Original Article

# Mobile App for Rating Health Care Facilities and to Report on Respectful Maternity Care in Public Sector Hospitals: A Pilot Study

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**Abstract**

Over the past two decades there has been a substantial reduction in maternal mortality World over due to various strategies adopted to reduce the same. One of the strategies was institutionalizing child birth and at present in India 85% of the births takes place in medical settings. This has led to overcrowding of health care facilities and disrespect and abuse (D&A) surfaced, making it necessary to preserve Respectful maternity care (RMC) which has become one of the integral part of maternal and child health programmes. The standards as categorised by Browser and Hill (2010) are cumbersome and require long hours to collect data to assess RMC. There is a need for simple methods of knowing D&A so that measures can be taken to correct and eliminate the same. We developed a simple App for assessing quality of health care facilities and reporting D&A and did a study to pilot test the App involving postpartum women and Birth companions. Overall the prevalence of D&A was 47% and the most common type was non-dignified care.

**Key Words:** Postpartum women, Birth companion, Disrespect and Abuse, Mobile App, Quality circle.

## Introduction

Respectful maternity care (RMC) is a quality health care initiative undertaken globally to address disrespect and abuse faced by women especially during pregnancy and child birth. The prevalence of disrespect and abuse (D&A) is reported to be as high

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as 97% in developing countries like Africa, Pakistan and India[1]**.** The literature shows that the prevalence of disrespect and abuse (D&A) during childbirth is high in public hospitals[1,2],[3]. Women suffer in silence and do not come forward to share their experiences of D&A with the care givers or the administrators because of fear of more abuse and denial of treatment. This is a major concern and challenge for Institutions to tackle, ***as per WHO if women experience D&A they may not come to health care facility and remain at home risking their lives and their new born lives***.

The current goal is to reduce 'Maternal Mortality Rate' (MMR) to less than 70 /100,000 live births by 2030 and neonatal mortality to 12/1000 and if D&A prevails it may not be possible to achieve the goal[4]. Hence there is a need to know the prevalence of D&A, develop simple mechanisms to report it and tackle the same so as to protect the reproductive rights of child bearing women and promote Respectful Maternity care (RMC).

The largest systematic review which evaluated the validated tools for measuring child birth experiences found 36 instruments but these are cumbersome and not simple though scientifically sound. They recommended that the researchers should adopt on the existing tools and improve up on them to fit in to their region and objectives of the research [5]. The aim of this publication is to describe the development and pilot testing of the mobile App to report D&A and to rate the health care facilities and to find out the prevalence and the type of D&A experienced by women in labour and immediate postpartum using Mobile App. This is a part of the project entitled "***Actions louder than words: development and evaluation of a curriculum for health professionals and a mobile phone app for intrapartum women to actualize respectful maternal care (RMC) in India*** 'SPARC (Project No. 862) IIT, Khargpur, India.

## Methodology

**Setting:** The study was conducted at a tertiary care Institute, in India with infra-structure and facilities for practicing and promoting RMC and a consent form for birth companion participation is also available. The policy of birth companionship was officially introduced one year prior to the commencement of this study.

The approvals for undertaking the project were taken at the site of the study, i.e., JIPMER Jawaharlal Institute of Postgraduate and Medical Education and Research ,(Ethical approval-JIP/IEC/2019/340) a tertiary care Institute, South India and it was registered under ICMR (Approval: 2020-9548 /F1) as per the requirements to conduct the project. This was a mixed method study and had six primary and one secondary objective. The Participants were different for each Objective. The primary objectives were 1. To determine the proportion of women treated with Disrespect and Abuse and identify the type of disrespect and abuse experienced in the immediate postpartum period *among women who gave birth* at JIPMER's Women and Children Hospital (JWCH) based on the USAID-MCHIP (United States Agency for International Development-Maternal and Child Health Integrated Programme) scale. 2. To determine the proportion of women treated with Disrespect and Abuse and identify the type of disrespect and abuse as perceived *by the birth companions of women* who give birth at JIPMER's Women and Children Hospital (JWCH) based on the USAID-MCHIP scale. 3. To measure the Empathy Quotient (EQ) and self-esteem among second year and final year medical and nursing students interns, doctors and qualified nurses who are involved in care of women who give birth at JWCH.4. To identify the needs of staff managing the labor rooms for RMC.5. To explore the opinion of local obstetric and nursing care experts on the key elements to be included in the curriculum training and practice of health professionals to promote RMC.6. To develop and evaluate a curriculum on RMC for health professionals based on the above finding. ***The secondary objective was the development of mobile App (to help the women in labour to report D&A based on the prevalence of D&A and pilot testing of App by postpartum women and birth companions***. This was innovative as there was no such intervention provided to women during

child birth as per our literature search prior to 2019 when the project was planned and approved. This manuscript describes the development and results of pilot testing of this App.

**Development of Mobile App**:

Phase I of the study recruited 380 postpartum women and 30 birth companions. After taking written informed consent, D&A was assessed by the Questionnaire adopted from USAID-MCHIP[6] which had a binary response of "YES" or "No". Same participants rated D & A they perceived on a10 point rating scale (0 -No D &A and 10- severe D&A). Qualitative data was obtained immediately after filling the Questionnaire regarding their views about RMC to and suggestions to improve RMC. The types of D&A experienced, and their prevalence was analysed. RMC Standards I to VII were followed as per Browser and Hill [2] and the type of D&A was expressed as frequencies and percentages. There was high prevalence of D&A as per the questionnaire (USAID-MCHIP) and low prevalence as per the rating scale as reported in our earlier publication on assessment of D&A as per our first objective [7].

After identifying the gaps from Phase I (Quantitative and Qualitative analysis) a mobile App was developed with the help of a technical assistant in simple terms in an understandable way in English and Local language (Tamil) to assess the health care facilities and to report abuse and disrespect during and immediately after child birth. The first page of App has the format for choosing language and giving consent (Fig 1). The second page has components for rating services on a 5 point Likert scale.(Fig 2) The third page has categories of D&A in to 9 items for easy understanding and to avoid duplication of reporting (Fig 3).

Figure 1

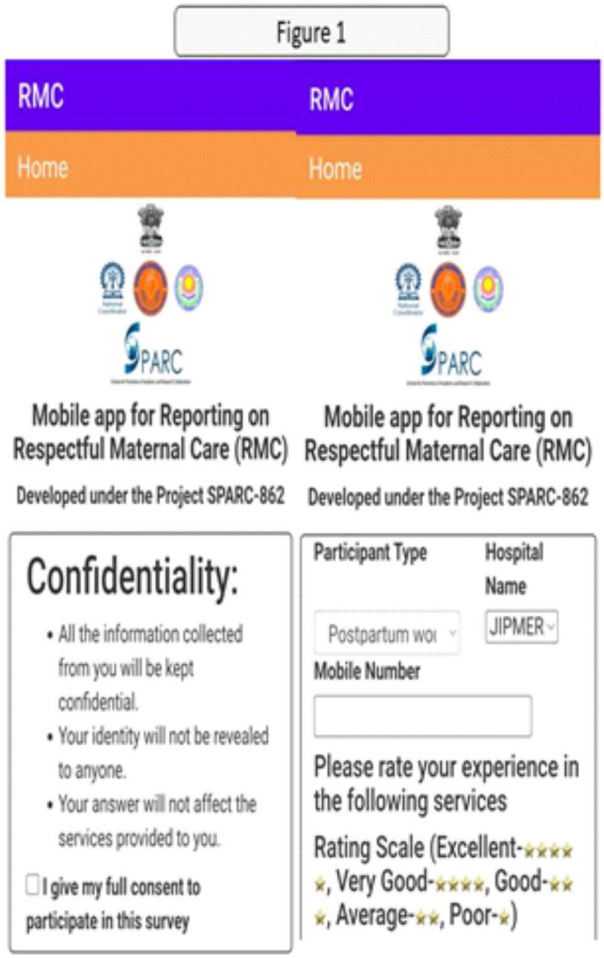
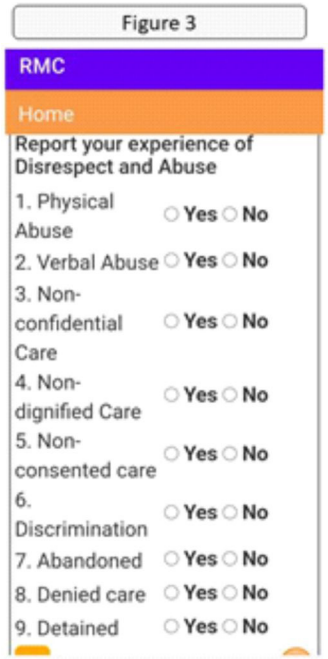


Figure 2


Figure 3




**Study tool and data collection:**

**Pilot-testing of App**: Thirty participants (10 -birth companions and 20 postpartum women) who had smart phone were recruited. Each participant was explained about the project as a whole and the need for pilot testing of the App (http://www.rmcsparc.com) and those who were willing to report were shown how to use the App independently and their doubts were cleared by the project assistant and the Indian investigators. Physical abuse and verbal abuse is self explanatory; Non confidential care was when they feel their health condition/record was disclosed to others who were not health care workers or not their relatives. They asked to choose non-dignified care when they were not examined with privacy, and birth companion was not allowed. Non consented care was to be chosen when they were not explained about the clinical examination or procedures like instrumental delivery, caesarean section etc., and prior to performing the same. Discriminated was easy to understand and they were asked to choose when they got the feeling that health care workers were not paying attention because of certain reasons like socioeconomic status, low education, caste , religion etc. Abandoned to be chosen when no health care worker comes to speak/ enquire /examine them. Denied care to be chosen when asked for support or medical care, the women did not get the same. Detained to be chosen when they request for discharge they were kept against their will. Each participant (30) was individually explained regarding the study and showed how to use the App. The data was accessed from cloud computing and was analysed. D&A was categorised as 9 types and interpreted as per 7 standards so as to enable us to compare with the data obtained by USAID_MCHIP Questionnaire in phase I. The results were expressed as frequencies and percentages.

## Results

Total 26 participants (10 birth companions, 16 postpartum women) only used the App out of 30 who were recruited Seventy seven percent reported services during child birth to be excellent. Fifty percent reported pain relief and nutritional support as excellent. Less than 10 % reported them as poor (Table 1). Overall D&A was reported by 47% and the most common types of D&A were non-dignified care15.4% (verbal abuse, not allowing birth companion, no privacy: as per RMC standard) and non-confidential care 7.7% (Table 2). None of the participants found the App difficult to use.

**Table 1: Rating of services by mobile App (N=26)**

**Rating Scale: 5 (Excellent; 4-Very good; 3- Good; 2- average 1- Poor**

| S. No | Description of services | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|
| | | N (%) | N (%) | N (%) | N (%) | N (%) |
| 1. | Services received during child birth | 20 (76.9%) | 4 (15.3%) | 1 (3.8%) | 1 (3.8%) | - |
| 2 | Cleanliness of Place of birth | 17 (65.3%) | 7 (26.9%) | 1 (3.8%) | 1 (3.8%) | - |
| 3 | Attitude/Behaviour of health care providers | 17 (65.3%) | 6 (23%) | 3 (11.5%) | - | - |
| 4 | Emotional support | 11 (42..3%) | 12 4(6.1%) | 3 (11.5%) | - | - |
| 5 | Nutritional support | 13 (50%) | 7(26.9%) | 3 (11.5% | 2 (7.7%) | 1 (3.8%) |
| 6 | Pain relief | 13 (50%) | 10 (38.4%) | 1 | 1 | 1 |

**Table 2. Categories of D&A as per App Data**

| S. NO | Category of D&A (*) | Number (26) | Percentage |
|---|---|---|---|
| 1 | Physical Abuse (I) | 1 | 3.8 |
| 2 | Verbal abuse (IV) | 1 | 3.8 |
| 3 | Non –Confidential care(II) | 2 | 7.7 |
| 4 | Non--Dignified Care (IV) | 2 | 7.7 |
| 5 | Non-Consented Care (II) | 1 | 3.8 |
| 6 | Discriminated (V) | 2 | 7.7 |
| 7 | Abandoned (VI) | 1 | 3.8 |
| 8 | Denied Care (VI) | 2 | 7.7 |
| 9 | Detained (VII) | 0 | 0 |

(*) – AS per categories of D&A (USAID_MCHIP)

## Discussion

Respectful maternal care (RMC) is the right of every woman and this is to receive the highest attainable standard of health care, It includes the right to dignified, respectful health care at all health systems around the world for child bearing woman throughout her pregnancy, during labour, and delivery, and the postnatal period. (WHO 2014)[4]. In 2010, Bowser and Hill conducted an analysis with a global perspective and presented 7 categories for D&A including physical abuse, discrimination, non-consented clinical care, non-dignified care, non-confidential care, abandonment of care, and detention in health facilities[2]. Women hesitate to report any mistreatment and disrespect and fear it may affect their further care during the hospital stay and hence they suffer in silence. Innovation is necessary so that they may report the quality of services and type of D&A anonymously. WHO statement on "Respectful maternity care "recommends research in to the innovative approaches that need to be further developed and tested to integrate RMC into quality improvement initiatives.

Innovation in health care can be an idea, product, service or a care pathway that has clear benefits when compared to the current practice and it involves invention+adoption+diffusion[8]. The development of the mobile App for reporting disrespect and abuse as well as rating the health care facilities fulfils these criteria. Though Browser and Hill recommended measuring D&A as 7 categories we used physical abuse and Verbal abuse separately for clarity of reporting.

Mobile health surveys are becoming the standard in the current era of Digital Health. Face-to face surveys which were standard have taken back seat. Health care delivery and follow up is becoming easy in remote areas where patients are taught how to use technology in their language to communicate to health care workers or to major health facilities. Through mobile phones the surveys are: the use of short message service (SMS), interactive voice response (IVR), and computer-assisted telephone interviews (CATI) which are called mobile phone surveys (MPS). A systematic review of mobile phone surveys in Low income and middle income countries found CATI to be the commonest mode.[9]

With regards to maternal health there are 8 apps which addressed different health care aspects especially for LMICS, [10] viz 1. Gifted Mom (Pregnancy follow-up, breast feeding, Vaccination) 2. Zero mothers die (to curb maternal health inaccessibility) 3. May (for infertile couples), 4. Safe delivery (to health care workers to strengthen the quality of maternal Care), 5.MAMA (warning signs, health tips, reminders) 6. Mobile midwife (text and pre-recorded voice messages for midwifes and nurses, tracking the pregnant and women in labour) 7. Suyojana (mobile-based clinical-decision support system) for ANMs. .8. Safe Pregnancy and Birth (Staying healthy during pregnancy, danger signs during pregnancy, Danger signs during birth and danger signs after birth etc) for expectant mothers and health care providers.

In India a pilot study using telephone interviews in antenatal care improved dietary interventions significantly compared to the control group[11]. hAPPy Mamma app is another ground breaking innovation where in addition to providing the knowledge regarding pregnancy and child birth it also takes feedback and allows women to answer questionnaire provided by the app[12]. The feedback can be utilised to improve the health care services.

Regarding apps for assessing respectful maternity care, there are none. A phone tool to measure RMC by face- to- face interviews was developed by Amnesty E LeFevre and colleagues [13] with the aim of using such a tool in routine measurement of RMC in India. This tool is also complex and deviated from the categories put forth by Browser and Hill. The tool includes Questionnaire on as per Bohren and colleagues (1) physical abuse; (2) sexual abuse; (3) verbal abuse; (4) stigma and discrimination; (5) failure to meet professional standards of care; (6) poor rapport between women and providers; and (7) health system conditions and constraints and these are grouped in to 2 main groups.

The prevalence of D&A was 47 % as determined by using the App and this was the assessment both by postpartum women who suffered and birth companions who witnessed the same. This was less than the prevalence as assessed by Questionnaire (85%) and more than that perceived by rating scale (33.6%)[7]. The most common type of D & A was **non-dignified care as assessed by both methods (Questionnaire and App).** Categorising D &A in to 9 types may avoid over lapping of the results in reporting.

There are many tools for measuring women's experiences during child birth other than those described by Browser and Hill, which are very elaborate involving as many as 33 indicators[14,15] and these are time consuming.

## Conclusion

The type of Disrespect and Abuse that was prevalent in the same health care facility as assessed by App was similar to that of the MCHIP Questionnaire. The prevalence differed (less than Questionnaire) most probably because of the minimum number of participants and this study report is only pilot testing.

This App is a simple and fast method to assess the health care facility and the presence of type of disrespect and abuse can be conveyed to the health care administrators sometimes in an anonymous way so that immediate corrective measures can be taken.

The key qualities of successful innovations are ease of usage and desirable to use and this App has both these key qualities.

**Implications of the Research:**

Reporting D &A is to be done on day today basis and the method of reporting should be simple, understandable and objective so as to implement measures to tackle the same and promote RMC at the health care facility. IEC activities on RMC can slowly curb D &A and this can be planned depending on the type of D&A prevalent at each facility. Clarity in reporting disrespect and abuse, facilitates the health care administrators and policy makers to undertake specific measures and actions.

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**Ethical clearance:** The approvals for undertaking the project were taken at the site of the study, i.e., JIPMER Jawaharlal Institute of Postgraduate and Medical Education and Research ,(Ethical approval-JIP/IEC/2019/340 ) a tertiary care Institute, South India and it was registered under ICMR

(Approval: 2020-9548 /F1) as per the requirements to conduct the project.

**Conflict of interest:** *The authors report that there are no competing interests to declare*

**Data availability statement:** Because of ethical considerations, de-identified data present can be provide on request

## References


1. Sudhinaraset M, Treleaven E, Melo J, Singh K, Diamond-smith N. Women's status and experiences of mistreatment during childbirth in Uttar Pradesh: A mixed methods study using cultural health capital theory. BMC Pregnancy Childbirth [Internet] 2016. Available from: http://dx.doi.org/10.1186/s12884-
2. Bowser D, Hill K. Exploring evidence for disrespect and abuse in facility-based childbirth: report of a landscape analysis. USAID-Traction Project. 2010
3. Singh A, Chuggani M,James MM. Direct observation on Respectful maternity care in India:A cross-sctional study on Health professionals of three different Health facilities in New Delhi.IJSR.2018:7 (5);821-825.
4. World Health Organization. The prevention and elimination of disrespect and abuse during facility-based childbirth. Geneva: World Health Organization, 2014.
5. Nilvér H, Begley C, Berg M. Measuring women's childbirth experiences: a systematic review for identification and analysis of validated instruments. BMC Pregnancy Childbirth. 2017 Jun 29;17(1):203. doi: 10.1186/s12884-017-1356-y. PMID: 28662645; PMCID: P
6. Respectful Maternity care : Countries experiences survey report:MCHIP (maternal and child health integrated program (2012) https://pdf.usaid.gov/pdf_docs/ PA00JXHJ.pdfMC5492707.
7. Dasari P, Sastry JG, Thulasingam M, Fisher J, Chandrasekaran N. Determinants of respectful maternity care at a tertiary care teaching institute in South India: A mixed-methods study. Int J Gynaecol Obstet. 2024 Feb; 164(2):721-731. doi: 10.1002/ijgo.15034. Epub 2023 Aug 17. PMID: 37589210
8. Kelly CJ, Young AJ. Promoting innovation in healthcare. Future Healthc J. 2017 Jun;4(2):121-125. doi: 10.7861/futurehosp.4-2-121. PMID: 31098448; PMCID: PMC6502619.
9. Gibson DG, Pereira A, Farrenkopf BA, Labrique AB, Pariyo GW, Hyder AA. Mobile Phone Surveys for Collecting Population-Level Estimates in Low- and Middle-Income Countries: A Literature Review. J Med Internet Res. 2017 May 5;19(5):e139. doi: 10.2196/jmir.7428. PMID: 28476725; PMCID: PMC5438460. 10. 8 apps revolutionising maternity health care .apphttps://mashable.com/article/apps-maternal-health.
10. https://mashable.com › Life › Health & Wellness
11. Dieteren C, Sarkar S, Saharan S, Bonfrer I. Effects of a smartphone application on maternal health knowledge and dietary diversity among pregnant women in India: a randomized single center pilot study. Journal of Global Health Reports. 2022;6:e2022057. doi:10.29392/001c.39604
12. Bonciani M, De Rosis S, Vainieri M. Mobile Health Intervention in the Maternal Care Pathway: Protocol for the Impact Evaluation of hAPPyMamma. JMIR Res Protoc. 2021 Jan 19;10(1):e19073. doi: 10.2196/19073. PMID: 33464218; PMCID: PMC7854034.
13. LeFevre AE, Scott K, Mohan D, Shah N, Bhatnagar A, Labrique A, Dhar D, Chamberlain S, Ved R. Development of a Phone Survey Tool to Measure Respectful Maternity Care During Pregnancy and Childbirth in India: Study Protocol. JMIR Res Protoc. 2019 Apr 25;8(4):e12173. doi: 10.2196/12173. PMID: 31021329; PMCID: PMC6658236.
14. Gurung, R., Ruysen, H., Sunny, A.K. et al. Respectful maternal and newborn care: measurement in one EN-BIRTH study hospital in Nepal. BMC Pregnancy Childbirth 21 (Suppl 1), 228 (2021). https://doi.org/10.1186/s12884-020-03516-4
15. Mengistu, B., Alemu, H., Kassa, M. et al. An innovative intervention to improve respectful maternity care in three Districts in Ethiopia. BMC Pregnancy Childbirth 21, 541 (2021). https://doi.org/10.1186/s12884-021-03934-y.