



Samrakshan Yodha Dashboard of Diagnostic and Performance Metrics for Fetal Radiologists

Rijo Mathew Choorakuttil¹ Akanksha Baghel² Praveen K. Nirmalan³

¹Department of Clinical Radiology, AMMA Center for Diagnosis and Preventive Medicine, Kochi, Kerala, India

²Department of Clinical Radiology, Baghel Sonography Center. Harda, Madhya Pradesh, India

³Department of Research, AMMA Healthcare Research Gurukul, AMMA Center for Diagnosis & Preventive Medicine, Kochi, Kerala, India

Address for correspondence Rijo Mathew Choorakuttil, MD, AMMA Center for Diagnosis and Preventive Medicine Pvt Ltd, Kochi 682036, Kerala, India (e-mail: rijomc@gmail.com).

Indian J Radiol Imaging 2023;33:392–393.

Abstract

We used the data collection experience of the initial 3 years of Samrakshan to develop a live dashboard for individual practitioners to examine diagnostic and performance metrics in real-time and to assess trends. The dashboard was created in MS Excel (Microsoft 365 MSO version 2209) and the output provides useful information on actionable items like compliance with low-dose aspirin and estimates of preterm and term pre-eclampsia and fetal growth restriction, congenital anomalies, the proportion of preterm births, and perinatal mortality estimates. The output will help individual practitioners to generate practice-related actionable evidence and can further optimize service delivery for local populations. The dashboard can be used on any platform with MS Excel and does not require the installation of any additional software or license. The dashboard is provided as a free, open-access resource by the Samrakshan Program of Indian Radiological and Imaging Association.

Keywords

- ▶ Samrakshan
- ▶ data
- ▶ dashboard

Technical Report

The Samrakshan program of the Indian Radiological and Imaging Association (IRIA) uses a multipronged strategy to address the high perinatal mortality rates in India.^{1,2} The strategies include upscaling the technical skills of fetal radiologists, upscaling service provision through the integration of fetal Doppler studies with routine antenatal ultrasound studies, systematic documentation of findings to explore trends from baseline data, and generation of locally relevant evidence to inform practice and policy.^{1,2} Samrakshan showed a significant reduction in perinatal mortality in 2 years and is being scaled up to cover all districts of India.² An important element of Samrakshan is

the generation and evaluation of evidence from local populations and the inclusion of individual practitioners and non-academic or non-teaching centers in the program.

We used the data collection experience of the initial 3 years of Samrakshan to develop a live dashboard for individual practitioners to examine diagnostic and performance metrics in real-time. The dashboard was created in MS Excel (Microsoft 365 MSO version 2209) and included separate tabs for data entry, the codebook, and the graphical representation of the output. Each pregnant woman is assigned one unique identification number that will be used to follow up all trimester-specific assessments of the woman. The input data include the demographics of each pregnant woman, details of past and current obstetric

article published online
January 31, 2023

DOI <https://doi.org/10.1055/s-0043-1761253>.
ISSN 0971-3026.

© 2023. Indian Radiological Association. All rights reserved.
This is an open access article published by Thieme under the terms of the Creative Commons Attribution-NonDerivative-NonCommercial-License, permitting copying and reproduction so long as the original work is given appropriate credit. Contents may not be used for commercial purposes, or adapted, remixed, transformed or built upon. (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)
Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

history, and trimester-specific ultrasound assessments including trimester-specific fetal Doppler studies, and childbirth outcomes. The first-trimester-specific details include mean arterial blood pressure, mean uterine artery (UtA) pulsatility index (PI), assessment of nasal bone, nuchal translucency and congenital abnormalities, estimation of the risk for preterm pre-eclampsia (PE) and fetal growth restriction (FGR), recommendation of low-dose aspirin 150 mg for high-risk pregnant women, and the assigned estimated date of delivery. The first-trimester risk assessment of PE and FGR can be estimated using the Fetal Medicine Foundation free calculators available online. The second-trimester details include self-reported compliance with low-dose aspirin, fetal abdominal circumference (AC) and estimated fetal weight (EFW), mean UtA PI, umbilical artery (UA) PI, risk estimates for preterm PE (using the FMF trimester specific calculator), the onset of early PE, and/or FGR, risk for preterm birth and congenital abnormalities. The third-trimester details include compliance with low-dose aspirin, fetal AC and EFW centiles, mean UtA PI, UA PI, middle cerebral artery PI and cerebroplacental ratio, abnormal liquor volume, congenital abnormalities, staging of FGR, and the onset of PE. Ductus venosus studies are recommended if there is a suspicion of FGR and if the UA Doppler shows abnormalities. We recommend the use of either the FMF or Barcelona calculators for the PI percentile assessments in the third trimester. However, our pragmatic recommendation is for users to continue using the same software for estimation as they are doing now. Childbirth details included gestational age at delivery, mode of delivery, sex of the baby, birthweight, live-or-stillborn, maternal mortality, neonatal morbidity and mortality, days spent in the neonatal intensive care unit, and postpartum PE. Fetal biometry measurements, cervical length and cervical angle measurements, placental thickness, and first-trimester markers including PAPP-A-pregnancy-associated plasma protein A, placenta growth factor (PGF) and soluble fms-like tyrosine kinase-1 (S-FLT) were included as optional variables.

► **Table 1** shows the headers of the graphical output generated automatically when data is input. The visual representation of data can be examined by the practitioner at regular intervals for trends. The output provides useful information on actionable items like compliance with low-dose aspirin, the proportion of preterm births, the proportion of stage 1 FGR and SGA fetuses that are preterm births, and perinatal mortality estimates. The output will help individual practitioners to generate actionable evidence from their personal practice and can further optimize service delivery for local populations. The dashboard can be used

Table 1 Output generated from the Samrakshan Yodha dashboard

Output headers
1. Parity
2. High risk for PE—First trimester
3. High risk for FGR—First trimester
4. Low-dose aspirin compliance—Second trimester
5. Early PE
6. Early FGR
7. High risk for preterm births
8. Congenital anomalies—Second trimester
9. Abnormal mean uterine artery PI—Third trimester
10. Abnormal umbilical artery PI—Third trimester
11. Abnormal middle cerebral artery PI—Third trimester
12. Cerebroplacental ratio—Third trimester
13. Abnormal Doppler
14. Stages of FGR
15. Antenatal PE
16. Birth status
17. Maternal mortality
18. Neonatal mortality
19. Perinatal mortality
20. Preterm birth
21. Stage 1 FGR and preterm birth
22. SGA and preterm birth

Abbreviations: FGR, fetal growth restriction; PE, pre-eclampsia; PI, pulsatility index; SGA, small for gestational age.

on any platform with MS Excel and does not require the installation of any additional software or license beyond what the practitioners currently use. The dashboard is provided as a free, open-access resource by the Samrakshan Program.

The MS Excel dashboard can be downloaded from <https://iria.org.in/samrakshan/samrakshan-forms/>.

After opening the Samrakshan Forms page on the IRIA website, click on download forms and then navigate and click on the Yodha Excel folder to access and download the dashboard.

Conflict of Interest

None declared.

References

- 1 Choorakuttil RM, Patel H, Bavaharan R, et al. Samrakshan: an Indian Radiological and Imaging Association program to reduce perinatal mortality in India. *Indian J Radiol Imaging* 2019;29(04): 412–417
- 2 Choorakuttil RM, Rajalingam B, Satarkar SR, et al. Reducing perinatal mortality in India: two-years results of the IRIA fetal radiology Samrakshan Program. *Indian J Radiol Imaging* 2022;32 (01):30–37