

PROJECT DESCRIPTION

PhD protocol

Video debriefing at the delivery ward - Empowering obstetric teams to high performance



RESEARCH GROUP

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AIM

The aim of the present PhD project is to evaluate the feasibility of real-life video debriefing for improving obstetric teams' management of postpartum hemorrhage in the clinical setting. Cameras are placed in the ceiling of all delivery rooms to record videos to be used for debriefing; a technique that has been applied successfully by this research group. The overall aim is explored in four studies:

1. Patient perspective. Birthing women and their relatives' experience of care during postpartum hemorrhage.
2. The feasibility and implementation of real-life video debriefing of emergency obstetrics.
3. Whether management of postpartum hemorrhage improves within 12 months after the introduction of real-life video debriefing.
4. The obstetric teams' ability to self-assess their own clinical performance using a telephone app.

BACKGROUND

Video review was first introduced in healthcare in the 1980s to improve emergency teams' management of critical situations by having them review their own performance on video in a debriefing session. Video debriefing offers an opportunity to review the care delivered in high-stake, high-risk, and time-critical situations, not only by the team itself but also by other teams¹⁻⁴. Video debriefing has been found to improve the performance of neonatal resuscitation teams^{1,5-7} and trauma teams²⁻⁴; however, video debriefing has not generally been accepted in the delivery ward⁸. Barriers to implementation of video debriefing of real-life scenarios seem to include obtaining informed consent and the risk of malpractice lawsuits where video can be used in evidence⁸. However, a recent PhD project, TeamOBS^{9,10} has identified ways of overcoming these barriers^{9,10}. The TeamOBS project developed a method for systematically filming obstetric emergencies, in two Danish hospitals, where informed consent had been obtained from all participants. In addition, the TeamOBS project developed a method for systematically assessing obstetric teams' clinical performance during postpartum hemorrhage^{9,10}. Postpartum hemorrhage continues to be the leading cause of maternal morbidity and mortality worldwide¹¹⁻¹⁴ and has been on the WHO's priority list for health issues for more than a decade. Successful management of postpartum hemorrhage requires not only administration of the right medicine, but also a rapid and coordinated response from a multi-professional team¹⁵⁻²¹. A prerequisite for this is that the individuals are well trained, which we believe can be improved by video debriefing of real-life events. In addition to teams' clinical management of postpartum hemorrhage, patient communication is considered an important factor in patient care in this situation, as postpartum hemorrhage is a potentially life-threatening situation and can be a traumatic event for both the woman and her relative. However, little is known about how women and relatives experience care during postpartum hemorrhage and which factors they consider most important^{22,23}.

STUDY 1: Womens' experience of care during postpartum hemorrhage

Objective

The objective of the present study is to examine women and their relatives' experience of care during postpartum hemorrhage.

Hypothesis

Women and their relatives need more information during postpartum hemorrhage than currently provided.

Material and methods

Design

Explorative, semi-structured individual interviews of the women and relatives²⁴⁻²⁶.

Settings

Obstetric departments at Aarhus University Hospital and Regional Hospital Horsens.

Population

N = 15 women (and relatives) who experiences major postpartum hemorrhage (>1.0 liter) during the study period.



Procedure

Potential participants and their relatives will be recruited selectively in order to establish a purposive sample. Potential participants will be provided with verbal and written study information by the PhD student immediately (daytime) after birth, when admitted to the maternity ward. Upon consent, an interview will be arranged for a time and place of the participant's choice – ideally less than one month after birth to limit recall bias. The PhD applicant will conduct the individual interviews under supervision and an anthropological approach will be used for developing a semi-structured individual interview guide. Questions are expected to include expectations of giving birth, experience of care during postpartum hemorrhage, need for information, pain relief, noise issues and attitudes towards video recording. The material will be analyzed using thematic analysis²⁷.

Outcome

The woman and her relative's experiences (a qualitative analysis).

Results

A paper describing and analyzing women and relatives' experiences of care during postpartum hemorrhage.

Perspective

The study will provide insights into which factors the women/relatives consider important in patient care, during postpartum hemorrhage and how women/relatives experience the care given. The results will be included in video debriefing performed in Study 3 to ensure the patients' views are represented, for team reflection.

STUDY 2: Developing and implementing real-life video debriefing of postpartum hemorrhage

Objective

To analyze the feasibility and implementation of real-life video debriefing of team performance in an obstetric department.

Hypothesis

Real-life video debriefing at the delivery ward is feasible and acceptable to the staff.

Material and methods

Design

Feasibility study.

Settings

Obstetric departments at Aarhus University Hospital and Regional Hospital Horsens.

Population

Labor ward midwives/physicians.

Procedure

A preliminary protocol for real-life video debriefing will be developed in study 3 and will include results on women's perspectives from study 1. The feasibility study focuses on (1) evaluation of recruitment capability, (2) evaluation of data collection procedures and outcome measures, (3) evaluation of the acceptability and suitability of the intervention, (4) evaluation of the resources and ability to manage and implement the intervention, and (5) preliminary evaluation of participant responses to the intervention²⁸. Using a systematic approach, the experience when implementing real-life video debriefing of obstetric team performance will be documented. The feasibility of the intervention and whether the intervention is appropriate (objective 1, 2 and 4) will be evaluated through qualitative data from field and research meeting notes as well as through quantitative data with preliminary evaluation of outcome measures. The acceptability and suitability of the intervention (objective 3 and 5) will be evaluated through



qualitative data from explorative group interviews of participants before and after initiation of debriefing^{28,29}, as well as indicators of the participants engagement in the process from field and research meeting notes²⁸.

Outcome

The researchers' experiences of implementing real-life video debriefing and preliminary examination of participants' responses to the intervention (a qualitative description).

Results

A paper describing implementation and feasibility of real-life video debriefing in an obstetric department.

Perspective

Following the feasibility study, the researchers will identify strategies to address the noted challenges and/or revise components of the intervention prior to designing the final intervention study (Study 3).

STUDY 3: Video debriefing to improve teams' management of postpartum hemorrhage

Objective

To examine the effect of real-life video debriefing on obstetric teams' management of major postpartum hemorrhage.

Hypothesis

Teams' management of postpartum hemorrhage improves after implementation of video debriefings in two Danish Hospitals.

Material and methods

Design

Intervention study.

Settings

Obstetric departments at Aarhus University Hospital (5,000 deliveries per year) and Regional Hospital Horsens (2,300 deliveries per year).

Population

N = 220 video recordings of women with major postpartum hemorrhage (>1.0 liter).

Technical solution

Since 2015, all delivery rooms in both hospitals have been equipped with an automatic recording system that enables filming of all critical incidents. This system was developed to minimize video recording of normal deliveries as we record only when the physician is present. Previous studies describe how a Bluetooth chip placed in the attending physician's phone activates the cameras when the physician enters the delivery room⁹.

Ethical and legal requirements

Video recording requires informed consent from all participants. Women expecting to deliver will be invited to provide informed consent for video recording. If a woman declines the invitation, the cameras will be covered up according to our protocol. If video recording occurs, all participants will be asked to give informed consent again.

Video debriefing

Video debriefing will be conducted by educated facilitators of debriefing. To ensure standardized debriefings, all debriefers will be further educated from Stanford University to use an established debriefing method³⁰⁻³³. Debriefings will follow a protocol and will focus on teams' clinical performance and non-technical skills. The protocol for debriefing will be guided by empirical findings in the feasibility study (Study 2) and include results on women's



perspectives (Study 1). The main focus of the protocol will be clinical debriefing with a main goal of improving clinical performance and patient care.

Assessment of videos

The videos will be assessed by raters using validated assessment instruments. The obstetric teams' clinical performance will be assessed by two senior obstetricians using the *TeamOBS-PPH* checklist^{9,10}. Non-technical performance (teamwork, leadership, and communication) is assessed by two trained non-technical raters using the *AOTP*³⁴ checklist. Possible confounders like bleeding velocity, hemorrhage etiology, time of day, team size, and hospital type will be collected from patient charts and videos.

Time of inclusion

Based on our calculation, videos will be included as follows: 1) Video inclusion, before introducing real-life video debriefings of team performance (n=100); 2) During the start-up of the debriefings (n=20) which will be used in the feasibility study (study 2); 3) After real-life video debriefings have been introduced as standard procedure (n=100).

Outcome

Clinical performance score (TeamOBS-PPH), non-technical performance score (AOTP), total blood loss (mL) and number of debriefing sessions performed (in total / per participant / failed attempted sessions).

Statistics

The number of teams is based on a power calculation performed in a previous study of 99 videos of postpartum hemorrhage^{9,10} with a power of 0.80, assuming that video debriefings will increase the percentage of high-performance procedures performed from 0.67 to 0.85. Agreement between raters assessing performance scores will be identified by the intraclass correlation and Bland-Altman analysis. A non-paired T-test will be used to test the main hypotheses. Our results will be tested for potential confounding variables. Statistical Professor Erik Parner from Aarhus University will supervise all statistical calculations.

Results

A paper describing the impact of video debriefing on team management of postpartum hemorrhage will explore the following outcomes: Clinical performance, non-technical performance, and total blood loss.

Perspective

If team management of postpartum hemorrhage is improved, this model can be introduced in other hospitals.

STUDY 4: Expert assessment versus self-assessment of clinical performance during hemorrhage

Objective

As expert assessment using videos is expensive and time-consuming, structured self-assessment of clinical performance using the *TeamOBS-PPH* app is an attractive alternative. The objective of the present study is to examine the obstetric teams' ability to self-assess their own clinical performance using a telephone app.

Hypothesis

Expert assessment is superior to team's self-assessment of their own clinical performance.

Material and methods

Design

Observational study - video review.

Settings

Identical to study 3.



Population

N = 60 video recordings of women with major postpartum hemorrhage (>1.0 liter).

Procedure

As described in Study 3, all videos are assessed by two experts using the *TeamOBS-PPH* checklist^{9,10}. In the delivery ward prior to the intervention study (study 3), teams will be briefed to use the *TeamOBS-PPH* app for self-assessment of their clinical performance. The assessment will be done in a team debrief conducted within 12 hours from the respective recorded hemorrhage.

Outcome

Clinical performance score (TeamOBS-PPH).

Statistics

The number of teams is based on a power calculation of a previous study of 99 videos of postpartum hemorrhage^{9,10} with a power of 0.80, assuming that a disagreement <15% is acceptable. A paired T-test will be used to test the main hypotheses. Statistical Professor Erik Parner from Aarhus University will supervise all statistical calculations.

Results

A paper describing the obstetric teams' ability to self-assess their own clinical performance.

RESEARCH PLAN AND DOCUMENTATION

The PhD project is expected to start in October 2020. The plan below shows when different parts of the project are expected to be carried out. The PhD student will be attending PhD courses and teaching activities continually.

			2020	2021	2022	2023
Enrolment						
Study 1						
Study 2						
Study 3						
Study 4						
Exchange						
Dissertation						

A detailed description is provided in the initial PhD plan.

FUTURE DIRECTIONS

This project is the first to evaluate the implementation, feasibility and use of real-life video debriefing in obstetric care. Results from this project can revolutionize our ability to learn from clinical cases and can guide how video can be introduced in ways acceptable to women, relatives and healthcare providers. Furthermore, this project addresses the perspective of the women and their relatives during emergency obstetrics and integrates the experience and knowledge into team debriefings.

APPLICANT'S PART IN THE PROJECT

The applicant will be responsible for the organization of the project and application for the requisite permissions. In the context of the qualitative studies, the applicant will be responsible for the feasibility study (in cooperation with the research group), developing interview guide and performing interviews (in cooperation with an anthropologist), obtaining consent, transcribing data, and performing thematic analysis. In the context of the quantitative studies, the applicant will be responsible for obtaining consent, downloading recorded videos, performing video debriefing (in cooperation with supervisors), performing data management and statistical analysis. The applicant will participate in developing the debriefing protocol and will participate in video assessments. The PhD student will be the first author of all five articles.



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