirth interventions, postpartum depression, future childbearing intentions and satisfaction with care.[22] Data were collected using digital, tablet-based tools (BLU Studio XL 2, Android OS, BLU Products, Miami, Florida, USA) using OpenClinica open source software for data collection and management (OpenClinica LLC and collaborators, Waltham, Massachusetts, USA). Data were prospectively submitted to a WHO central server using a 3G-cellular connection or wireless internet.

Statistical analysis

Sociodemographics and obstetric characteristics were aggregated and reported as a proportion of the total study population and by women's level of satisfaction. Women's satisfaction with their care during childbirth was compared by country. The two women's satisfaction outcomes for this analysis were: (1) overall satisfaction of care received (yes=strongly agree/agree vs no=strongly disagree/disagree/neutral) and (2) would recommend the same facility to others (yes=strongly agree/agree vs no=strongly disagree/disagree/neutral). The predictors of interest were dichotomous variables indicating the presence (yes/no) of any different type of mistreatment. There was also a composite variable (any type of mistreatment) to capture the presence of any of physical abuse, verbal abuse or stigma and discrimination. Operational definitions of each variable were defined based on the structure of the typology of the mistreatment of women during childbirth (online supplemental table 1).[6]

Multivariable logistic regression models were constructed to evaluate the association between the presence of types of mistreatment (any physical abuse, any verbal abuse, any physical/verbal abuse/stigma/discrimination, lack of informed vaginal examination, long waiting time to be seen by a health worker, pain relief, mobilisation during labour and presence of curtains/partitions or other privacy measures) and women satisfaction outcomes of interest (overall satisfaction of care received and would recommend of the same facility to others). All models were adjusted for age, marital status, education, number of births and country. Possible intermediate effect modification by woman's experience of being informed about care was examined to evaluate the association between overall satisfaction of care received and recommendation of the same facility to others and consented vaginal examination while the models were adjusted for age, marital status, education, number of births and country. Data analysis was conducted using SAS (SAS software, V.9.4), and Stata (StataCorp, V.15). We adhered to Strengthening the Reporting of Observational Studies in Epidemiology guidelines for the reporting of observational studies.

Patient and public involvement

A technical consultation with representatives from advocacy groups, non-governmental organisations, research organisations, universities, professional associations and United Nations agencies was held at WHO in November

2013 and informed the design of this study. Women who recently gave birth were involved in content validity testing and providing feedback on the validity testing of the community survey tool.[22]

RESULTS

A total of 2672 women participated in the survey and are included in this analysis. Table 1 presents the sociodemographic and obstetric characteristics of the women in association with their level of satisfaction during childbirth. Women with higher education (post-secondary/tertiary) were less satisfied with the services received (satisfied: n=439/2359, 18.6%; dissatisfied: n=90/304, 29.6%) and those with primary education were more satisfied (satisfied: n=673/2359, 28.5%; dissatisfied: n=66/304, 21.7%). Those who were currently breastfeeding their children and those who initiated breastfeeding within 1 hour after birth were more satisfied with the received services, (satisfied: n=2294/2360, 97.2%; dissatisfied: n=284/304, 93.4%) and (satisfied: n=1216/2309, 52.7%; dissatisfied: n=123/287, 42.9%), respectively. Women whose child was alive at the time of interview were more likely to be satisfied with the services (satisfied: n=2293/2360, 97.2%; dissatisfied: n=283/304, 93.1%).

Women with higher education (postsecondary/tertiary) were less likely to recommend the facility to others (recommend: n=464/2382, 19.5; not recommend: 65/287, 22.6%). Those who were breastfeeding their children currently and those who initiated breastfeeding within 1 hour after birth were willing to recommend the facility to others, (recommend: n=2313/2384, 97.0%; not recommend: n=270/286, 94.4%) and (recommend: n=1229/2328, 52.8%; not recommend: n=111/273, 40.7%), respectively. Women whose child was alive at the time of interview were likely to recommend the facility to others, (recommend: n=2315/2384, 97.1%; not recommend: n=266/285, 93.3%).

Table 2 shows women's satisfaction of care by country across three domains: experience of care, infrastructure and general satisfaction. Overall, most women were satisfied with the services received (n=2361/2672, 88.4%), ranging from highest in Guinea (n=585/644, 90.8%) to Nigeria (n=477/561, 85.0%). In total, 89.3% of women would recommend the facility to others (n=2385/2672), ranging from 92% in Nigeria (n=516/561) to 86.9% in Ghana (n=727/836). Most women reported that they would choose the same hospital for their future birth (n=2127/2672, 79.6%), with variation across countries (Ghana: n=651/836, 77.9%; Guinea: n=568/644, 88.2%; Myanmar: n=437/631, 69.3%; Nigeria: n=471/561, 84.0%). The detailed description of women's satisfaction across four countries was described in online supplemental table 2).

Across all countries, women's overall satisfaction report on several experiences of care measures were markedly lower than others including being informed about decisions for care (n=1827/2672, 68.4%), waiting time to see a health worker (n=1807/2672, 67.6%), having the opportunity to discuss any concerns (n=1684/2672, 63.0%), making shared decision about care (n=1533/2672, 57.4%) and having the opportunity to discuss any preferences or requests (n=1503/2672, 56.3%). Women in Myanmar reported the lowest frequencies for these (having the opportunity to discuss any concerns (n=252/631, 39.9%), making shared decisions about care (n=272/631, 43.1%), having the opportunity to discuss any preferences or requests (n=208/631, 33.0%)). Although women reported better experiences of care for some measures, a significant difference can be seen across countries: women's report on being respected for their cultural and religious needs ranged from 96.4% in Guinea (n=621/644) to 71.3% in Myanmar (n=449/631), almost three-quarters of women agreed that privacy was respected during the examinations and treatment (n=1956/2672, 73.2%) while women in Nigeria reported lower satisfaction with privacy (n=322/561, 57.4%).

Across all countries, satisfaction with the facility infrastructure was overall around 80% (adequate electricity: (n=2370/2672, 88.7%), adequate cleanliness: (n=2241/2672, 83.9%), adequate water: (n=2190/2672, 81.9%)). There was a notable difference in adequate electricity in Nigeria (n=401/561, 71.5%).

The results of bivariate analysis of women's experiences of mistreatment during childbirth with their overall satisfaction with the services received and whether they are likely to recommend the facility to others were mentioned in online supplemental tables 3 and 4), respectively. Based on the bivariate results, a selected list of mistreatment items were selected for further analysis. Multivariable logistic regression models were used to evaluate the association between women's experiences of mistreatment during childbirth, and their overall satisfaction with the services received (table 3). Women who were not verbally abused were 4.52 times more likely to report being satisfied, compared with women who were verbally abused (adjusted OR (AOR) 4.52, 95% CI 3.50 to 5.85), and women who had short waiting time before being attended to by health workers were five times more likely to report being satisfied, compared with women who had longer waiting times (AOR 5.12, 95% CI 3.94 to 6.65). Women who had not experienced any physical abuse, verbal abuse or stigma/discrimination were more likely to be satisfied with services received (AOR 4.25, 95% CI 3.27 to 5.50). Similarly, there was a positive association between the following mistreatment measures and women's report of satisfaction with care services: not experiencing physical abuse (AOR 2.38, 95% CI 1.71 to 3.32), being offered pain relief (AOR 1.78, 95% CI 1.29 to 2.45) and having the benefit of privacy measures such as curtains and partitions (AOR 1.56, 95% CI 1.15 to 2.10). Women who were consented for vaginal examinations were 2.0 times more likely to report satisfaction with care received (AOR 1.98, 95% CI 1.52 to 2.58).

There were similar findings for the regression model on whether women were likely to recommend the facility

Table 1 Characteristics of study population and level of satisfaction with facility-based childbirth (n=2672)*

	Overall satisfaction with services received				Recommend to others					
	Agree		Disagree/neutral		Agree		Disagree/neutral		Total	
	n (%)		n (%)		n (%)		n (%)		n (%)†	
Overall sample	2361	88.4	305	11.6	2385	89.3	287	10.8	2672	100.0
Maternal age (years)										
15–19	258	10.9	27	8.9	257	10.8	30	10.5	287	10.7
20–24	509	21.6	65	21.3	511	21.4	64	22.3	575	21.5
25–29	665	28.2	86	28.2	673	28.2	79	27.5	752	28.1
30–34	566	24.0	83	27.2	581	24.4	69	24.0	650	24.3
≥35	363	15.4	44	14.4	363	15.2	45	15.7	408	15.3
Marital status										
Married/cohabitating	2160	91.5	275	90.5	2182	91.5	257	89.9	2439	91.4
Single/never married	179	7.6	26	8.6	180	7.6	27	9.4	207	7.8
Separated/divorced/widowed	21	0.9	3	1.0	22	0.9	2	0.7	24	0.9
Education‡										
No education	305	12.9	33	10.9	306	12.8	32	11.1	338	12.7
Preprimary	259	11.0	29	9.5	260	10.9	29	10.1	289	10.8
Primary	673	28.5	66	21.7	664	27.8	77	26.8	741	27.8
Secondary	645	27.3	84	27.6	651	27.3	81	28.2	732	27.4
Postsecondary/tertiary	439	18.6	90	29.6	464	19.5	65	22.6	529	19.8
Vocational/other	38	1.6	2	0.7	37	1.6	3	1.0	40	1.5
No of previous pregnancies										
1	808	34.3	110	36.1	815	34.3	106	36.9	921	34.6
2	572	24.3	76	24.9	574	24.1	75	26.1	649	24.3
3	399	16.9	44	14.4	405	17.0	38	13.2	443	16.6
≥4	576	24.5	75	24.6	585	24.6	68	23.7	653	24.5
No of previous births										
1	1390	59.0	165	54.3	1397	58.7	163	57.0	1560	58.5
2	439	18.6	72	23.7	444	18.7	67	23.4	511	19.2
3	240	10.2	38	12.5	254	10.7	24	8.4	278	10.4
>4	287	12.2	29	9.5	285	12.0	32	11.2	317	11.9
No of children alive today										
0	26	1.1	7	2.3	28	1.2	5	1.7	33	1.2
1	981	41.6	122	40.1	979	41.1	128	44.8	1107	41.5
2	603	25.6	85	28	614	25.8	74	25.9	688	25.8
3	349	14.8	50	16.4	362	15.2	37	12.9	399	15.0
>4	398	16.9	40	13.2	398	16.7	42	14.7	440	16.5
Currently breastfeeding§										
No	66	2.8	20	6.6	71	3.0	16	5.6	87	3.3
Yes	2294	97.2	284	93.4	2313	97.0	270	94.4	2583	96.7
Time of initiation of breastfeeding§										
Within 1 hour	1216	52.7	123	42.9	1229	52.8	111	40.7	1340	51.5
Within 24 hours	875	37.9	130	45.3	888	38.1	120	44.0	1008	38.8
More than 24 hours	218	9.4	34	11.8	211	9.1	42	154	253	9.7

Continued

Table 1 Continued

	Overall satisfaction with services received				Recommend to others					
	Agree		Disagree/neutral		Agree		Disagree/neutral		Total	
	n (%)		n (%)		n (%)		n (%)		n (%)†	
No of babies at most recent birth										
1 (singleton)	2314	98.0	297	97.4	2336	97.9	281	97.9	2617	97.9
2 (twins)	47	2.0	8	2.6	49	2.1	6	2.1	55	2.1
Sex of baby at most recent birth										
Female	1261	53.4	154	50.5	1280	53.7	137	47.7	1417	53.1
Male	1084	45.9	148	48.5	1088	45.6	148	51.6	1236	46.3
Both (for twins)	15	0.6	3	1.0	16	0.7	2	0.7	18	0.7
Baby status at interview†§										
Baby alive at interview	2293	97.2	283	93.1	2315	97.1	266	93.3	2581	96.7
Baby not alive at interview	67	2.8	21	6.9	69	2.9	19	6.7	88	3.3
Mode of birth										
Vaginal birth	1936	82.0	245	80.6	1963	82.3	224	78.3	2187	81.9
Caesarean birth	424	18.0	59	19.4	421	17.7	62	21.7	483	18.1
Countries§										
Ghana	740	31.3	91	29.8	727	30.5	109	38.0	836	31.3
Guinea	585	24.8	58	19.0	588	24.7	56	19.5	644	24.1
Myanmar	559	23.7	72	23.6	554	23.2	77	26.8	631	23.6
Nigeria	477	20.2	84	27.5	516	21.6	45	15.7	561	21.0

*Percentages exclude unknowns for each variable.
†As for twins, if one of the babies or both the babies die, the pair was categorised as not alive.
‡Significant at p<0.05 for overall satisfaction with services received outcome.
§Significant at p<0.05 for overall satisfaction with services received outcome and recommend to others outcome.

to others (table 3). Women who were not verbally abused were 4.4 times more likely to recommend the facility to others, compared with women who were verbally abused (AOR 4.40, 95% CI 3.38 to 5.72), and women who experienced short waiting time before being attended by health workers were four times were willing to recommend the facility to others, compared with women who had to wait longer times (AOR 4.11, 95% CI 3.14 to 5.38). Women who had not experienced physical abuse as well as not experienced physical, verbal abuse or stigma/discrimination were more likely to provide recommendation for the facility to others, (AOR 1.88, 95% CI 1.30 to 2.70) and (AOR 3.89, 95% CI 2.98 to 5.06) respectively. Women who were consented for vaginal examinations were 1.58 times more likely to report recommend the facility to others (AOR 1.58, 95% CI 1.21 to 2.05).

The intermediate effect by women's experience of being informed about care on the association of women's experience of consented vaginal examination and with their satisfaction is presented in table 4. Women who were consented before their vaginal examination and informed about their care were more likely to report satisfaction with the services received (OR 1.8, 95% CI: 1.1 to 2.6). There was no significant effect modification by woman's experience of being informed about care for the association between consented vaginal examination and recommendation of the facility to others.

DISCUSSION

This is a large, multicountry study exploring the association between women's experiences of different types of mistreatment and their satisfaction with care in health facilities during childbirth. We found that women's overall satisfaction for services received during their facility stay was high (>85%) and about 90% of the women would recommend the hospital to others. In the same context as these reports of high satisfaction, 35% of women reported experiencing any physical abuse, verbal abuse or stigma and discrimination. This suggests that these mistreatment practices and experiences may be normalised to some extent and measuring only satisfaction may not adequately reflect women's experiences of care. Furthermore, our analysis shows that women's experiences of mistreatment during childbirth lowers both their satisfaction with care and whether they would recommend the facility to others. Reducing mistreatment is therefore critical for improving women's

Table 2 Women's satisfaction of their experiences during their facility-based childbirth (n=2672)

	Total	Ghana	Guinea	Myanmar	Nigeria
	n (%)	n (%)	n (%)	n (%)	n (%)
Overall sample	2672 (100.0)	836 (31.3)	644 (24.1)	631 (23.6)	561 (21.0)
General satisfaction (strongly agree/agree)					
Satisfied with services received	2361 (88.4)	740 (88.5)	585 (90.8)	559 (88.6)	477 (85.0)
Will recommend this facility to others	2385 (89.3)	727 (86.9)	588 (91.3)	554 (87.8)	516 (92.0)
Will choose the same hospital for future birth (yes)	2127 (79.6)	651 (77.9)	568 (88.2)	437 (69.3)	471 (84.0)
Experience of care (strongly agree/agree)					
Cultural and religious needs were respected	2285 (85.5)	700 (83.7)	621 (96.4)	449 (71.3)	515 (91.8)
Treated with respect	2202 (82.4)	685 (81.9)	570 (88.5)	488 (77.3)	459 (81.8)
Health education and information needs	2097 (78.5)	628 (75.1)	469 (72.8)	555 (88.0)	445 (79.3)
Privacy was respected during examinations and treatment	1956 (73.2)	699 (83.6)	460 (71.4)	475 (75.3)	322 (57.4)
Informed about decisions for care	1827 (68.4)	561 (67.1)	427 (66.3)	440 (69.7)	399 (71.1)
Waiting time to see a health worker was not long	1807 (67.6)	505 (60.4)	488 (75.8)	442 (70.1)	372 (66.3)
Had the opportunity to discuss any concerns	1684 (63.0)	562 (67.2)	454 (70.5)	252 (39.9)	416 (74.2)
Made shared decisions about care	1533 (57.4)	451 (53.9)	453 (70.3)	272 (43.1)	357 (63.6)
Had the opportunity to discuss any preferences or requests	1503 (56.3)	465 (55.6)	425 (66.0)	208 (33.0)	405 (72.2)
Infrastructure (strongly agree/agree)					
Facility had adequate electricity	2370 (88.7)	812 (97.1)	628 (97.5)	529 (83.8)	401 (71.5)
Facility had adequate cleanliness	2241 (83.9)	621 (74.3)	623 (96.7)	500 (79.2)	497 (88.6)
Facility had adequate water	2190 (81.9)	631 (75.5)	599 (93.0)	555 (88.0)	405 (72.2)

experiences, quality of care and building trust and confidence in health systems. High levels of satisfaction with care in the presence of mistreatment may also be reflective of women having low expectations of care, therefore, suggesting that more work is needed to empower women and communities to understand their rights to dignified and respectful maternity services.

Other studies have shown wide variation in women's satisfaction with maternity services in LMIC settings, ranging from above 90% to as low as 19%.[9 11 24 32–40] This variation may be because of real differences in the quality of services provided and childbirth experiences across study contexts, or the use of different measurement tools with different operational definition, measurement approaches (labour observation, facility exit interview and postpartum interview at respondents' home), or timing of measurement (at the post-natal ward, at the time of hospital discharge, postpartum 2–6 weeks, 4–6 weeks or at any time with women when she had delivered within last year). Additionally, this variation may be due to differences in women's interpretation of satisfaction based on their own childbirth experiences and expectations. For example, facility exit interviews may underestimate negative childbirth experiences and overestimate satisfaction, as women may not feel comfortable providing negative feedback while still in a care context (social desirability bias), or may not yet have had time to process their childbirth experience relative to their expectations. Similarly, there may be real changes over time in women's assessments of satisfaction (eg, from the time of birth to several weeks post partum), as both they and their baby's health may change or be shaped by sharing their birth experiences with others.[9 11 24 32–40]

In our study, among the different types of mistreatment women experienced, being verbally abused or having long waiting times were strongly associated with lower overall satisfaction of care. A 2011 study of n=1388 women discharged from delivery at hospitals in Tanzania by Kujawski *et al* similarly concluded that disrespectful and abusive treatment during childbirth is an important factor in reducing women's confidence in health facilities.[24] These findings highlight the importance of the interpersonal relationships between women and healthcare providers. Other studies have similarly found that women's satisfaction with childbirth care was also associated with other manifestations of mistreatment such as short waiting time[11 41 42] and measures taken to ensure privacy during clinical examinations.[11 36] These findings provide actionable evidence for quality of care improvements by addressing long waiting times and providing reasonable privacy measures. This may involve human resource and structural changes, for example filling vacant staff positions, or improving communication around expected wait times. For example, in Guinea, our research team has translated our findings on mistreatment into a set of recommendations for national implementation to reduce mistreatment during childbirth as part of the

Table 3 Associations of women's experiences of mistreatment on satisfaction and recommending facilities to others (n=2672)

	Total (N=2672)	Overall satisfaction with services received†		Recommend to others‡	
Factors	**n (%)**	**n (%)**	**AOR (95% CI)§**	**n (%)**	**AOR (95% CI)§**
Any physical/verbal/stigma					
No	1727 (64.6)	1620 (68.6)	4.25* (3.27 to 5.50)	1618 (67.8)	3.89* (2.98 to 5.06)
Yes	945 (35.4)	741 (31.4)	Ref	767 (32.2)	Ref
Physical abuse					
No	2385 (89.3)	2134 (90.4)	2.38* (1.71 to 3.32)	2141 (89.8)	1.88* (1.30 to 2.70)
Yes	287 (10.7)	227 (9.6)	Ref	244 (10.2)	Ref
Verbal abuse					
No	1851 (69.3)	1733 (73.4)	4.52* (3.50 to 5.85)	1735 (72.8)	4.40* (3.38 to 5.72)
Yes	821 (30.7)	628 (26.6)	Ref	650 (27.3)	Ref
Providing professional standard of care					
Consent before vaginal examination¶ (n=2411)					
Yes	1197 (49.6)	1099 (51.7)	1.98* (1.52 to 2.58)	1090 (50.8)	1.58* (1.21 to 2.05)
No	1214 (50.4)	1028 (48.3)	Ref	1055 (49.2)	Ref
Offered pain relief (n=2582)					
Yes	1054 (40.8)	960 (42)	1.78* (1.29 to 2.45)	947 (40.9)	1.32 (0.96 to 1.8)
No	1528 (59.2)	1325 (58)	Ref	1366 (59.1)	Ref
Had to wait long periods of time before being attended by health workers (n=2665)					
No	2238 (84.0)	2057 (87.4)	5.12* (3.94 to 6.65)	2063 (86.7)	4.11* (3.14 to 5.38)
Yes	427 (16.0)	298 (12.7)	Ref	316 (13.3)	Ref
Rapport between women and providers					
Being told to mobilise or mobilised during labour (n=2649)					
Yes	1042 (39.3)	942 (40.3)	1.23 (0.87 to 1.73)	944 (40)	1.29 (0.92 to 1.81)
No	1607 (60.7)	1396 (59.7)	Ref	1418 (60)	Ref
Health system condition and constraints					
Curtains/partitions or other privacy measures used (n=2653)					
Yes	1451 (54.7)	1308 (55.8)	1.56* (1.15 to 2.10)	1294 (54.6)	1.34 (0.99 to 1.82)
No	1202 (45.3)	1037 (44.2)	Ref	1075 (45.4)	Ref

Remark, Crude OR for selected mistreatment measures were reported in annex tables 3 and 4.
*Significant at p<0.05.
†Denotes the % of women who had satisfied (strongly agree and agree) their childbirth experiences during facility-based childbirth.
‡Denotes the % of women who would recommend (strongly agree and agree) the facility to others.
§ORs adjusted for: age, marital status, education, number of births and country.
¶Consent defined as being informed and obtaining permission before vaginal examination.
AOR, adjusted OR.

Reproductive, Maternal, Newborn, Infant, Adolescent Health and Nutrition (SRMNIA-N 2020–2024) Strategic Plan and the MUSKOKA Action Plan of 2021.[43] These indicators include changes to policies allowing labour companionship, birth position of the woman's choice, and health system changes to scale up training

Table 4 Association of women's experience of consented vaginal examination and informed care with their level of satisfaction during facility-based childbirth (n=2672)

		Overall satisfaction with services received*			Recommend to others†		
			Women agreed that informed about care	Women disagreed informed about care		Women agreed that informed about care	Women disagreed informed about care
Factors	Total (N=2672)	n (%)	OR (95% CI)	OR (95% CI)	n (%)	OR (95% CI)	OR (95% CI)
Consent before vaginal examination‡ (n=2411)							
Yes	1197	1099 (51.7)	1.75 (1.1 to 2.6)	1.05 (0.7 to 1.5)	1090 (50.8)	1.12 (0.77 to 1.63)	1.23 (0.79 to 1.9)
No	1214	1028 (48.3)	Ref	Ref	1055 (49.2)	Ref	Ref

*Denotes the % of women who had satisfied (strongly agree and agree) their childbirth experiences during facility-based childbirth.
†Denotes the % of women who would recommend (strongly agree and agree) the facility to others.
‡Consent defined as being informed and obtaining permission before vaginal examination.

on respectful care and strengthening governance and oversight.[43]

A key strength of this study is the use of a standardised multi-country protocol and data collection instruments that were informed by a systematic review and formative research to understand women's mistreatment experiences in each context. Another strength is the use of trained adult female interviewer (non-clinicians) with experience conducting community-based surveys to encourage disclosure of women's childbirth experiences and to reduce risk of under-reporting due to social desirability bias (eg, by using interviewers with clinical backgrounds). Conducting interviews with the women at their households within 8 weeks postpartum period instead of exit interviews may likewise improve reporting of mistreatment experiences while reducing the risk of social desirability bias.[22] We used a 15-item scale to explore experiences of and satisfaction with care, which allowed for nuanced interpretation of the different factors that contribute to quality of care.[22]

This study also had some limitations. This study was conducted only in secondary and tertiary level health facilities and therefore, may not be generalisable to other level hospital settings. Future studies could consider applying the same methodology other types of hospitals to explore if these associations hold true. As we recruited women to participate after their most recent birth in a study health facility, it is possible that this design may have excluded women who previously had a negative experience and did not give birth in a health facility for subsequent births (selection bias), which may have resulted in underestimation of mistreatment.

Satisfaction is one of the measures of confidence in health system proposed by high-quality health system framework components in the Sustainable Development Goals era.[3] Our study highlights the importance of assessing both women's experiences of care and satisfaction, and found that women's experiences of mistreatment accounts for lower satisfaction with care. We argue that measuring both women's experiences (process measures) and their satisfaction with care (outcome measures) are critical to assess quality of care and provide actionable evidence for improvement across the continuum of maternity care services. Respectful maternity care is a multidimensional concept[25]; therefore, it is unlikely that a single measure of experience or satisfaction will provide actionable evidence to programmers, researchers or policy-makers on how to improve quality.

CONCLUSION

Women's overall satisfaction for services during childbirth and recommendation of the hospital to others was high regardless in contexts where women also experience mistreatment. However, where the women experienced mistreatment, there was a strong association between mistreatment and dissatisfaction with care and lack of willingness to recommend the health facility to others. Measuring both women's experiences and their satisfaction with care are critical to holistically assess quality of care and provide actionable evidence for improvement across the continuum of maternity care services. Assessing women's experiences of care, including whether they were mistreated during childbirth, provides important information about a woman's interactions with the health system and health providers that may be missed if only satisfaction is measured. These experiences of care measures are considered 'process measures' that can enable health systems to identify and respond to root causes contributing to measures of satisfaction, as well as identify targeted areas for improving women's experiences of maternity services. Creating environments that encourage positive childbirth experiences and preventing mistreatment during childbirth will improve women's satisfaction with care received and continue to improve maternal and newborn health during the Sustainable Development Goal era.

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Data availability statement Data are available on request. The analytical study dataset from the 'How women are treated during facility-based childbirth' WHO study is deidentified and, archived through WHO/HRP's electronic record management system. Data requests with an expression of interest in pursuing multi-country secondary analyses with a specific research question can be made to srhmph@who.int. More information about the study tools are available here: https://bmcmedresmethodol.biomedcentral.com/articles/10.1186/s12874-018-0603-x and the primary publication from the study here: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(19)31992-0/fulltext.

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REFERENCES

1 UNFPA, World Health Organization, UNICEF, World Bank Group the UNPD. Trends in maternal mortality, 2000-2017. Geneva, Switzerland: 2019. Available: https://www.unfpa.org/featured-publication/trends-maternal-mortality-2000-2017 [Accessed 17 Feb 2020].
2 Safer MP. *Making pregnancy safer: the critical role of the skilled attendant a joint statement by who, ICM and FIGO*, 2004.
3 Kruk ME, Gage AD, Arsenault C, *et al*. High-Quality health systems in the sustainable development goals era: time for a revolution. *Lancet Glob Health* 2018;6:e1196–252.
4 Tunçalp Ö, Were WM, MacLennan C, *et al*. Quality of care for pregnant women and newborns-the who vision. *BJOG* 2015;122:1045–9.
5 Larson E, Sharma J, Bohren MA, *et al*. When the patient is the expert: measuring patient experience and satisfaction with care. *Bull World Health Organ* 2019;97:563–9.
6 Bohren MA, Vogel JP, Hunter EC, *et al*. The mistreatment of women during childbirth in health facilities globally: a mixed-methods systematic review. *PLoS Med* 2015;12:e1001847.
7 Bohren MA, Hunter EC, Munthe-Kaas HM, *et al*. Facilitators and barriers to facility-based delivery in low- and middle-income countries: a qualitative evidence synthesis. *Reprod Health* 2014;11:71.
8 Avortri GS, Beke A, Abekah-Nkrumah G. Predictors of satisfaction with child birth services in public hospitals in Ghana. *Int J Health Care Qual Assur* 2011;24:223–37.
9 Mekonnen ME, Yalew WA, Anteneh ZA. Women's satisfaction with childbirth care in Felege Hiwot Referral Hospital, Bahir Dar city, Northwest Ethiopia, 2014: cross sectional study. *BMC Res Notes* 2015;8.
10 Kifle MM, Ghirmai FA, Berhe SA, *et al*. Predictors of women's satisfaction with hospital-based intrapartum care in Asmara public hospitals, Eritrea. *Obstet Gynecol Int* 2017;2017:1–7.
11 Tayelgn A, Zegeye DT, Kebede Y. Mothers' satisfaction with referral hospital delivery service in Amhara region, Ethiopia. *BMC Pregnancy Childbirth* 2011;11:78.
12 Larson E, Hermosilla S, Kimweri A, *et al*. Determinants of perceived quality of obstetric care in rural Tanzania: a cross-sectional study. *BMC Health Serv Res* 2014;14:483.
13 Srivastava A, Avan BI, Rajbangshi P, *et al*. Determinants of women's satisfaction with maternal health care: a review of literature from developing countries. *BMC Pregnancy Childbirth* 2015;15:97.
14 Kruk ME, Kujawski S, Mbaruku G, *et al*. Disrespectful and abusive treatment during facility delivery in Tanzania: a facility and community survey. *Health Policy Plan* 2018;33:e26–33.
15 Hameed W, Avan BI. Women's experiences of mistreatment during childbirth: a comparative view of home- and facility-based births in Pakistan. *PLoS One* 2018;13:e0194601.
16 Kruger Lou-Marié, Schoombee C. The other side of caring: abuse in a South African maternity ward. *J Reprod Infant Psychol* 2010;28:84–101.

17 Sethi R, Gupta S, Oseni L, *et al*. The prevalence of disrespect and abuse during facility-based maternity care in Malawi: evidence from direct observations of labor and delivery. *Reprod Health* 2017;14:111.
18 Asefa A, Bekele D, Morgan A, *et al*. Service providers' experiences of disrespectful and abusive behavior towards women during facility based childbirth in Addis Ababa, Ethiopia. *Reprod Health* 2018;15:4.
19 Sando D, Ratcliffe H, McDonald K, *et al*. The prevalence of disrespect and abuse during facility-based childbirth in urban Tanzania. *BMC Pregnancy Childbirth* 2016;16:236.
20 Abuya T, Warren CE, Miller N, *et al*. Exploring the prevalence of disrespect and abuse during childbirth in Kenya. *PLoS One* 2015;10:e0123606.
21 Bohren MA, Mehrtash H, Fawole B, *et al*. How women are treated during facility-based childbirth in four countries: a cross-sectional study with labour observations and community-based surveys. *Lancet* 2019;394:1750–63.
22 Bohren MA, Vogel JP, Fawole B, *et al*. Methodological development of tools to measure how women are treated during facility-based childbirth in four countries: labor observation and community survey. *BMC Med Res Methodol* 2018;18:N.PAG.
23 Mocumbi S, Högberg U, Lampa E, *et al*. Mothers' satisfaction with care during facility-based childbirth: a cross-sectional survey in southern Mozambique. *BMC Pregnancy Childbirth* 2019;19:303.
24 Kujawski S, Mbaruku G, Freedman LP, *et al*. Association between Disrespect and abuse during childbirth and women's confidence in health facilities in Tanzania. *Matern Child Health J* 2015;19:2243–50.
25 Shakibazadeh E, Namadian M, Bohren MA, *et al*. Respectful care during childbirth in health facilities globally: a qualitative evidence synthesis. *BJOG: Int J Obstet Gy* 2018;125:932–42.
26 Balde MD, Diallo BA, Bangoura A, *et al*. Perceptions and experiences of the mistreatment of women during childbirth in health facilities in guinea: a qualitative study with women and service providers. *Reprod Health* 2017;14:1–13.
27 Bohren MA, Vogel JP, Tunçalp Özge, *et al*. Mistreatment of women during childbirth in Abuja, Nigeria: a qualitative study on perceptions and experiences of women and healthcare providers. *Reprod Health* 2017;14:9.
28 Bohren MA, Vogel JP, Tunçalp Özge, *et al*. "*By slapping their laps, the patient will know that you truly care for her*": A qualitative study on social norms and acceptability of the mistreatment of women during childbirth in Abuja, Nigeria. *SSM Popul Health* 2016;2:640–55.
29 Diouldé Balde M, Diallo BA, Bangoura A. Perceptions and experiences of the mistreatment of women during childbirth in health facilities in guinea: a qualitative study with women and service providers.
30 Maung TM, Show KL, Mon NO, *et al*. A qualitative study on acceptability of the mistreatment of women during childbirth in Myanmar. *Reprod Health* 2020;20;17:5.
31 Maya ET, Adu-Bonsaffoh K, Dako-Gyeke P, *et al*. Women's perspectives of mistreatment during childbirth at health facilities in Ghana: findings from a qualitative study. *Reprod Health Matters* 2018;26:70–87.
32 Gashaye KT, Tsegaye AT, Shiferaw G, *et al*. Client satisfaction with existing labor and delivery care and associated factors among mothers who gave birth in University of Gondar teaching Hospital; Northwest Ethiopia: institution based cross-sectional study. *PLoS One* 2019;14:e0210693.
33 Panth A, Kafle P. Maternal satisfaction on delivery service among postnatal mothers in a government Hospital, Mid-Western Nepal. *Obstet Gynecol Int* 2018;2018:1–11.
34 Bitew K, Ayichiluhm M, Yimam K. Maternal satisfaction on delivery service and its associated factors among mothers who gave birth in public health facilities of Debre Markos town, Northwest Ethiopia. *Biomed Res Int* 2015;2015:1–6.
35 Monazea EMM, Al-Attar GST. Quality of delivery care in Assiut University Hospital, Egypt: Mothers' satisfaction. *J Egypt Public Health Assoc* 2015;90:64–71.
36 Demas T, Getinet T, Bekele D, *et al*. Women's satisfaction with intrapartum care in St Paul's Hospital Millennium Medical College Addis Ababa Ethiopia: a cross sectional study. *BMC Pregnancy Childbirth* 2017;17.
37 Marama T, Bayu H, Merga M, *et al*. Patient satisfaction and associated factors among clients admitted to obstetrics and gynecology wards of public hospitals in Mekelle town, Ethiopia: an Institution-Based cross-sectional study. *Obstet Gynecol Int* 2018;2018:1–9. doi:10.1155/2018/2475059
38 Jha P, Larsson M, Christensson K, *et al*. Satisfaction with childbirth services provided in public health facilities: results from a cross-sectional survey among postnatal women in Chhattisgarh, India. *Glob Health Action* 2017;10:1386932.
39 Mohammad KI, Alafi KK, Mohammad AI, *et al*. Jordanian women's dissatisfaction with childbirth care. *Int Nurs Rev* 2014;61:278–84.
40 Ajayi AI. "I am alive; my baby is alive": Understanding reasons for satisfaction and dissatisfaction with maternal health care services in the context of user fee removal policy in Nigeria. *PLoS One* 2019;14:e0227010.
41 Paudel YR, Mehata S, Paudel D, *et al*. Women's Satisfaction of Maternity Care in Nepal and Its Correlation with Intended Future Utilization. *Int J Reprod Med* 2015;2015:1–9.
42 Dewana Z, Fikadu T, G/ Mariam A, *et al*. Client perspective assessment of women's satisfaction towards labour and delivery care service in public health facilities at Arba Minch town and the surrounding district, Gamo Gofa zone, south Ethiopia. *Reprod Health* 2016;13.
43 Research leads to actions improving childbirth in guinea. Available: https://www.who.int/news/item/15-05-2020-research-leads-to-actions-improving-childbirth-in-guinea [Accessed 28 Oct 2020].