Women and Birth xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Women and Birth

journal homepage: www.elsevier.com/locate/wombi

"It's like a bus, going downhill, without a driver": A qualitative study of how postpartum haemorrhage is experienced by women, their birth partners, and healthcare professionals

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ARTICLE INFO

Article history:
Received 8 May 2020
Received in revised form 3 December 2020
Accepted 3 December 2020
Available online xxx

Keywords:
Postpartum haemorrhage
Birth experience
Qualitative methods

ABSTRACT

Problem: Postpartum haemorrhage [PPH] remains a major cause of maternal morbidity and mortality. Whilst low-resource settings bear the greatest burden of deaths, women live with associated morbidities in all healthcare settings. Limited data exists regarding the experience for women, their partners, or healthcare professionals [HCPs], affected by PPH.

Aim: To qualitatively investigate the experience of PPH, for women (n = 9), birth partners (n = 4), and HCPs (n = 9) in an inner-city tertiary referral centre. To provide multi-faceted insight into PPH and improve understanding and future care practices.

Methods: Participants were interviewed about their experiences within two weeks of a PPH. Data were analysed using thematic analysis.

Findings: Four distinct, but related, themes were identified: 'Knowledge specific to PPH'; 'Effective and appropriate responses to PPH'; 'Communication of risk factors'; and 'Quantifying blood loss'; which collected around a central organising concept of 'Explaining the indescribable'.

Discussion: PPH was viewed as a 'crisis-style emergency', generating respectful fear in HCPs, whilst women and partners had little-to-no prior knowledge. Specific PPH knowledge dictated HCPs' response and risk communication. PPH risks were typically linked to quantification of blood loss, assessment of which varied with acknowledged questionable accuracy. Women's and partners' confidence in HCPs' ability to deal with PPH was unquestionable. Non-verbal communication was highlighted, with HCP body language betraying professional confidence.

Conclusion: Information about blood loss during childbirth must be imparted in a sensitive, timely manner. Whilst training for HCPs results in effective PPH management, consideration should be given to their non-verbal cues and the impact of dealing with this stressful, 'everyday emergency'.

Statement of significance

Issue
Rates of PPH are rising, however, due to the paucity of qualitative work in this area, little is known about the experience of PPH in women, their birth partners, and the HCPs involved in managing their care. The impact of PPH as a crisis-style phenomenon remains, therefore, ill-understood.

What is already known
PPH is a life-threatening, time-critical clinical emergency with high risk of complications and/or death. Medical interventions have changed in recent years, improving outcomes, but without necessarily affecting experiences.

Abbreviations: HCPs, Healthcare Professionals; NHS, National Health Service; PPH, Postpartum Haemorrhage; NICE, National Institute for Health and Clinical Excellence.

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http://dx.doi.org/10.1016/j.wombi.2020.12.002
1871-5192/

Please cite this article as: A.L. Briley, S.A. Silverio, C. Singh et al., "It's like a bus, going downhill, without a driver": A qualitative study of how postpartum haemorrhage is experienced by women, their birth partners, and healthcare professionals, Women Birth, https://doi.org/10.1016/j.wombi.2020.12.002

What this paper adds
Insight into the psychological impact of excessive blood loss on women, their birth partners, and the staff involved in managing the emergency PPH situation.

Introduction

Postpartum haemorrhage (PPH), defined as blood loss of 500 mL or more within 24 h of childbirth [1], irrespective of mode of birth, is a leading cause of maternal death globally, with low- to middle-income countries bearing the greatest burden of cases [2,3]. Many high-income countries are reporting rising PPH rates [4–6], possibly due to demographic changes, such as increased maternal age and BMI, and abnormal placentation following previous caesarean birth, which drive haemorrhage [7]. Despite recent reduction in global deaths, PPH accounts for around 100,000 potentially avoidable maternal deaths annually. Whilst many more women survive, they live with short and long term health consequences associated with excessive bleeding during childbirth.

Even in countries where resources are readily available to treat this obstetric emergency, it remains a cause of maternal mortality and morbidity. A recent UK report showed there was no statistically significant change in maternal death rates, directly attributable to pregnancy, stating that obstetric haemorrhage remains a major contributor, associated with 14, 13, and 11 deaths in each triennial report between 2009 and 2017 [8].

Recent advances in the treatment of PPH, most notably, the inclusion of tranaxemic acid as first line treatment for severe blood loss [9] has improved management strategies. The improved understanding regarding transfusion regimes [10] and the awaited results of ongoing clinical trials (www.copestudy.uk), should all impact the number of women and families affected by the short- and longer-term health issues associated with PPH. However, although several trials have used qualitative methodologies to explore participant experience of an intervention versus standard care, and others have focussed on the experience of PPH in the most severe cases [5,11–14] there is a paucity of data available to understand the experience of less severe PPH, for women and their birth partners [15]. In-line with Green-top guideline (No.52) blood loss between 500–1000 mL is defined as minor PPH and 1001–2000 mL as moderate PPH [16]. Dunning et al. [15] concluded, that women and birth partners required more information about PPH, regardless of the volume lost and that this was commonly omitted with mild and moderate PPH. Information about the impact for health care professionals involved in these clinical emergencies is similarly limited. A recent review of data from 29 countries, with the largest included studies in resource poor environments with associated multifactorial complex issues, concluded that stakeholder engagement and staff training to deal with PPH are paramount to increase confidence and competence to deal with PPH [17].

It has been reported that birth trauma can cause various short and longer term physical and psychological issues in women who experience PPH [13,14,18] and in their birth partners witnessing the PPH [19]. Additionally, there is evidence to suggest the frequent exposure to traumatic events (such as PPH) which maternity-based HCPs have could be the cause behind the high levels of professional attrition in obstetrics and gynaecology [20–23], and in midwifery [21–28].

This qualitative study is part of a wider study (see [7]) which aimed to identify expectations around blood loss in childbirth, knowledge and management of PPH, with the objective of better understanding the emotional and intellectual impact of these events on all those involved. The assumption carried in the wider study was that women's and birth partners' knowledge around blood loss in childbirth is limited and unrealistic, and that staff, although trained to deal with this emergency, are not well prepared for the psychological impact of being involved in managing this obstetric emergency. To this end, the study detailed in this article, explores the experience of PPH for women, their birth partners and the HCPs involved in their care.

Participants, Ethics, and Methods

This work formed part of a mixed-methods study investigating risk factors for, management and experience of PPH. Results of the quantitative study and description of the trial population have previously been published [7]. This study used a qualitative research design [29] engaging three participant groups (women, their birth partners, and HCPs) in interviews discussing experiences of PPH. Participants were recruited using a maximum variation, purposive sampling strategy [30,31].

The research team aimed to capture not only the perspectives of women who had experienced a PPH and the staff who provided care for these women, but also women's birth partners who had witnessed the situation unfold and be resolved. In this sense, data were collected in accordance with a case study approach [52], whereby the women were the centre-hub of the analysis with their partners' data (where gathered) and their HCP' data, as subsidiary spokes. In all, these three participant groups made for a comprehensive and robust assessment of experiences of the same PPH emergencies.

Following favourable National Health Service [NHS] ethics committee review (IRAS ID: 07/H1102/79) and local approvals,

Table 1
Maternal (and birth partner) demographics.

Interview ID	Mode of birth	Blood loss (mL)	Treatment	Parity
Woman 1	Spontaneous vaginal birth	800	Oral iron	3
Woman 2	Emergency caesarean section	1200	Oral iron	4
Woman 3	Emergency caesarean section	2500	Transfusion (2 units)	2
Woman 4	Emergency caesarean section	1500	Transfusion (3 units)	2
Woman 5	Emergency caesarean section	14,000[a]	Transfusion (21 units) cell salvage	4
Woman & Partner 1	Instrumental vaginal birth[b]	2000	Transfusion (4 units)	3
Woman & Partner 2	Forceps	800	None.	1
Woman & Partner 3	Forceps	1400	Oral iron	1
Woman & Partner 4	Waterbirth	4000	Transfusion (2 units)	1

[a] **N/B.** This woman had placenta increta; developed intravascular coagulation syndrome and was therefore rapidly losing transfused blood products in addition to her own circulating blood volume. Management of these cases is complex, requiring multiple blood products and replacement fluids.
[b] Failed ventouse proceeded to forceps delivery.

recruitment took place on the postnatal wards in two South London NHS Trusts. In the UK, NHS Trusts are organisational units for healthcare systems and/or organisations in the United Kingdom, and generally, either serve a particular geographic area or provide a specialist function (such as mental health, or ambulance services etc.). Although NHS Trusts may comprise of more than one hospital, in this study each Trust had one hospital; a smaller district general hospital and a larger teaching hospital and tertiary referral centre. In total five women, four women and birth partner dyads, and nine HCPs involved in the management of the PPHs (two Consultant Obstetricians; two Research Midwives; three Midwives; and two Student Midwives) were recruited (N = 22). See Tables 1 and 2 for full demographic details. All cases of PPH had taken place within five days preceding the interview.

Two of the research team [AB, HB] identified participants via medical records and approached them on the postnatal wards. Interviews were undertaken 1–4 days after the event, dependent on maternal condition and prior to hospital discharge. Staff were also identified at this time and interviews occurred within 3 weeks of the index PPH, dependant on workload and rotas. In total 17 face-to-face interviews were conducted (5 with two interviewees) by two members of the research team [AB, HB]. Interviews were at a time and place convenient to the participant, and participants provided written informed consent before interviews commenced. The semi-structured interview schedule was designed to cover a range of topics relating to the PPH experience. This allowed for interviews to be conversational rather than a simple 'call and response' style of questioning, whereby participants could recall their experiences at length, to ensure richness of data. This style of interviewing also allows for common lines of inquiry to be addressed across the whole dataset to allow for analytical comparisons, but also provides the flexibility to enable the interviewer(s) to follow-up on interesting or pertinent points made by each individual participant. Interviews lasted 30–60 min. All were digitally recorded, and intelligently transcribed [32] [HB], that is, interviews were transcribed omitting contextual matter (i.e. coughing/false sentence starts); as opposed to verbatim [33]. Member checking [34] was undertaken, by taking the transcript back to participants to ensure they deemed it an accurate reflection of the recorded interview.

Interviews were uploaded, managed, and analysed in QSR NVivo 12. A thematic analysis [35,36] was used to analyse and interpret these data. This thematic analysis approach has six phases, is consultative in nature, methodically inductive, and utilises open coding to derive the initial themes from the raw data [37]. The process requires researchers to first (re)familiarise themselves with the data, then generate initial codes, before searching for themes, and review them amongst the team, before providing final names and explanations for each theme, which can be written-up as part of the final report [35]. Data were coded by one member of the research team [SAS] with approximately 20% of transcripts coded by another member of the research team [AB] to enable cross-checking of coding, followed by negotiating and agreeing the final thematic structure [38].

Themes hinged on a central organising concept which acts as a core idea to draw together and unify all aspects of the data assigned to different themes [36]. Members of the research team [SAS, AB, CS] held regular discussions to interrogate the analysis, revise coding, and generate the final thematic structure. This also enabled the team to establish analytical rigour, with discrepancies in interpretation being debated to satisfy a diverse range of analytical perspectives in the context of a cross-disciplinary health research team [32], which for this study included perspectives from Midwifery, Obstetrics, Psychology, and Medical Sociology.

Sample size sufficiency and thematic concordance were achieved using principles set out in previous methodological explorations of qualitative health data, as follows. Complete analysis of twelve transcripts was required to achieve thematic saturation [39] whereby new themes were no longer being identified in new transcripts thereafter, with the remainder of transcripts acting as confirmation of the coding and theme structure. Data in this study were highly useable [40], meaning interviews and subsequent transcripts were of high quality, with little-to-no shadowed data (where participants speak about the experiences of someone else, rather than their own experiences), therefore the richness of the data collected was deemed to not be marred in anyway. Both the assessment of theme saturation [39] and data quality [40] enabled the team to assess the dataset and analysis in accordance with Vasileiou et al. [41] guidance for sample size sufficiency and data adequacy. In this study, sample size sufficiency (that enough participants were recruited to the study to have sufficient data to fully answer the research question) and data adequacy (that the data we had collected was suitably contextualised, rich in detail, and that transcripts across the dataset were sufficiently comparable in content to draw meaningful conclusions, representative of the whole population recruited) were both deemed to be excellent.

Findings

A thematic analysis of this dataset enabled the identification of four distinct, but related themes: 'Knowledge specific to PPH'; 'Effective and appropriate responses to PPH'; 'Communication of risk factors'; and 'Quantifying blood loss'. These themes had a central organising concept [36] of 'Explaining the indescribable'. All researchers involved in the analyses agreed final thematic concordance within the dataset and the final analytical interpretation.

The most illustrative quotations have been presented below, and, in-line with our case study, hub-and-spoke approach [52], we

Table 2
Staff demographics.

Interview ID	Years in practice	Pattern of work	Place of work	PPH cases involved in
Consultant Obstetrician 1	23 (13 as obstetrics & gynaecology specialist)	Birth centre	Tertiary hospital	Woman 3 Woman 5
Consultant Obstetrician 2	26 (13 as obstetrics & gynaecology specialist)	Birth centre	Tertiary hospital	Woman 4 Woman 5
Research Midwife 1[a]	10	Rotational	Tertiary hospital	Woman 4
Research Midwife 2[a]	16	Bank	Tertiary hospital	Woman 1
Midwife 1	3.5	Caseload	Community	Women & Partner 1
Midwife 2	2	Rotational	District general hospital	Woman & Partner 3
Midwife 3	27	Bank	Tertiary hospital	Woman & Partner 4
Student Midwife 1	3rd year of training	Home from home	Tertiary hospital	Woman 1
Student Midwife 2	2nd year of training	Home from home	Tertiary hospital	Woman & Partner 4

[a] These participants engaged in a joint interview.

present data from women first, followed by the data recorded from their birth partners and attending HCPs.

Knowledge Specific to PPH

The first theme covered aspects of women's, their partners', and their HCPs' knowledge of PPH. Largely, women and their partners had no previous experience or expectations of blood loss during labour and birth:

> "I suppose the only thing that made me aware that you bleed quite a lot afterwards is when you read the stuff about what to take to hospital, and you see the maternity pads to buy and they say you bleed a lot, then and I suppose that was the only time, and they say it's heavier than the normal period and you need to show them to your Midwife when they come round, and all that sort of thing, but that was the only bleeding I had thought about and obviously you are aware that things can go wrong, and you know, but I think I hadn't really thought about it then very much other than that." (Woman & Partner 1 - Woman)

Conversely, all HCPs knew about PPH, but had varying experience, which usually followed their years of practice. For example, participants who had a lot of experience with PPH would make judgements based on their prior cases:

> "And also so that we know if there's, if you ring me up in the middle of the night and say we've had a 2 L blood loss and she's now dry as a bone, great, all I need to know is you're doing the observations, but if you ring me up and say she's had a litre and a half, but she's still bleeding, I'm on my way in, so it's actually . . . I don't come in just because she's bled, I come in because she's bleeding and we're not under control." (Consultant Obstetrician 1)
>
> "Er . . . yes, it is part of the package, you can see the whole picture of the woman. The size tends to really vary . . . if very underweight and very overweight I think it's a big problem. I think I've had more PPHs for people who are overweight." (Midwife 1)

Staff also demonstrated willingness to keep up-to-date and share their own experiences with junior team members and those in training, or engage in self-directed learning, to ensure they were practicing in an evidence-based manner and within current guidelines:

> "I make sure I revise protocols etc., and the students keep me up to date with new things they are learning." (Midwife 2)
>
> " . . . there was a paper that was talking about how, really emphasised how you could have a woman who was compromised with a 250 mL blood loss, who had a PPH who was going to be compromised – and whether we call it a PPH or not is beside the point. What we actually want to do is make sure that we do the best for this woman who may have lost too much blood for her, and this study was, you know, showing, it was a scientist who wrote it, I think she was a haematologist, it was about basically you can lose up to 1000 mL and not be compromised if you have got a woman who is healthy, whose Hb is fine, actually it could be quite normal to lose up to 1000 mL and that is no problem, but you could have a 250 mL loss on somebody who was already compromised and then you've got a problem." (Research Midwife 1)

However, analysis of the dataset also showed that Student Midwives were inevitably, exposed to the clinical emergency during their training:

> "Suddenly she gasped and there was blood pouring down her legs and soaking into the towels and [incontinence] pads on the floor. The Midwife put a pad in place quickly, we draped her in towels and went very quickly into the room we had for her. We put her onto the bed and the Midwife felt her uterus . . . . . she said it was not contracted and asked me to pull the buzzer for help and write notes down, like times etc. By this time the pads were soaked, <woman's name> was not keen to have a uterotonic but the Midwife explained that her womb needed to contract to stop the bleeding. It was the dad who said she should have it and she agreed. The Midwife continued to rub up a contraction and had put the baby to the breast in the hope that this would help the uterus contract. The Midwife asked me to go and get some syntometrine and make sure the labour ward co-ordinator knew we had a PPH." (Student Midwife 2)

This first theme – 'Knowledge specific to PPH' – provides insight into the juxtaposing experiences and perceptions between our participant groups. PPH was not part of women's or their birth partners' expectations about birth, meaning their knowledge about PPH was often reflected upon as being newly acquired at the time it was happening, and information was therefore transmitted in a hectic way from the HCPs to them during an emergency response. Conversely, HCPs had a good knowledge-base about PPH, and although they did not expect PPH to be part of their everyday care, understood the regularity at which PPH occurred and were well-versed in delivering PPH-related life-saving interventions. Often, knowledge for HCPs was acquired over time, learning from more senior colleagues when they undertook clinical placements as students or were newly qualified clinicians. This early exposure to PPH facilitated knowledge around blood loss during childbirth and, supported by annual mandatory training, developed response strategies in emergency situations, resulting in morbidity and life-saving clinical decision making.

Effective and Appropriate Responses to PPH

Data from women who had experienced PPH, and those partners who had witnessed the clinical response to it, demonstrated their belief that the responses to their PPH events were rapid and co-ordinated, and in being so, engendered a feeling of reassurance that the emergency would be dealt with effectively, despite the event itself being viewed as frightening.

> " . . . I'm not a clinician in anyway, but because I work in the health field I was probably more aware that something had, you know, that it hadn't gone well but I sort of felt that there was no panic and people knew what they were doing. The thing I really liked was the Midwife, who'd been with me before . . . . . he was there, like when we went into theatre and stayed with me and talked and then came into HDU and stuff afterwards and that was really nice and I really liked that, that he was there throughout, really good." (Woman & Partner 1 – Woman)
>
> "Erm, well we were with the Midwife because we were trying to put her into the wheelchair to bring her down, and she literally just collapsed in her arms, and so she just got me to pull the emergency whatever, and I reckon within ten seconds, if not less to be honest with you, there were six people in the room, two major Doctors and three other sort of Midwives or Assistants, whatever else . . . so that was quite reassuring . . . reassuring in terms of the number of people, slightly horrifying in terms of what are all these people doing, and suddenly you start wondering is she going to get carted off to you know, whatever . . . ." (Woman & Partner 2 – Partner)

Analysis of data from HCPs echoed that from women and their partners, and showed the key to providing an effective medical response in that time-critical, emergency period, was the ability to keep up to date with training. This was often supported by

mandatory training but also often garnered informally, from self-directed learning, shared experiences from colleagues, or having trainees bring them up to speed with the latest, cutting edge, clinical practice and research being taught:

"The clinical skills Midwife's funding was removed, therefore no longer the regular drills, so currently what keeps me current and up to date is having students . . . " (Midwife 2)

However, HCPs also valued the importance of antenatal planning of management for high-risk women, which, in this theme, meant an appropriate and effective intervention could be mapped out, prior to the expected delivery date:

"Ok, this is a lady with a twin pregnancy, two previous caesarean sections, a BMI of 38 or 42, aged 39ish with a diagnosis of placenta accreta. She was referred here because we have interventional radiology . . . . . my plan had been to admit her at 35 weeks and have a multidisciplinary meeting at about that stage and planned to do her caesarean section probably at 36, 37 weeks . . . We had recently had a not dissimilar case, as in a very large lady with an accreta who had had a caesarean where there had been a number of major problems . . . and so to me one of the things to do differently was to have the multidisciplinary meeting to make sure that everyone was there, and agreed with what our plan was. One of the things with her, was the question as to whether or not she had bladder involvement, so I planned to have a urologist at the multidisciplinary meeting as well as two Gynae Surgeons, the anaesthetist, and interventional radiology, so we could set up exactly what we needed to do." (Consultant Obstetrician 1)

Given that PPH often occurs as an emergency, regardless of careful planning, HCPs also acknowledged the importance of a cohesive approach and rapid response to this unpredictable emergency:

"It's always because I have been called to help, because it is out of control and the doctors are needing help, so I would come in, try and assess it quickly, and then take charge of my bit which would be stopping the bleeding, training people, as the anaesthetist should be doing the fluids, and there should, by this stage, be someone running and writing, and usually the co-ordinator . . . . . So, I would expect the most senior doctor to be in charge or supervising the one below . . . probably." (Consultant Obstetrician 2)

In this theme, HCPs further spoke of an appropriate and effective response as having many possible guises, and because of this, were confident they could facilitate a way for the emergency to be successfully overcome:

"I would rather have a PPH over a shoulder dystocia any day, as there are so many different paths to go down, and there comes a point where you hand over to the Obstetrician. With shoulder dystocia you have three or four different things to try and then what can you do if they fail, try them all again, whereas with PPH there are so many different things to try." (Midwife 2)

In explaining this, HCPs often spoke about strategies and techniques they had found effective over their years in practice, which they had retained as being both effective and appropriate for intervening in PPH cases:

"I think that the basic ones are very effective, like making sure the uterus is contracted and sometimes rubbing the uterus is enough, but many times the draining of the bladder does the trick, because the uterus is contracting but it doesn't contract because the bladder is full and those two things, many times, it is enough . . . and it happened to me at home a couple of times because we do a lot of homebirths as well, and those two things are very effective." (Midwife 1)

This theme documented how the most effective and appropriate responses to PPH were perceived by women and their birth partners, and their HCPs. Participants from all healthcare backgrounds discussed how these co-ordinated responses came about – through ongoing training, multi-disciplinary meetings and working, as well as shared practices amongst colleagues – and how they were subsequently applied to stabilise women experiencing PPH. Similarly, women and their birth partners discussed the experience of witnessing these responses and stated how the rapid responses and immediate performance of life-saving interventions, left them feeling the HCPs whose care they were under had a high level of preparedness for PPH emergencies, and that their actions were both appropriate and effective in saving lives.

Communication of Risk Factors

Often participants spoke about how the explanation of the risks associated with PPH had to be communicated quickly, either immediately prior to, or during the emergency itself:

"The consultant came out and said clearly to me that she needed to save my life . . . I could end up in ITU and need a lot of blood. I said, 'Do it, I will survive', and she did it, said she would contact other doctors and saved my life." (Woman 5)

However, even when decisions relating to both birth and subsequent PPH were being made at the point of emergency, women and their partners often recalled that the communication of risk was done in a way which was informative, but also did not incite panic:

"I was virtually in the doorway of one of the labour suites and the baby was coming out, and then 'The baby's here, baby's fine but you're bleeding.' pulling the emergency bell, a lot of people running and she was so lovely this Midwife, just so calm 'Don't panic, everything's fine, baby's out and baby's beautiful, we just want to stop you bleeding.' and she was explaining to me what was going on, which was really really helpful because I felt dreadful. Um, they were trying to deliver my placenta and um, they said 'Your placenta's stuck, we're going to have to pull it out' and at that point I said 'That hurts I want the Entonox back' and snatched it back off the student Midwife [Laughs] so they were laughing and said 'You've done this before!', [Laughs] . . . The placenta was bigger than my baby!" (Woman 1)

"I mean the anaesthetist was very good because he was very much like 'How are you feeling?' and asking a lot of questions and asking me 'Is she cold?' and had everything on hand . . . that was good." (Woman & Partner 1 – Partner)

"No, there was no sense of panic, but I think for me partly because you [partner] didn't panic, I think that if you had started to sound panicked then I would've worried a bit more, but you [partner] were very calm." (Woman & Partner 1 – Woman)

"Well it doesn't help anyone to panic . . . " (Woman & Partner 1 – Partner)

Though verbal reassurance was often helpful for women and their birth partners, sometimes the HCP's body language or behaviour indicated the gravity of the situation:

"They were quite quiet, so I was scared. That was why I kept asking, 'Is everything ok with my baby?' and they says 'Oh she's fine, she's got lots of hair!' and things like that, but that wasn't what I wanted to hear because, you know, she wasn't crying, I couldn't hear anything from her, so . . . and then there was this issue of all this stuff going on with me . . . . . I can compare it to the last time and I was like, they should be done

by now, but it just kept on going and I think the Doctor said something about the placenta being down or something, but you know, I didn't really get what was going on, no . . . . . " (Woman 3)

Similar to other literature discussing patient-provider interactions during obstetric emergencies [42], women and their birth partners discussed 'outing' HCPs who were trying to remain calm in a seriously grave emergency, by reading their facial expressions:

"I work, I sell medical equipment to hospitals and I spend a lot of time in theatres and so I know, the facial, you know, when people, make sort of faces and people go quiet. It often means that things aren't going brilliantly so that was a worry." (Woman & Partner 1 – Partner)

" . . . I just had a baby . . . and she [Midwife] was very nervous, I remember thinking that wasn't a very nice face . . . " (Woman & Partner 3 – Woman)

Finally, participants in this theme spoke about how the risks associated with PPH and the birth experience were discussed after the emergency event. Despite being contentious in other areas (see [43]), formal debriefing, or even just informal discussions with no debriefing purpose, were cited as being variably useful for women to understand their PPH experience, with some stating they were beneficial:

"Erm, I think if, I'm not too sure actually, because if I had known what was going on, maybe that'd make me panic a bit more, you know, worry me more, but because he came and explained to me after, I knew they were going to speak to me afterwards, and he did say: 'You know, you've lost quite a bit of blood.', and I was fine with that." (Woman 4)

Some women reported the timing of the discussion, directly after the birth and PPH intervention, as inappropriate for them to understand the whole event:

"The Doctor did come back, I think that very day, to tell me, but obviously I was still a bit drowsy and so, still today I don't know what happened." (Woman 3)

HCPs also reflected on how difficult it could be to convey the message of associated risks, and sometimes turned to colleagues to assist them:

" . . . a bit of warning would have been good [Laughs] but that just ain't going to happen is it? [Laughs] I think seeing it happen really made me think about the whole situation . . . The Midwife was great because we went and saw < woman's name > the following day, and you know explained the whole thing . . . that was good for me, because I could hear what happened you know it was explained in a cool, calm way, outside the emergency . . . I think that was really good, for < woman's name > and me . . . " (Student Midwife 2)

This turning to colleagues for support with conveying messages to women and their partners was especially true in situations which were likely to result in a hysterectomy:

"Her uterus had just stopped, it was knackered. So I talked to this woman about doing a hysterectomy and she didn't quite understand, but she did sort of understand that it was going to mean no more children, and it was the only thing I could do to stop the bleeding, so I said I'd get another consultant in to make sure we'd got two people making this decision, I always have two people to make a decision about doing a hysterectomy . . . " (Consultant Obstetrician 1)

This theme discussed how risk was communicated to women. The data presented above shows that discussions were often held quickly during the emergency, with little explained antenatally. This often resulted in decisions having to be made in times of crisis. From our data we can see that women's understanding that PPH could happen, as well as that of their birth partners, was variable. Although HCPs often aspired to remain calm in emergency situations by delivering information about risk appropriately, often women and their partners would pick up on non-verbal cues to interpret how grave the situation was becoming. Explaining the risk after the event had mixed responses from women, with some suggesting debriefs were reassuring and others saying the timing was inappropriate. In concordance with other literature, timing of debriefing should be considered to alleviate ongoing PTSD [15,43]. Overall, communicating information about the blood loss was viewed as difficult to successfully achieve, due to it typically being undertaken at the time of the emergency, when capacity for understanding, measured decision making, and fully informed consent, was often limited.

Quantifying Blood Loss

The final theme from this analysis was how women, women's birth partners, and HCPs discussed blood loss, and more specifically how it was quantified. A lot of participants used metaphorical language, which was eloquently demonstrated by one of the women who had, herself, experienced PPH:

"Yes, you can quantify and then you can actually sort of visualise a big bottle of Perrier water, oh Perrier is a litre isn't it . . . and you can see that and you think gosh, that's a lot of water, or blood or whatever . . . . . so I don't know, telling women afterwards or before that you can lose that much, so you will need some sanitary towels [Laughs]." (Woman 1)

Women and their partners often expressed surprise or shock at the quantities of blood lost. They commented on how HCPs seemed less concerned by what they considered a huge blood loss, even if the PPH was small:

"I think it's relative as well because I'm obviously a much smaller build, so you know like 800 probably is a lot for someone my height and my weight . . . I'm 5 foot 2 . . . er, about 47 kg. So maybe 800 was a lot for me. But obviously, we don't have any idea what in comparison . . . " (Woman & Partner 2 – Woman)

"It scared me, I won't swear . . . that was actually the worst part of the whole thing, probably . . . . . and the baby is out and the baby is fine, which is obviously number one or number two concern, and then your partner's fine, and that's absolutely fine and everything looks great . . . . . and then she gets up to come down here and she faints, and suddenly you have this 'Oh my god this is blood loss, this is serious!' going on . . . " (Woman & Partner 2 – Partner)

They often pondered over the notion that blood loss was notoriously hard to quantify, and spoke of experiences they had where HCPs were somewhat unclear about total blood loss during their PPH:

"I didn't know I lost lots of blood, I actually asked the Midwife if I lost blood and she said no, and I was quite shocked that someone said that I lost 1200mLs, I was like, 'Oh, okay . . . ' . . . " (Woman 2)

"Um, I mean I knew there was going to be some because we were talking about the pads that [she] had to wear for a week or so after the birth but not to that kind of extent, I mean two litres is a lot and it kind of started going up because it was 'She's lost 800mLs' and then they weighed some more dressings and then 'It's probably closer to 1500mLs' and by the time we were kind of ready to leave theatres they were saying that it was actually probably about two litres." (Women & Partner 1 – Partner)

Moving away from metaphors, HCPs were perhaps more empirical in the way they liked to discuss blood loss, though often struggled to explain quantity of blood loss effectively, so relied on their training which oft involved 'weighing' the blood loss:

> "I didn't go to theatre, but cleaned up the room. It was awful, it looked as though a blood bath had taken place . . . . . One of the sisters said I was to collect as much of the blood as possible so we could weigh the clots and then know how much she had lost." (Midwife 3)

However, there were inconsistent opinions across the dataset about this practice, and about the accuracy of the methods used to weigh the blood:

> "You look at it, you have to think about not just what is blood but other water, the liquor, any other bodily fluids that have come at the same time, but mainly I never weighed . . . . . No . . . the only thing I did in terms of measurement was if there were clots or actually sometimes if I thought there was a lot actually sometimes I would scoop up what was on the bed and on the incontinence pad and put it in a jug, so I suppose sometimes I did measure it in that sense. I never weighed it, no-one ever introduced any concept of weighing." (Research Midwife 1)

HCPs therefore discussed the actual quantification of blood loss as difficult, due to the many factors by which it could be effected, such as blood captured in suction devices, blood contaminated with other bodily fluids, or blood loss occurring over different periods of time, all of which led to a less accurate appraisal of blood lost in each case of PPH:

> "I think the most difficulty was when somebody loses blood slowly, more than rapidly, if it is rapidly everybody recognises a PPH, or that it's a problem but if somebody loses blood for a couple of hours not very heavily, then that is the problem." (Midwife 1)

Accordingly, some HCPs worried that current attitudes towards birth-related blood loss were not sufficiently concerned, and that now, even large quantities of blood were being seen by obstetric and midwifery practitioners as 'nothing to worry about' or normal:

> "I don't think people are scared enough of postpartum haemorrhage, and I remember, I remember being taught by somebody who talked about obstetrics and said 'One of the things about obstetrics is it's like a bus, going downhill, without a driver, the momentum builds up and up and up and the later you are on board the harder it is to stop it, whether that's pre-eclampsia or whether that's a postpartum haemorrhage.' And I think people don't have that concept of when things are getting increasingly out of control. You know, you see 500 mLs of blood here, you see 500 mLs of blood there, but actually that's much worse because that was the first one and that's the fourth 500 mLs, so I think that concept of it accelerating and therefore you have to speed up with it just isn't imbued in everyone and so I am particularly scared of postpartum haemorrhage so . . . " (Consultant Obstetrician 2)

The final theme generated through analysis focused on the quantification of blood loss in PPH situations. Often discussed using metaphors, the quantity of blood lost was recognised as being difficult to accurately measure. Some HCPs expressed concern that attending Obstetricians and Midwives had become habituated to seeing large quantities of blood lost and therefore were not as concerned as they should be in some PPH situations. Interestingly, women and their birth partners appeared to echo this sentiment with many women and birth partners suggesting the volume of blood they were told they had lost came as a shock to them, whilst reporting that the HCPs did not seem unduly concerned. In all, these data suggest the practice of quantifying blood loss remains varied with apparent sources of error leading to inaccuracies in quantification and variation in how grave different volumes of blood loss were viewed.

Discussion

This study set out to explore the early perceptions and experiences of PPH in women, their birthing partners, and the HCPs who provided care for women with PPH. Whilst the intention was to triangulate data from the same event, and to some degree this was achieved, inevitably staff recalled and discussed other situations of PPH, and women and partners for whom the index PPH was not their only experience, recalled and contrasted all occasions of PPH. Interview data were analysed using thematic analysis [35,36], resulting in four distinct themes, related through a central organising concept of 'Explaining the indescribable'. Overall, PPH was seen by most across the whole dataset as being a crisis-style emergency, of which HCPs maintained and encouraged others to maintain a respectful fear; and of which women and their partners had little-to-no prior knowledge until the event occurred. Specific knowledge of PPH fed into how HCPs provided effective and appropriate emergency responses to this life-threatening situation and also affected how the event was communicated to women and their birth partners. Often the perception of risk associated with PPH was linked to the amount of blood loss, but the practices of how best to quantify total blood lost during PPH were varied and of questionable accuracy. In all, PPH was discussed by all participants to be a frightening event – for those who only experienced it once (such as the women and their birth partners) and for those HCPs who saw PPH as part of their routine clinical practice.

These data concur with others that women's expectations and understanding around blood loss in childbirth was limited [13,14]. The issues around accuracy of measurement and assessment of blood loss have long been reported, and discussed in the literature [5,44–46,53,54]. The feeling expressed by participants in this study that some HCPs seemed less concerned about what they perceived as large volumes of blood loss is interesting, and may be due to the fact that, by the time these final volumes are discussed, the active bleeding has been controlled and therefore the HCPs' concern was reduced as the emergency was over. This highlights the importance of whose role it is to explain processes to women and their birth partners, or who the woman and their partners should approach to answer their questions. Further consideration should be given to how and when this information is imparted, either at a formal debriefing session or informally by staff, though debriefing is variably reported amongst the childbirth-related trauma literature [15,43].

In this study, women and their partners had little insight or expectation around blood loss during childbirth, even in the parous women. Although it is a National Institute for Health and Care Excellence [NICE] recommendation [47] that all women be informed antenatally what to expect with each package of care for managing the third stage of labour and the benefits and risks associated with each, there is no clear evidence as to how detailed such explanations should be or how well this information is understood by women and their partners in the antenatal period when their focus is on the birth of their baby. In addition, the provision of antenatal education has been reduced in the UK in recent years, meaning many women are reliant on accessing private classes. For some women these are unaffordable, and for others language or literacy barriers may exist. Additionally, women with complicated pregnancies often see Obstetricians and may, therefore, miss out on midwifery contact and antenatal

preparation. Whilst there is information available through the internet, this is not reviewed for accuracy and detail, and in this study, no-one mentioned accessing information about blood loss via the internet. The women interviewed all focused on the positive aspects of pregnancy, labour, and birth; often avoiding information about emergencies or complications, which has been previously reported in other obstetric conditions such as a pre-eclampsia [48]. The importance of non-verbal communication during the emergency event was highlighted, as some women and partners felt staff body language betrayed their professional confidence [42].

Previous survey data has confirmed the need for training for staff to deal with these emergencies (Finalyson et al., 2019). Both the NHS Trusts involved in this study had annual multidisciplinary mandatory training in place for staff members (PROMPT: www.promptmaternity.org). The women's and partners' confidence in the staff to deal with this emergency is congruent with the recognised effectiveness of multidisciplinary training [49], although this confidence was not always expressed by the staff, who often stated they found managing the situation stressful. This study confirmed that both HCPs and women and their birth partners alike, considered HCP knowledge of PPH to be good and management effective. Regular multidisciplinary skills and drills training ensures that HCPs are up to date and confident in managing PPH [49], also confirming the validity of PROMPT training. Where excessive blood loss is anticipated, the need for an antenatal multidisciplinary team plan to be in place is imperative to maximise patient safety and staff confidence, even when the plan is not followed. The woman and her birth partner's engagement and understanding of the situation and need for this plan is paramount and could arguably be integrated as an essential component of multidisciplinary PPH training.

Strengths, Limitations, and Implications for Practice and Future Research

Strengths of this study are that women, partners, and the staff involved in the same event were interviewed about the experience, thus allowing for substantial triangulation of the data pertaining to specific events. Furthermore, the range of blood loss included was broad and therefore the impact of PPH at different levels was uniquely captured. Usually, only the most severe cases are investigated [5,8,11], but this study shows that even a 'moderate' PPH has a significant impact on the woman and her partner. Limitations include the inability of the research team to engage junior medical staff in the interviews. Previous work identified doctors in training as having knowledge gaps and feeling 'panic' when PPH occurs [50], but we were unable to investigate their experiences in the current study. The reasons for non-engagement are likely to be complex, potentially due to the recognised fear of being inappropriately blamed, and fear of bullying or harassment adding to the stress of emergencies leading to burn-out that could adversely affect future career opportunities [51]. Although the researchers were senior Midwives, this could have further adversely influenced the decision of junior doctors to take part in the study.

These data were collected more than 10 years ago, and whilst this could be considered a limitation, in reality, the lived experience of PPH for women and their birth partners as well as staff managing this common clinical situation has not changed. Rates of PPH have not significantly altered in the intervening years and therefore the reported findings should be considered valid, despite the passage of time since data collection.

This study confirms the confidence women and their partners feel in the HCPs managing PPH. But suggests that additional training regarding management of non-verbal cues may reduce fear for women and partners. It also raises the contentious issue of debriefing and when and whose responsibility it is to explain the event to the woman but, perhaps more importantly, the partner. This study interviewed women with various sizes of PPH, and HCPs need to be mindful that even a "small" or "moderate" blood loss is frightening for the woman and her partner. This study also highlighted that women and partners are not told, or do not hear, antenatal information about blood loss during childbirth and consideration need to be given as to how effectively, and when to impart this information.

Investigation into methods and strategies to inform women and their partners expectations around blood loss during childbirth could empower women and their partners, but further research into the most appropriate timing and detail of the information imparted is required.

Further research into the longer-term impact of PPH at all levels on women and their partners would facilitate a more comprehensive understanding of the experience and the short and medium term effects on the family. For example, associations with bonding, breastfeeding, physical and emotional recovery from the birth. This knowledge would enable the development of appropriate postnatal pathways for women who experience PPH.

Similarly, qualitative work with HCPs around the stress that ensues following a PPH could improve confidence in dealing with the situation and facilitate appropriate management of these stresses, which could further improve interdisciplinary working.

Conclusion

In the unique public health role fulfilled by Midwives, information about blood loss during childbirth needs to be imparted in a sensitive, practical manner. Consideration of when and how much detail should be given is required, especially for women without identified risk factors, given the unpredictable nature of PPH. Whilst training is mandated for all clinical staff, and the management of PPH is effective in most cases, both in terms of imparting confidence and dealing with the emergency, consideration needs to be given to the impact on the team members, which may result in improved non-verbal cues regarding the situation.

Conflicts of Interest

Annette Briley (Caring Futures Institute, Flinders University, Adelaide SA, and King's College London) is supported by Hospital Research Foundation, previously being supported by Tommy's Charity and National Institute for Health Research Collaboration for Leadership in Applied Health Research and Care South London [NIHR CLAHRC South London]. Jane Sandall (King's College London) is supported by a National Institute for Health Research Senior Investigator Award, and along with Sergio A. Silverio (King's College London) is supported by the National Institute for Health Research Applied Research Collaboration South London [NIHR ARC South London] at King's College Hospital NHS Foundation Trust. The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care.

Acknowledgement

We would like to thank all the participants for taking part in this study and acknowledge Henrietta Ballard RM for her assistance in data collection. This study was funded by the Guy's and St Thomas' Charity (registered charity number 251983), grant reference number: G070706.

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