



Obstetric violence: Clinical staff perceptions from a video of simulated practice

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ABSTRACT

Objective(s): Obstetric Violence refers to professional deficiencies in maternity care. Examples include non-dignified care, discrimination and abandonment of care. Obstetric violence has been described in both low and high resource settings. The objective of this study was to assess knowledge and attitudes towards obstetric violence in a cohort of multinational obstetric nursing/midwifery staff and obstetricians at a private maternity hospital in Qatar.

Study design: An online survey for anonymous completion was sent to the hospital email accounts of obstetric nursing/midwifery staff and obstetricians at Sidra Medicine (n = 640). The survey incorporated a video showing a dramatized scenario of obstetric violence. The survey assessed the participant's demographics and knowledge of the term obstetric violence. The participants scored their perceptions on the behaviors in the video using a visual analogue scale. The participants were then asked to reflect on their own practice. Comparisons of the survey responses were made between both doctors and nursing/midwifery staff members using student's *t*-test.

Results: 50 obstetricians and 167 obstetric nursing/midwifery staff fully completed the survey. Fifty two percent had previously heard of the term obstetric violence, and 48% could define it correctly. 136 (63%) had witnessed obstetric violence at some point in their career. Significant differences were seen when each professional group was asked to report on the behavior of the opposite professional team as depicted in the video ($p = 0.01$ and $p < 0.001$). Doctors completing the survey were also more critical of the doctors-in-training than were the midwifery/nursing staff ($p = 0.06$). Obstetricians and nursing/midwifery responders identified patient dignity, privacy and patient-centred care as the leading professional deficiencies seen in the video. Obstetricians were significantly less likely to change their perceptions of how a care team should interact with a patient compared to the obstetric nursing/midwifery group ($p < 0.001$).

Conclusions: This questionnaire study demonstrates that the majority of staff in this cohort were aware of obstetric violence and able to identify negative behaviours in the video and then reflect on how this impacts care they provide. Further studies are needed to identify ways in which obstetric violence can be prevented in both low resource and high resource settings.

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Introduction

Respectful and dignified healthcare provision is a fundamental right for every pregnant woman, leading to a positive birth experience delivered by compassionate, skilled providers. The care provided to women in childbirth varies across the globe and in many settings there are examples of non-dignified and sometimes even abusive patterns of care being provided to pregnant women.

Reporting on the scale and types of these deficiencies in maternity care is increasing [1,2]. Whilst this behavior is by no means restricted to low socio-economic countries, it is often seen in cultures where empowerment of women and accountability of providers is not the normal standard of care. Recent evidence suggests that exposure to a disrespectful, abusive or coercive service by skilled maternity providers, which results in actual or perceived poor quality of care, is both directly and indirectly associated with *both* adverse maternal and neonatal outcomes [3–7].

The term 'Obstetric Violence' was coined to reflect the 'professional' deficiencies in healthcare provision to pregnant women. Obstetric Violence is defined as 'the appropriation of the

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body and reproductive processes of women by health personnel, which is expressed as dehumanised treatment, an abuse of medications and to convert the natural processes into pathological ones, bringing with it loss of autonomy and the ability to decide freely about their bodies and sexuality, negatively impacting the quality of life of women [8].

In parts of Latin America, over the past 10 years, the term "Obstetric Violence" has become part of the legal framework, with specific laws against obstetric violence being introduced [9–12]. To highlight the problem Amnesty International produced a short video (Available at <https://youtu.be/glwP60-g77A>) depicting an example of Obstetric Violence in order to raise awareness of the problem seen in many birthing units in Latin America. The video is two minutes and forty seconds in length, presented in Spanish, with English subtitles. The video depicts a woman going into labour, she is on her own without a birthing partner and her confinement is attended, at various points, by two midwives/nurses, a doctor and two medical students. The video is filmed from the patient's perspective and depicts the woman in distress, asking for help. The medical team are not compassionate or caring and do little to either communicate with the woman or to help her as the labour progresses. They undertake siting of intravenous access, giving of uterotonics and vaginal examination without effective communication or informed consent, resulting in a harrowing, traumatic and lonely birthing experience filmed from the patient's perspective.

Sidra Medicine (Doha, Qatar) opened its private inpatient maternity services In February 2018. As with most healthcare workforces in Qatar, the staff are multinational; with around 80 nationalities represented within the Obstetric unit. The aim of this study was to determine the multinational staff awareness of the term obstetric violence and their opinion of the conduct of the professional caregivers depicted in the Amnesty International video by means of an anonymous questionnaire.

Materials and methods

The project was reviewed by the Sidra Research Department and as this was a survey of clinicians, formal ethical approval for the study was not required. No funding was received for this study.

In July 2018 an online electronic survey was sent to the hospital email accounts of all midwifery, nursing and medical staff within the Obstetrics division of Sidra Medicine (n = 640). The survey was live for a period of four weeks, during which time a weekly reminder was sent to all potential participants by email.

The email explained the purpose of the survey and confirmed that participation was entirely voluntary and the results

anonymous. It included a link to the Amnesty International video followed by 21 questions. The first questions assessed the participant's demographics and asked whether staff had heard of the term obstetric violence and what was meant by the term obstetric violence. The following eight questions assessed the participant's perceptions on the video they were reviewing. These questions utilised a visual analogue scale and were each scored from 0–100. Higher scores indicate a greater approval/positive response to the question. The final six questions assessed participant's perceptions on their own practice after reflecting on the content of the video and one of these also utilized the visual analogue scale.

Staff were asked to watch the short video and then to complete the questionnaire. Comparisons of the survey responses were made between both doctors and nursing/midwifery staff members.

The results were analysed using SPSS Version 23.0. Comparisons between results for doctors and midwifery/nursing staff were made using Student's *t* test or chi square test as appropriate.

Results

Two hundred and seventeen staff members completed the survey fully after confirming they had watched the short video in its entirety. These included 50 obstetricians and 167 obstetric nursing/midwifery staff representing a response rate of 60% for obstetricians and 30% for nursing and midwifery staff.

Table 1 shows the background demographic data and prior understanding of the term obstetric violence. There was a significant difference in gender between the obstetricians and nursing/midwifery staff with 40% of obstetricians being female compared to 100% of nurses and midwives. There was also a significant difference in nationality with proportionately more obstetricians originating from the United States of America or Northern Europe, compared to nursing and midwifery staff (56% v 30%). Duration of clinical experience also demonstrated a significant difference between the two groups with 98% of obstetricians having 10 or more years of experience compared to 30% of nurses and midwives.

Fifty two percent of those who responded had previously heard of the term obstetric violence, and 48% of responders understood what the term obstetric violence meant. There were no significant differences in these responses between the two groups.

Table 2 demonstrates the mean scores (+1SD) given by the responders to questions specifically around the professional behaviours seen in the video, the *t* statistic, 95% confidence interval and *p* value for each are shown. The *t* value indicates the

Table 1

Background demographic data and prior understanding of obstetric violence in the survey responders. (chi square * $p < 0.05$).

Survey question	Obstetricians (n=50) %	Obstetric nurse/midwifery staff (n=167) %
Please select your gender		
male	58%	0%*
female	42%	100%
How many years have you been working in the field of Obstetrics?		
less than 5 years	0%	37%*
5 to 10 years	4%	34%
more than 10 years	96%	29%
In what country/region did you complete your primary clinical training?		
North American/Europe	56%	30%*
Other	44%	70%
Have you heard of the term Obstetric violence before?		
Yes	58%	50%
No or unsure	42%	50%
From the option list, what do you think the term obstetric violence means?		
correct	60%	44%
incorrect	40%	56%

Table 2

Comparison between professional groups of visual analogue scale mean scores for questions related to the professional conduct demonstrated in the video and future perceptions on this (* = $p < 0.05$).

Survey question	Obstetric nursing/ midwifery staff (mean + 1SD)	Obstetricians (mean + 1SD)	t statistic	95% Confidence interval of the t statistic	Significance level (* denotes statistical significance: $p < 0.05$)
Having watched the video, how well did you feel the Obstetric team worked together?	13.0 + 21.7	17.3 + 21.5	-1.30	-11.4156 to 2.3556	$p = 0.1961$
How well do you think the Obstetric team did in their manner of communication with the patient, given the clinical circumstances?	8.6 + 20.0	11.2 + 20.4	-0.80	-9.0234 to 3.8034	$p = 0.4233$
How well do you think the doctor did in giving good quality information to the patient and gaining informed consent?	6.8 + 18.8	7.8 + 15.1	-0.36	-6.7223 to 4.6823	$p = 0.7247$
How well do you think the team as a whole were mindful of the patient's dignity and privacy made an effort to preserve these as far as possible in the clinical situation?	6.6 + 19.7	7.8 + 17.4	-0.38	-7.2548 to 4.9348	$p = 0.7079$
How well did the team involve the patient and put the patient at the centre of their efforts to provide care and in planning care?	7.0 + 19.1	8.3 + 15.1	-0.47	-7.1889 to 4.4129	$p = 0.6377$
In your opinion, how professionally did the doctor behave in this video?	3.7 + 11.2	8.9 + 17.5	-2.55	-9.3738 to -1.1924	$p = 0.0116^*$
In your opinion, how well did the medical trainees behave professionally in this scenario?	3.9 + 11.6	7.9 + 18.6	-1.84	-8.3078 to 0.2795	$p = 0.0667$
In your opinion, how professionally did the midwife/nurses behave professionally in this video?	4.7 + 12.6	11.2 + 17.5	-2.90	-10.8801 to -2.0784	$p = 0.0041^*$
How much did watching this video change your perception of how a medical team should act/ behave when caring for a patient?	75.4 + 36.4	29.6 + 35.9	7.71	33.7096 to 56.8636	$p < 0.0001^*$

size of the variation or difference in responses between the two groups. The p value indicates the statistical significance, with values less than or equal to $p < 0.05$ being considered statistically significant in this study.

Significant differences were seen when each clinical group (obstetricians or midwives/obstetric nurses) were asked to report on the behavior of the opposite clinical team members in the video, with the nurses and midwives being more significantly critical of the medical team in the video ($p = 0.01$) compared to their own professional group, and the medical team also significantly more critical of the nursing and midwifery team in the video ($p < 0.0001$). Obstetricians completing the survey were also more critical of the doctors in training than the midwifery/nursing staff, however this was not significant. ($p = 0.06$).

The final part of the survey questioned the responder's personal response to the video in terms of whether the video had highlighted a need for self-reflection and which areas they would reflect, prior obstetric exposure to similar situations in their career and whether they had received training on professional behaviours (Table 3). Both the obstetricians and nursing/midwifery responders identified patient dignity and privacy, and patient centred care as the leading areas of professional deficiencies seen in the video. There was a significant difference ($p < 0.001$) in how the responders felt the medical team should interact after watching the video. Doctors felt that the video changed their perceptions of how a care team should interact with a patient significantly less than midwifery/nursing staff (mean score on visual analogue scale 30/100 versus 75/100, $p < 0.0001$). Forty six percent of doctors felt

Table 3

Impact of the video on self-reflection and prior exposure to obstetric violence scenarios in the workplace. Comparison of means with visual analogue scales using student's t test.

Survey question	Obstetricians (n=50)	Obstetric nurse/midwifery staff (n=167)
How much did watching this video change your perception of how a medical team should act/ behave when caring for a patient? (Scored 0 to 100 on visual analogue scale)	Mean 29.6	Mean 75.4 ($p < 0.0001$)
Has viewing this video prompted you to reflect on your own practice and possibly identify areas of change?		
yes	46%	86%
no or unsure	54%	14%
If you have been prompted to change, what area/areas are you planning to change most?		
teamwork	28%	51%
communication	26%	70%
patient dignity and privacy	23%	58%
patient respect	14%	54%
patient centred care approach	23%	60%
informed consent	12%	49%
professionalism	19%	48%
During your career, have you seen real life situations scenario depicted in this video?		
yes	74%	59%
no or unsure	26%	41%
If you have seen such a scenario take place in real life, how often have you seen it?		
never witnessed	12%	34%
rarely (annually)	57%	42%
occasionally (monthly)	29%	20%
frequently (weekly)	2%	4%
Have you personally received training in professional conduct as part of your clinical training?		
yes	76%	84%
no	24%	16%

the video highlighted a need for them to reflect on their professional behavior compared to 86% of nursing and midwifery staff. Communication, team working and patient dignity and privacy were selected as areas all responders felt would be areas to reflect on their own practice.

In terms of prior exposure to episodes of obstetric violence, 136 (63%) staff members said they had witnessed similar situations as depicted in the video at some point through their career (37 obstetricians (74%) versus 99 nursing/midwifery staff (60%)). Twenty five percent of all staff groups had previously witnessed some elements of this kind of behavior as frequently as monthly, despite around 75–80% of all staff groups having received training in professional conduct in maternity care in their previous or current maternity unit.

Comment

This is the first study to describe a survey regarding 'obstetric violence' completed by obstetricians and nursing/midwifery staff working in a high resource setting. The main findings are that only around 50% of doctors, midwives and obstetric nurses in this cohort had previously heard of obstetric violence and were able to accurately define it. This is despite 63% of staff witnessing such behavior previously, in many cases on a frequent basis. Doctors and nursing/midwifery staff were both significantly more critical of the other professional group ($p < 0.05$) and doctors were significantly less likely to change their perception of how patients in these settings should be cared for as a result of watching the video ($p < 0.05$).

The range in incidence of obstetric violence has previously been reported as 15–97% [13–19] with the risk of being exposed to obstetric violence being influenced by socioeconomic and educational status, particularly in societies where empowerment of women is low [19]. Similarly, facilities which are overwhelmed by workforce shortages, inadequate provider training and supervision, where a lack of accountability exists, promotes an environment for unprofessional behaviours to develop and grow; impacting negatively on obstetric outcomes and childbirth complications [3,13,20–22]. Such behaviours have been clearly identified and described in public enquiries into recent healthcare scandals in the United Kingdom [23,24] and it is clear that such behaviors and scenarios are by no means confined to low resource settings. Steps to address obstetric violence must focus on mandatory practical health provider training in how to respect women's rights and facilitate shared decision making, facilitating improvement in interpersonal skills. Institutional policies on respectful maternity care must also be developed, implemented and enforced.

The definition of obstetric violence covers a broad range of deficient behaviours which include physical abuse, non-consented care, non-confidential care, non-dignified care, discrimination based on specific patient attributes, abandonment of care and finally patient detention [25]. As would be anticipated non-dignified care from providers with poor negative unfriendly attitudes predominate, with physical abuse and detention least likely to occur [19]. The Amnesty International video demonstrates graphically in just over two minutes the more common elements of obstetric violence reported and how they fail to provide the patient with the respect and dignity she should expect to receive during her confinement.

The Women's unit of Sidra Medicine is staffed by a team of around 600 clinical staff from around 80 Nationalities with different clinical backgrounds and possibly different attitudes to patient care in childbirth. Given the disparity in terms of experience, ethnicity, cultural and training background we aimed to determine, in this small study, whether there was a knowledge gap around professional behaviours on the labour ward and, more

importantly, that staff recognised the unacceptability of the type of patient care depicted in the training video.

Around 50% of the cohort in this study were aware of the term 'obstetric violence' and around half were able to correctly identify what is meant the term obstetric violence. Reassuringly, it appears that both medical and nursing/midwifery staff groups recognised the unprofessional level of care provided by the obstetric team in the training video with no significant differences observed between the medical and nursing and midwifery scores when evaluating the behaviors of the healthcare team in the video. Where doctors and nursing and midwifery did disagree is in using the video as a tool to reflect on their own professional behaviours. The nursing and midwifery responders were significantly more likely to personally reflect (86% versus 46%) than the doctors. This may simply be due to seniority of the doctors and unfamiliarity with reflective practice, however one cannot help but wonder whether the level of unprofessional behavior 'hit a raw nerve' with the nursing staff who already act as advocates for women in their care. This is supported by the fact both clinical groups were significantly more likely to be critical of the other groups behavior in the video ($p < 0.05$).

In our cohort, sixty percent of clinical staff claimed to have witnessed some elements of the behaviours depicted in the video during their career, with 25% of responders claiming that they had witnessed it at least as frequently as monthly. Obstetricians were more likely to report having seen obstetric violence (74%) compared nursing and midwifery staff (60%), which may be explained by the doctors having a better understanding of the term 'obstetric violence' and being more senior in terms of how long they have been in the specialty.

Despite the high levels of reported episodes of obstetric violence the staff in this cohort have witnessed previously, this study demonstrates that both nursing/midwifery and medical staff in this cohort have an awareness of what constitutes unprofessional behavior and an ability to self-reflect on their own standards of care. There is however a need to further improve this understanding and ensure that high professional standards continue to be met through education and multidisciplinary simulation and training [26].

In conclusion, obstetric violence becoming increasingly understood as an important issue to understand and address in maternity care. The results of this survey have demonstrated that the majority of staff in this cohort have witnessed examples of obstetric violence, but were able to identify the negative behaviours in the video they viewed and reflect on how this impacts the care they provide as individuals. Further studies are needed to identify ways in which obstetric violence can be identified and prevented in both low resource and high resource settings.

Conflict of interest

The authors have no conflicts of interest to declare.

References

- [1] d'Oliveira AFPLA, Diniz SGS, Schraiber LBL. Violence against women in health-care institutions: an emerging problem. *Lancet* 2002;359(9318):1681–5.
- [2] World Health Organization. The prevention and elimination of disrespect and abuse during facility-based childbirth. 2014. . Published. (Accessed 3 January 2019) http://apps.who.int/iris/bitstream/10665/134588/1/WHO_RHR_14.23_eng.pdf?ua=1&ua=1.
- [3] Bohren MA, Hunter EC, Munthe-Kaas HM, Souza JP, Vogel JP, Gulmezoglu AM. Facilitators and barriers to facility-based delivery in low- and middle-income countries: a qualitative evidence synthesis. *Reprod Health* 2014;11(1):71.
- [4] Bhutta ZA, Salam RA, Lassi ZS, Austin A, Langer A. Approaches to improve quality of care (QoC) for women and newborns: conclusions, evidence gaps and research priorities. *Reprod Health* 2014;11(2):S5.

- [5] Hulton L, Matthews Z, Martin-Hilber A, Adanu R, Ferla C, Getachew A, et al. Using evidence to drive action: a "revolution in accountability" to implement quality care for better maternal and newborn health in Africa. *Int J Gynecol Obstet*. 2014;127(1):96–101.
- [6] Wagaarachchi PT, Fernando L. Trends in maternal mortality and assessment of substandard care in a tertiary care hospital. *Eur J Obstet Gynecol Reprod Biol* 2002;101(1):36–40.
- [7] Banks KP, Karim AM, Ratcliffe HL, Betemariam W, Langer A. Jeopardizing quality at the frontline of healthcare: prevalence and risk factors for disrespect and abuse during facility-based childbirth in Ethiopia. *Health Policy Plan* 2018;33(3):317–27, doi:http://dx.doi.org/10.1093/heapol/czx180.
- [8] Bohren MA, Vogel JP, Hunter EC, Lutsiv O, Makh SK, Souza JP, et al. The mistreatment of women during childbirth in health facilities globally: a mixed-methods systematic review. *PLoS Med* 2015;12:1–32.
- [9] Ley de protección integral para prevenir, sancionar y erradicar la violencia contra las mujeres en los ámbitos en que se desarrollen sus relaciones interpersonales (Ley 26.485, Argentina 2009). 2009. <http://servicios.infoleg.gob.ar/infolegInternet/anexos/150000-154999/152155/norma.htm>.
- [10] Ley orgánica sobre el derecho de las mujeres a una vida libre de violencia (Ley 38.668, República Bolivariana de Venezuela 2007). 2007. www.derechos.org/ve/pw/wp-content/uploads/11-Ley-Organica-sobre-el-Derecho-de-las-Mujeres-a-una-Vida-Libre-de-Violencia.pdf.
- [11] Ley integral para garantizar a las mujeres una vida libre de violencia (Ley 348, Estado Plurinacional de Bolivia, 2013). 2013. www.gacetaoficialdebolivia.gob.bo/index.php/normas/descargar/141694.
- [12] Ley que tipifica el delito de homicidio y la violencia contra la mujer (Ley 82, Panamá 2013). 2013. www.organojudicial.gob.pa/wp-content/uploads/2016/11/Ley-82-de-2013.pdf.
- [13] Banks KP, Karim AM, Ratcliffe HL, Betemariam W, Langer A. Jeopardizing quality at the frontline of healthcare: prevalence and risk factors for disrespect and abuse during facility-based childbirth in Ethiopia. *Health Policy Plan* 2018;33(3):317–27, doi:http://dx.doi.org/10.1093/heapol/czx180.
- [14] Burrowes S, Holcombe SJ, Jara D, Carter D, Smith K. Midwives' and patients' perspectives on disrespect and abuse during labor and delivery care in Ethiopia: a qualitative study. *BMC Pregnancy Childbirth* 2017;17(1):263, doi: <http://dx.doi.org/10.1186/s12884-017-1442-1>.
- [15] Tanzania Sando D, Ratcliffe H, McDonald K, Spiegelman D, Lyatuu G, Mwanyika-Sando M, et al. The prevalence of disrespect and abuse during facility-based childbirth in urban. *BMC Pregnancy Childbirth* 2016;16:236, doi:http://dx.doi.org/10.1186/s12884-016-1019-4.
- [16] 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(3):e0194601, doi:http://dx.doi.org/10.1371/journal.pone.0194601 eCollection 2018.
- [17] Balde MD, Diallo BA, Bangoura A, Sall O, Soumah AM, Vogel JP, 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):3, doi:http://dx.doi.org/10.1186/s12978-016-0266-1.
- [18] Chadwick RJ. Obstetric violence in South Africa. *SAMJ: South Afr Med J* 2016;106(5):423–4.
- [19] Ishola F, Owolabi O, Filippi V. Disrespect and abuse of women during childbirth in Nigeria: a systematic review. *PLoS One* 2017;12(3):e0174084, doi:http://dx.doi.org/10.1371/journal.pone.0174084 eCollection 2017. Review.
- [20] Miller S, Cordero M, Coleman AL, Figueroa J, Brito-Anderson S, Dabash R, et al. Quality of care in institutionalized deliveries: the paradox of the Dominican Republic. *Int J Gynecol Obstet* 2003;82(1):89–103.
- [21] Filippi V, Ronsmans C, Campbell OM, Graham WJ, Mills A, Borghi J, et al. Maternal health in poor countries: the broader context and a call for action. *Lancet* 2006;368(9546):1535–41.
- [22] Diaz-Tello F. Invisible wounds: obstetric violence in the United States. *Reprod Health Matters* 2016;24(47):56–64.
- [23] Francis R. Report of the mid staffordshire NHS foundation trust public enquiry. Available at: . 2013. . (Accessed 3rd January 2019 <http://webarchive.nationalarchives.gov.uk/20150407084231/http://www.midstaffpublicinquiry.com/report>).
- [24] Kirkup B. The report of the Morecambe Bay Investigation. Available at. 2015. . (Accessed 3rd January 2019 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/408480/47487_MBI_Accessible_v0.1.pdf).
- [25] Bowser D, Hill K. Exploring evidence for disrespect and abuse in facility-based childbirth. Report of a landscape analysis. 2010. . Published. (Accessed December 14, 2018) http://www.tractionproject.org/sites/default/files/Respectful_Care_at_Birth_9%E2%80%909020%E2%80%9090101_Final.pdf.
- [26] Ndwiwa C, Warren CE, Ritter J, Sripad P, Abuya T. Exploring provider perspectives on respectful maternity care in Kenya: "work with what you have". *Reprod Health* 2017;14(1):99, doi:http://dx.doi.org/10.1186/s12978-017-0364-8.