Reproductive Health

STUDY PROTOCOL

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Improving the process of evaluating the quality of care in "maternal near miss" at hospital level: an action research study protocol

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Abstract

Background The fifth Millennium Development Goal aims to improve maternal health by reducing maternal mortality by 75% from 1990 to 2015. Consequently, utilizing quality care indicators and performance evaluations is crucial for providing effective services. This study aimed to evaluate the quality of care for critically ill mothers in hospitals through action research.

Methods/design This study involves action research utilizing reform cycles, including focus group meetings with the head of the midwifery office, maternity hospital officials, gynecologists, and midwives from Mashhad University of Medical Sciences. Following a severe morbidity incident resulting in maternal death, a hospital meeting will convene to investigate the root causes. This committee will review the hospital records from the mother's admission to discharge to identify necessary preventive measures against malpractice. Sampling is purposeful. Sample size will be determined by data saturation. The project's final results, along with participant feedback, will inform the planning of the second action research cycle, which will encompass planning, implementation, observation, and reflection. The final report will be submitted to officials for approval, and the number of invitees for subsequent meetings will be based on study findings, facilitating discussion and decision-making for ongoing processes. Ultimately, the final care quality assessment process will be prepared for presentation.

Discussion In many birth blocks, women experiencing severe complications from pregnancy and childbirth face similar health issues. Quality care is essential for global strategies aimed at eliminating avoidable deaths.

Ethical code IR.MUMS.NURSE.REC. 1402.024.

Keywords Maternal near miss, Sever maternal morbidity, Quality of care, Action research

Plain Language Summary

In many regions, women facing severe complications during pregnancy and childbirth share similar health challenges. These mothers often either die or come "close to death," and understanding this process can help prevent future cases. "Mothers close to death" refer to those who experience life-threatening complications but survive through pregnancy, delivery, and up to 6 weeks postpartum. The fifth Millennium Development Goal aims to enhance

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maternal health, with two main objectives: (1) reduce the maternal mortality rate by 75% from 1990 to 2015, and (2) achieve universal access to reproductive health by 2015. Following 2015, the Sustainable Development Goals set a target of reducing maternal deaths to below 70 per 100,000 live births by 2030. The assessment of maternal health now focuses not just on statistics but also on the quality of care. Thus, quality care indicators and performance evaluations are essential for improving services. Severe maternal morbidity is a critical indicator for enhancing maternal care by identifying weaknesses and areas needing improvement. This study aims to evaluate the care quality for "close to death" mothers in hospitals through action research. By addressing current challenges, we aim to identify causes and preventable factors contributing to maternal deaths. The study will explore obstacles in evaluating quality services for mothers in critical condition and seek agreed-upon solutions. It will involve reform cycles and focus group meetings with the provincial midwifery office head, maternity hospital officials, gynecologists, and midwives from Mashhad University of Medical Sciences-affiliated hospitals.

Background

In recent years, prioritizing mothers' health has become crucial for ensuring healthy pregnancies and access to quality healthcare information and services [1]. The fifth Millennium Development Goal aims to improve maternal health, focusing on two objectives: reducing the maternal mortality rate by 75% between 1990 and 2015 and achieving universal access to reproductive health by 2015 [2]. After 2015, the Sustainable Development Goals set a global aim to reduce maternal deaths to fewer than 70 per 100,000 live births by 2030 [3, 4]. To address this issue, the World Health Organization introduced the "beyond numbers" approach in 2004, emphasizing the need to identify the underlying causes of maternal deaths rather than merely counting them. This shift has turned the examination of maternal health indicators from numerical data to a greater emphasis on the quality of care [5]. Consequently, quality care indicators and performance evaluations are crucial for delivering effective services [6]. Severe maternal morbidity is a key indicator for enhancing maternal care quality by pinpointing areas needing improvement [7]. Many women experiencing severe complications during childbirth face similar morbidity causes [8]. "Mothers close to death" are those who survive life-threatening complications during pregnancy and the postpartum period but remain critically ill [9, 10]. The persistence of this rate not only hampers the achievement of sustainable development goals but also constitutes a violation of human rights [11]. These mothers often leave hospitals under adverse conditions, burdened by long-term social, economic, and physical consequences [12, 13]. Identifying these women and implementing necessary interventions to prevent avoidable risks is a fundamental right for all women [11, 14]. However, without ensuring quality service delivery, these interventions are unlikely to improve maternal health [15, 16], as evidenced during the Covid-19 pandemic in many countries [17–19]. This study aims to enhance the quality of care for "mothers close to death" through action research focused on identifying and addressing avoidable causes of maternal death, representing a significant step forward.

The main goal

To enhance the evaluation process for quality services provided to mothers nearing death in hospitals.

The project's practical objectives

Developing guidelines to address existing deficiencies and clarify implementation strategies at all levels. The researchers aim to conduct action research to improve the quality of care evaluation for mothers close to death in hospitals by:

- Accurately mapping out the stages and processes involved in assessing mothers nearing death, from the Ministry of Health to hospitals.
- Integrating educational materials, such as protocols and standards, in all hospitals.
- Implementing a pilot program in each hospital to address local challenges.
- Evaluating the quality of committees organized by the Ministry of Health and developing relevant checklists.
- Anticipating potential challenges and proposing effective solutions.

Specific goals of the plan

1. Identify obstacles and issues related to evaluating quality services for mothers near death in hospitals.
2. Present suitable and agreed-upon solutions for this evaluation process.
3. Analyze how action research can improve quality service evaluations for mothers nearing death in hospitals.

Research inquiries

1. What obstacles and challenges exist in evaluating quality services for mothers near death in hospitals?
2. What suitable and agreed solutions apply to evaluating these services?
3. Is action research effective in enhancing the quality care assessment for mothers nearing death in hospitals?

Methods/design

Study design

This research employs the Kemis and Taggart model for action research, following the four key steps: 'Plan', 'Act', 'Observe', and 'Reflect'. Action research is based on the premise that knowledge arises from action, and understanding the social world entails efforts to change it. This approach recognizes that much of people's experiential knowledge is often implicit and requires emphasis. Such tacit knowledge gained through experience can offer practical solutions to specific problems and is acquired either individually or collectively during problem-solving.

Action researchers advocate for the production of theory through action, rather than using established theory solely for informed action. Unlike applied research, which focuses on solving specific problems and generalizing findings, action research operates within real contexts, aiming to address problems systematically through intervention. It involves critical inquiry, collects documented information, and has a defined question guiding the process. Action research is characterized as a strategic, intentional, and purposeful movement that embodies social commitment and aims to create knowledge applicable to similar contexts.

Research method: This study employs action research based on the Kamis and Taggart model, following four primary steps: 'Plan', 'Act', 'Observe', and 'Reflect'.

First step: diagnosis and planning

In this phase, relevant information, documents, and evidence reflecting the current situation were gathered and analyzed. After the intervention, the evidence is re-collected and compared to assess the intervention's effectiveness. A thorough and precise data collection enhances the likelihood of identifying suitable solutions. The researcher compiles a list of potential solutions, supported with justifications. This stage encompasses a clear problem statement, data collection, review of existing studies, and the development of the intervention plan. It details the environment from which the sample is drawn, the sampling method, participant characteristics and selection process, as well as data collection and analysis techniques. The planning phase is further elaborated based on findings from the interview analyses.

Research environment

The qualitative study will be conducted in real-world settings where participants live and share their experiences, or in locations they choose. Conducting interviews at appropriate times and places can enhance participant cooperation. This study will involve midwives in hospitals and extend to maternity hospital officials, gynecologists, educational supervisors, matrons, hospital heads, and high-ranking officials from the university and the Ministry of Health. To ensure participant comfort, data collection will occur in locations they find desirable and appropriate, respecting their privacy and encouraging openness in sharing their experiences. Individual and focus group interviews will be held in quiet, private environments where confidentiality can be maintained. The research will be based in hospitals affiliated with Mashhad University of Medical Sciences.

In qualitative research, a suitable sample includes participants who can provide valuable insights relevant to the study's objectives. Participants should have a solid understanding of the phenomenon and be willing to share their perspectives. The chosen sampling method emphasizes maximum variation, purposefully selecting a diverse range of participants to capture a broad array of experiences and views. In this study, participants are selected for their first-hand knowledge and relevant experiences related to the phenomenon being investigated.

Participants and Selection: This study included midwives from hospitals affiliated with Mashhad University of Medical Sciences, as well as the chairperson of the maternal mortality committee, hospital committee secretaries, the high-risk mothers committee secretary, the matron, the hospital's clinical supervisor, and the head of the midwifery department. Treatment assistants also played a role. Additionally, mothers who experienced near-death situations were invited as guests in quality assessment sessions. An experienced midwife typically serves as the coordinator to ensure stability during these meetings. Proper identification of participants enhances the reliability of interviews with women and their families. Meeting attendees include staff involved in maternal case reviews, such as midwives, gynecologists, obstetricians, anesthesiologists, neonatologists, and laboratory experts. Interviewing mothers who have experienced near-death situations requires their informed consent and understanding of the interview's purpose. Principles of independence (voluntary participation and the right to end the interview at any time) and privacy (confidentiality of the interviewee's identity in reports) must be upheld. Patients may feel more comfortable discussing

their care after some time has passed since discharge. The interviewer should focus on collecting women's perceptions of the care received, without formally documenting feedback. Understanding the "real" experience of care is crucial for evaluating incidents, improving performance, and enhancing quality. A facilitator with appropriate clinical experience should promote group discussions to identify areas needing improvement. Comparing the case management process with existing guidelines helps participants appreciate the significance of adhering to clinical standards and enhances their understanding and application of relevant documentation while working.

Data collection methods

Qualitative studies commonly employ various data collection methods such as group or individual interviews, observation, diaries, and other documents to gather information.

The qualitative data collection method in the first round of action research for this study included:

Focus group meetings, where photos and minutes will be recorded for reporting. These meetings will involve the head of the provincial midwifery office, heads of maternity hospitals, gynecologists, and midwives from hospitals affiliated with Mashhad University of Medical Sciences. Following a severe morbidity incident resulting in maternal death, a committee meeting is convened in the hospital to investigate and analyze the root causes of the event. This committee reviews the hospital file to identify all actions that should have been taken to prevent malpractice, extracting avoidable factors to prevent similar occurrences in the future. The individual who experienced a near-death incident will also be present to share their perspective on care deficiencies.

The meeting will blend expert opinions with the mother's insights to propose improvements in care quality. Initially, the atmosphere will be made comfortable to foster trust, starting with general questions, introductions of participants, and a brief overview of their professional backgrounds. Then, group interview questions will be posed, recalling the research purpose and asking for experiences related to quality improvement sessions for near-death mothers. Sample questions include:

- What do you perceive as the strengths and weaknesses of the quality assessment sessions for near-death mothers, and why?
- If you have relevant experiences regarding the outcomes of these issues, please share.
- What do you identify as the root causes and areas contributing to the lack of quality in evaluating care for near-death mothers?
- What solutions have you proposed to address these problems?

At the end of the interview, participants will be asked if they believe any important issues remain for discussion. The session will conclude with a note on the need for possible follow-up to clarify ambiguities and a thank you for their participation. Additionally, individual semi-structured or unstructured interviews may be conducted with each research unit as needed. All group and individual interviews will be recorded, and the researcher will transcribe them verbatim after each session. Following a detailed study and preliminary analysis of each interview's text, subsequent interviews will be scheduled. Since some midwives may be reluctant to discuss certain topics in a group setting, they will be invited to share their experiences and opinions in writing, anonymously if preferred. Data collection will also involve observation of educational contexts, printed diaries, documents, as well as information gathered through internet resources, and written and oral reports from midwives and others involved in severe maternal complications or close to mothers at risk of death.

Quantitative data of the study

This study will draw from clinical guidelines for evaluating the quality of care for critically ill mothers in European hospitals, the region with the lowest maternal mortality and near-death rates. Prior to implementing action research in 2019, the current performance of these guidelines will be reviewed to identify necessary reforms within 1 year after the intervention. Researchers will use a self-created checklist, validated through content validity by seven professors from the University of Medical Sciences and experts in the field, with its reliability assessed using Cronbach's alpha. Each checklist item will be scored as follows: 0 = totally inappropriate quality, 1 = major problems, 2 = minor problems, and 3 = good quality. Items will be categorized with a total score, allowing determination of an average score.

- The performance of hospital workers will be assessed in the initial stage of action research and compared to similar results obtained after the intervention.
- In the first phase of the action research, the quality care evaluation programs for critically ill mothers in other countries will be reviewed.
- Researchers will communicate with participants through the project manager, who will coordinate all project stages, including focus group meetings and interviews, while overseeing evaluations.

Qualitative data analysis will occur concurrently with data collection, employing a conventional content analysis process. This process involves: (1) defining the content of the analysis, (2) identifying the unit of analysis or semantic unit, (3) compressing and summarizing information while forming codes, (4) classifying codes into subclasses, (5) consolidating subclasses into broader classes, and (6) developing themes through inductive reasoning based on the relationships and meanings within the classes. The researcher's interpretations will culminate in the final themes. MAXQDA software will be utilized for this analysis.

In the initial step of action research, alongside problem identification and prioritization, the quality of care evaluation sessions for mothers nearing death will assess the type and level of intervention. The brainstorming method and nominal group technique will be employed. During this qualitative phase, the researcher will pose questions to gather insights from the mothers and midwives involved, which will then undergo standard qualitative content analysis. The findings from these interviews will inform the identification of the main problem and potential solutions. Additionally, to address quality care assessment challenges, insights from countries aligned with World Health Organization goals will be examined. This information will be compared with domestic programs to develop effective solutions.

The first step: planning

The findings from the qualitative phase, along with a review of international studies from countries with the lowest maternal death rates and highest-quality maternal care, will guide the preparation of a prioritized checklist of obstacles, facilitators, and factors affecting educational quality. A focus group with at least 10 participants will be conducted to present the qualitative results and checklist, gathering feedback on necessary interventions to improve the process. The researcher, with participant input, will then develop an actionable plan for implementation.

The second step: implementation

In this phase, the approved measures will be executed as per the action plan. The researcher will engage with participants to gather feedback throughout the process. Key stakeholders, including midwives, the head of the maternal death committee, and hospital committee secretaries, will be informed of all action dimensions. All implementation steps will be meticulously documented, and regular quality assessments will be conducted to ensure the process remains effective, with approvals obtained at the hospital level.

The third step: observation

In this phase, alongside the intervention, continuous monitoring of data collection, intervention oversight, data classification, analysis, and feedback to the research team occurs. Group decisions, involving all participants under the supervision of the researcher and the supervising team, guide the implementation of measures, which will be regularly reviewed and adjusted as necessary. To assess the primary goal of enhancing care quality evaluation, the researcher will utilize a checklist.

The fourth step: rethinking

In objective research methods, the researcher investigates impartially; however, in action research, the researcher plays an active role and collaborates with others to address the problem. This collaboration between the researcher and problem owners is crucial for action research success. They rely on each other's experiences and skills, working closely to identify solutions and generate new insights. During the reflection stage, the researcher presents a report on all actions taken and their outcomes to experts and stakeholders, facilitating discussions on the findings' value and potential program modifications. The researcher analyzes intervention results based on collected data, documenting all stages and outcomes, thus preparing a comprehensive preliminary report to inform participants and gather their feedback.

Rethinking involves analyzing one's thoughts, essentially a conversation about thinking. It encompasses the review and revision of events, experiences, and situations to enhance understanding. This process entails reflecting on personal experiences, gathering information, reevaluating them, and ultimately leading to solutions, ideas, improvements, and changes. Simply experiencing events doesn't guarantee learning; deliberate rethinking, coupled with reflection, is essential. To enhance the study's validity, precise writing about rethinking is crucial. There are three types: rethinking content, process, and hypotheses.

The Gibbs rethinking model is a well-known framework with six stages:

1. Description: what occurred? Consider the what, where, when, who, and how. Reflect on your actions and the context.
2. Emotions: What were your initial thoughts and reactions? Did your feelings evolve? What do they reveal about you?
3. Evaluation: Assess the experience's positives and negatives. Identify what was enjoyable, upsetting, or unhelpful, and consider what improvements were needed.

4. Analysis: Evaluate your perception of the situation. Compare theory with practice and examine similarities and differences with other experiences. Reflect on the choices you made and their consequences.

Conclusion: What additional actions did you take? What lessons did you learn for the future? What further steps should you consider?

Action research: What will you do next time? How will you respond if the same situation arises?

The project's final results, along with participants' feedback, will inform the planning of the second cycle of action research, which will include planning, implementation, observation, and reflection. The final report will be submitted to the authorities for approval, and during meetings, the number of attendees will be determined based on the study's findings. These findings will be discussed to make informed decisions on how to proceed, and the final version of the care quality assessment process will be prepared for presentation. The action research cycle will be conducted twice over two consecutive years.

Main measurable outcomes: The study will take place in the hospital where a meeting was held to investigate the maternal morbidity committee. This meeting included the head of the midwifery department, a project partner, and was designed to collect qualitative data through interviews.

Research environment

The qualitative study will take place in real-world settings where participants live and have experiences. Participants have indicated that conducting interviews in suitable locations and at appropriate times enhances their cooperation (33). Sampling will begin with midwives in hospitals, then include officials from maternity hospitals, gynecologists, educational supervisors, heads of hospitals, and senior officials from the university and the Ministry of Health. To ensure participants' comfort, data collection will occur in locations they deem appropriate, preserving their privacy and encouraging openness in sharing experiences. All individual and focus group interviews will be held in private, quiet spaces where confidentiality can be maintained. The research will focus on hospitals affiliated with Mashhad University of Medical Sciences.

Sampling

A suitable sample in qualitative research consists of participants who can provide valuable insights relevant to the study. Participants must possess a clear understanding of the phenomenon and a willingness to share their thoughts. Typically, sampling involves maximum variability, purposefully selecting a diverse sample across different dimensions (33). In this study, participants are chosen based on their firsthand knowledge and experience related to the phenomenon.

Participants and selection

This study will involve midwives from hospitals affiliated with Mashhad University of Medical Sciences, the head of the maternal mortality committee, secretaries of hospital committees, the matron, clinical supervisors, and the head of the midwifery department. Additionally, mothers who have experienced a "near-death" incident will be invited to participate in quality assessment sessions. A coordinator, typically an experienced midwife or facilitator, will help guide these meetings. Correctly identifying these participants enhances the reliability of interviews with mothers and their family members. Invitees will include medical staff involved in the review of maternal care cases, such as midwives, gynecologists, anesthesiologists, neonatologists, and laboratory experts. Mothers selected for interviews should fully understand and consent to participate, with principles of independence (voluntary participation, right to withdraw) and privacy (anonymity in reports) strictly adhered to. Patients may feel more comfortable sharing their experiences after some time has passed since discharge. The interviewer's role is to gather women's perspectives on the care received without formally reporting feedback. Capturing genuine care experiences is vital for performance assessment and quality improvement. A clinically experienced midwife will facilitate group discussions to identify areas for enhancement. Participants will also compare case management processes against existing guidelines, improving their understanding and application of clinical standards.

Data analysis

It involves qualitative methods conducted alongside data collection. The analysis follows a conventional content analysis process, which includes: (1) identifying the content to be analyzed, (2) determining the unit of analysis or semantic unit, (3) compressing, summarizing, and coding the data, (4) classifying codes into sub-classes, (5) forming classes from these sub-classes, and (6) developing themes through inductive reasoning based on the relationships among the classes and their meanings. The researcher's interpretations will finalize these themes. MAXQDA software will be utilized for qualitative data analysis. The sample size will take 18 months to achieve.

Intervention/exposure/main outcome group: None.

Control group(s) (placebo, no placebo): None.

Criteria for entering the study:

Qualitative research requires a sample of participants who can provide valuable insights based on the study's objectives. Participants must have a clear understanding of the phenomenon and be willing to share their thoughts. Maximum variability sampling, which involves purposefully selecting individuals with diverse experiences related to the topic, is commonly used in qualitative studies. Participants are chosen for their firsthand knowledge or specific perspectives on the phenomenon in question. This study will use purpose-based sampling.

Exclusion criteria:

Any unwillingness to cooperate.

Study execution platform and data collection locations:

In this study, following a severe morbidity incident resulting in a mother's near-death experience, a committee meeting will convene in the hospital to investigate the incident. This committee will review the hospital records, examining all actions from the mother's admission to her discharge to identify preventive measures that could have avoided malpractice. Discussing these failures will help highlight areas for improvement in maternal care for future evaluations. The qualitative research will take place in real-world settings where participants reside or in locations they choose. Participants believe that interviewing in comfortable locations at convenient times will enhance cooperation. Data collection will begin with midwives in hospitals and extend to maternity hospital officials, gynecologists, educational supervisors, and senior officials from the university and the Ministry of Health. To ensure participants' comfort, data collection will occur in locations of their choosing, respecting their privacy and fostering an environment where they can freely express their experiences. All individual and focus group interviews will take place in discreet settings where privacy is maintained. The research will be conducted in hospitals affiliated with Mashhad University of Medical Sciences.

Discussion

To assess the quality of care for severe pregnancy and childbirth complications, the World Health Organization outlines a two-stage entry criterion. First, it identifies mothers with potentially life-threatening conditions, such as severe postpartum hemorrhage, preeclampsia, eclampsia, sepsis, uterine rupture, and complications from abortion or ectopic pregnancy, that require intensive care, radiological interventions, or laparotomy unrelated to cesarean sections. Second, it categorizes life-threatening conditions into "mothers close to death" and "mother's death," where mothers experience organ dysfunction (e.g., cardiovascular, respiratory, kidney, coagulation, liver, or neurological issues) [9].

A 2001 study in England recorded the incidence of mothers close to death at 12 per thousand live births [20]. Recent studies in Brazil documented rates between 1.41 [21] and 12.8 per thousand live births [22], while in India, the rate was 1.15 per thousand live births [23]. Research from Iran is limited; a 2013 study in southern Iran reported 2.25 per thousand live births [24], and another in Alborz in 2012 noted 4.97 per thousand [25]. Continuing high rates of mothers close to death followed by maternal mortality hinder sustainable development goals and violate human rights, as all women deserve interventions to address avoidable maternal death factors [11].

Furthermore, evidence indicates that implementing necessary interventions without ensuring high-quality services does not improve maternal health [15, 16]. Quality care is crucial to global efforts to end preventable deaths [26, 27]. Consequently, many countries have assessed maternal care quality to reduce mortality [28–30]. However, evaluations often fall short of standards, necessitating comprehensive reviews to enhance outcomes and improve care quality, ultimately aiming to identify and mitigate causes of maternal mortality and prevent recurrence of similar cases.

Acknowledgements

We thank the volunteer participants for sharing their experiences and giving their time and help to make this study possible.

Author contributions

A, S.M, and TKH contributed to the design of the protocol. S.A, T.KH contributed to the implementation and analysis plan. S. A, S.M, Sh. B, and TKH have written the first draft of this protocol article and all authors have critically read the text and contributed with inputs and revisions.

Funding

This Study is funded by Mashhad University of Medical Sciences.

Availability of data and materials

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

Written informed consent will be obtained from each participant. This protocol has been approved by the Ethics Committee of the Mashhad University of Medical Sciences, Mashhad, Iran (code number: IR.MUMS.REC. 1402.024).

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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Received: 6 November 2024 Accepted: 28 November 2024
Published online: 04 December 2024

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