



SMART health

HIGH-RISK PREGNANCY AND NON-COMMUNICABLE DISEASES IN INDIA

Policy and research recommendations



The George Institute
for Global Health

India

EXECUTIVE SUMMARY



Maternal and child survival in India has improved dramatically since 1990. Consequently, health concerns for women are changing. Chronic conditions, such as diabetes, high blood pressure, heart disease and stroke are leading causes of death and illness for women. The development of diabetes or hypertension during pregnancy increases risks for both the mother and her unborn child, as well as identifying women at lifelong risk of type 2 diabetes and cardiovascular disease.

The George Institute for Global Health hosted two national-level meetings in India in 2019 bringing together experts in pregnancy care, digital health, frontline health workers and academic and implementation partners. The aim of the meetings was to discuss challenges and potential innovative solutions to use pregnancy as a window to improve the life-long health of women.

KEY RECOMMENDATIONS:



- Women with high-risk conditions during pregnancy should be educated about the lifelong risk of chronic conditions
- Women with diabetes or hypertension detected during pregnancy should be screened in the postpartum period for high blood glucose or blood pressure.
- Digital referral systems and communication between all levels of the health system needs to be strengthened
- Digital systems must be interoperative, intuitive, reliable, secure and designed to reduce the total workload and administrative tasks of frontline workers
- Programs that automatically link payments for incentive-based remuneration to completion of digital patient registration/risk assessment and provision of preventative and social care should be prioritised and scaled.

HIGH-RISK PREGNANCY AND NON-COMMUNICABLE DISEASES IN INDIA



Non-communicable diseases (NCDs) account for the majority of deaths amongst women in India. India has achieved impressive reductions in maternal mortality; however, challenges remain in providing care to women with high-risk pregnancies. This includes women with pre-existing diseases, as well those who develop pregnancy-specific complications. The two most common pregnancy-specific medical disorders are gestational diabetes mellitus (GDM) and preeclampsia. The development of either of these conditions identifies women at increased lifelong risk of type 2 diabetes and cardiovascular disease. Better detection, referral and management of high-risk pregnancies coupled with preventative interventions after birth, could improve pregnancy outcomes and the lifelong health of women.

National Workshops on high-risk pregnancy and non-communicable diseases

On the 29th of March and 1st April 2019, the George Institute for Global Health and the University of Oxford, UK, hosted two national level stakeholder workshops in New Delhi and Vijayawada on integrating high-risk pregnancy and NCD programs in India. The purpose of these workshops was to discuss current priorities, initiatives and challenges in delivering care for women with high-risk pregnancies before and after birth, and to specifically discuss the role for digital and community level interventions in the Indian context. The workshops took the format of short introductory presentations to set the scene, followed by three panel discussions around three key issues:

- ***High risk pregnancy conditions and NCDs***
- ***Challenges and priorities in mHealth in maternal health and NCDs in India***
- ***The role of community health workers in bridging NCD and MCH programs***

ACHIEVEMENTS AND PRIORITIES IN MATERNAL HEALTH IN INDIA



In New Delhi, **Dr Sumita Ghosh**, Deputy Director Ministry of Health and Family Welfare, Government of India, summarised the impressive reduction in maternal deaths in India. Successful national level programs have driven this change by expanding antenatal care coverage; promoting institutional delivery; improving quality of care in the delivery room; providing access to high-risk pregnancy HDU and ICU services; and removing out-of-pocket expenses for pregnancy, birth and the new born period.

However, challenges remain. Underlying disease prevalence is high. Across India 50% of pregnant women are anaemic, and amongst women of reproductive age, 11% have hypertension and 6% have diabetes. There are also health system challenges such as: ensuring universal comprehensive antenatal screening coverage; timely facility transfer (with 20% of maternal deaths

occurring en route to a facility); quality of care at all levels; and the need for better data.

Dr Shalini Singh, Division of Reproductive Biology, Maternal and Child Health, ICMR, outlined current ICMR research priorities in reproductive health, emphasising the importance of addressing the social determinants of health, as well the need to shift the focus towards a life course approach.

Improved detection and management of high-risk pregnancies is a national research priority. But the health needs of women beyond their reproductive years also need to be recognised, as well as the needs of those who don't, or can't, have children. There is also a need for research addressing conditions that affect women differently. As an example, Dr Singh highlighted that in many districts over twice the number of women are overweight or obese compared to men.

SMARTHealth AND SMARTHealth PREGNANCY



The George Institute has developed and tested a program to improve community-level detection, referral and management of CVDs, mental health, kidney diseases and diabetes. Over the past 10 years, the program has been introduced in five countries, with over 100 000 people screened. The concept of SMARTHealth and how it is being adapted for use in pregnancy was presented.

Dr Praveen Devarsetty (Head of Primary Health, The George Institute, India) presented an outline of the SMARTHealth. Following a training course, community health workers, such as Accredited Social Health Activists (ASHAs), screen adults for CVD and other risk factors in their homes using a secure, electronic clinical decision support platform. The platform gives an individual risk assessment displayed as a "risk-ometer" with videos in local languages on modifiable risk factors such as poor diet, lack of exercise and tobacco intake. An automatic electronic referral to the primary care

doctor is generated for those who may need medication or further assessment. Similarly, a list of high risk individuals requiring follow-up is generated for ASHAs to make timely visits and ensure adherence to medications. The doctor is provided with an electronic decision support App, ensuring prescribing and advice is in keeping with national guidelines.

Dr Shobhana Nagraj (Primary Care Physician, DPhil student, University of Oxford) presented the proposed SMARTHealth Pregnancy adaptation, which aims to improve the detection and management of hypertension, gestational diabetes and anaemia both during and after pregnancy amongst women living in rural communities in India.

The platform has been developed following detailed stakeholder consultations in 2017-18. Usability testing was completed in March 2019 and a pilot cluster randomised trial will soon commence in Guntur, Andhra Pradesh and Jhajjar, Haryana. If feasible and acceptable, it is hoped that the next step for this technology will be an at-scale evaluation, to determine before recommendation for adoption, whether SMART Health Pregnancy is clinically effective, acceptable, technically and economically sustainable.

HIGH RISK PREGNANCY CONDITIONS AND NCDS

In New Delhi, **Dr Manju Puri** of Lady Hardinge Medical College described how the need for integration is recognised at the tertiary level, however this has proven challenging, despite studies from her hospital demonstrating high rates of hyperglycaemia in women after a pregnancy affected by GDM.

"We've been so much engrossed with pregnancy and its complications, so the moment one patient delivers, she moves out, so she's out of our focus. And then our focus goes on others who are high risk and they enter the scenario. So that is what is happening."

– Dr Manju Puri, Lady Hardinge Hospital, Delhi.

In contrast, **Malvika Sharma** from Piramal Swasthya, described the challenges women in Tribal areas face accessing basic ANC, acknowledging the link between nutrition, pregnancy outcomes and NCDs and that more work is needed for integration.

Dr Ashima Arora from PGI Chandigarh presented how in her institution, over the past 30 years, deaths from direct obstetric causes, such as post-partum haemorrhage, have dramatically fallen. However, women are still dying or being left with ongoing health problems after complications of NCDs during pregnancy. PGI Chandigarh have introduced a near-miss postpartum follow-up clinic for surviving women and children, with medical, social work and psychological support for families affected by very complicated pregnancies.

Dr. Ashish Srivastiva from JHPIEGO, India described a program in Aurangabad where 30 000 pregnant women were screened for GDM. Prior to the screening program the prevalence was thought to be 0.3. The programme identified this risk as 9%,

meaning 2200 women were detected as GDM. This highlights the current problems with identification of women that are high-risk during and after their pregnancies in India. He also commented on the problem of continuity of care, with women being lost in the post-partum period because systems are currently not in place to link them with NCD prevention programs.

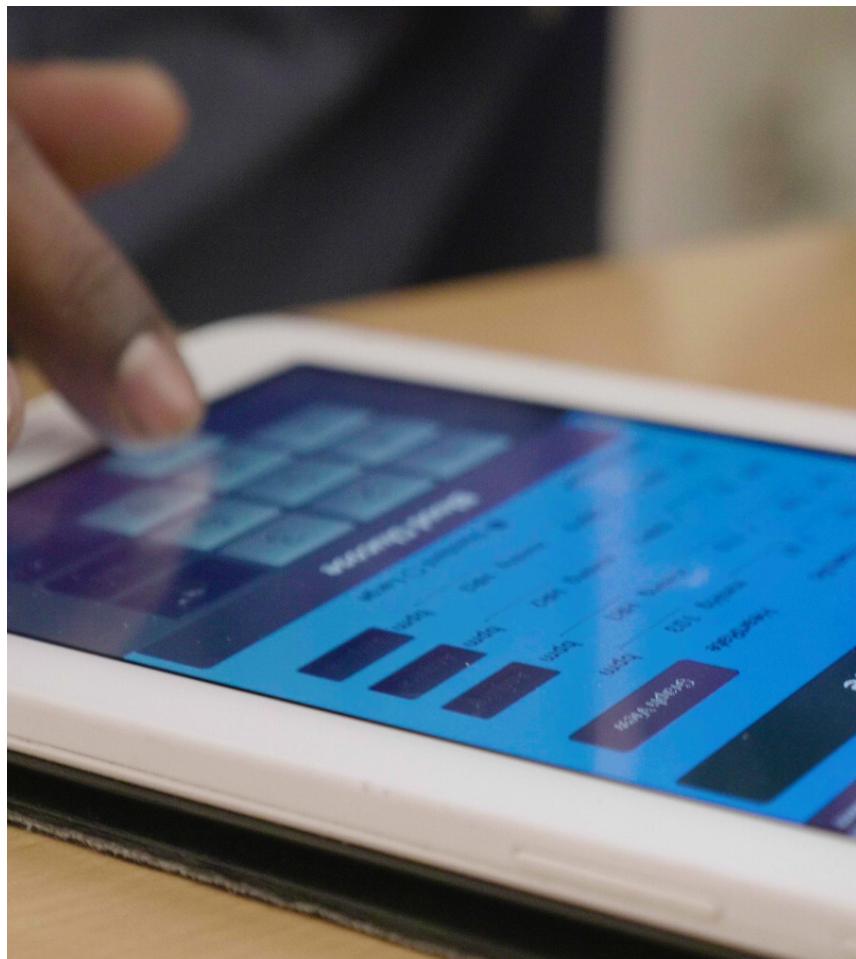
When thinking about strengthening GDM screening, a major challenge is that the oral glucose tolerance test requires women to wait for 2 hours. This is a problem at all levels of the health system. Comments from the panel and audience supported the need for testing to be done by the Auxiliary Nurse Midwives (ANMs) at the community level.

Dr Srivastava concluded with a wider point. In India, the health of the child will often take priority over concerns for the mother, and that programs such as that at PGI Chandigarh, have been successful as they have also focussed on the health of the child.

In Vijayawada, **Sudheer Kumar Nadipally** from Piramal Swasthya, described how in a large screening program across six states, 9.4% of pregnant women were identified as having a high-risk condition. He described challenges in implementing such a comprehensive program included lack of coordinated efforts between field and facility levels and minimal or no usage of technology for ANC when the program first began.

Dr Shymala, Additional District Medical and Health Officer, Guntur District Andhra Pradesh, described the large number of initiatives and programs which she oversees in relation to both maternal, child and reproductive health as well as NCDs. What is lacking however is a system to unify these programs and track people as they move from one to another.

CHALLENGES AND PRIORITIES IN MHEALTH, IN MATERNAL HEALTH AND NCDS IN INDIA



Digital health has spread very rapidly across India, with hopes that it will be transformative. However, there are also concerns that with many Apps and electronic health records, a system could be created that is fragmented and ultimately makes more work for frontline health workers.

In New Delhi, **Dr Oommen John**, of the George Institute, India, emphasised the importance of an electronic health record that can track individuals from birth until death, incorporating new risk factors as they develop, such as pregnancy complications. The system must also be integrated across levels of the health system, recognising the importance of near-miss events in pregnancy and during hospital admissions. He also highlighted challenges around delivery care for chronic conditions in a system focussed on episodic acute care.

One of the most successful programs in reproductive, maternal and child health in India has been ImTECHO, which has been implemented across Gujarat. **A.K. Sethuraman** presented an outline

of the program, including how for women over 30 years of age, the program incorporates NCD screening when they present for ANC as recommended by the government. This program utilises ASHA workers and ANMs.

The platform started with a family survey and initially focussed on reproductive, maternal and child health. It has now expanded to NCDs, cerebral palsy detection and blindness. Mr Sethuraman emphasised the key role the family survey played in mapping the population initially to being able to build a comprehensive platform. Challenges however always remain. In his experience the main challenge is around health worker motivation, which they have addressed with motivational messages and linking the performance of tasks to incentive payments.

Other important challenges for mHealth which came up in the question and answer session were around the better use of data to prioritise health care and the time and cost of transitioning from paper based to fully digital systems.

A major challenge is the large number of electronic and written medical record systems, that are frequently unlinked, making longitudinal patient follow-up difficult. Mobile health (mHealth) platforms targeting NCDs offer an opportunity to provide clinical decision-making support to skilled and unskilled health workers alike and to store electronic medical records. In order to avoid adding to the



web of unintegrated medical record systems, new mHealth platforms should aim to link with other commonly used record systems and thereby permit continued patient management, even if the patient moves to a new community.

“Data is very important to build policy [...]. When we talk about NCDs, when we’re talking about chronic, life-long disease[s], it is important to have longitudinal records. So right now, we have a woman who might be going to mobile medical van for a check-

up, might be going to a tele-medicine centre, might be going to a tertiary care centre, might be going to a private practitioner [...] and they] all have systems which don’t talk to each other .”

– Malvika Sharma from Piramal Swasthya.

In Vijayawada, **Arun Aggarwal**, from Janitri, emphasised the importance of user centric design for technologies, if they are to be adopted at scale in the community. An example was given by **Rama Rao**, Program officer at the DMHO of 18 applications in use at the level of the ANM, with a lack of end-to-end connectivity with most of the technologies used.

THE ROLE OF COMMUNITY HEALTH WORKERS IN BRIDGING NCD AND MCH PROGRAMS



In New Delhi **Dr Varun Arora**, PGI Rohtak, highlighted some of the issues facing community health workers. He gave examples of how a large proportion of CHWs lack the skills and/or equipment to do basic measurements such as blood pressure and haemoglobin, and that basic quality checks for their work when paper based are frequently lacking.

Dr Manoj, nodal officer from the National Rural Health Mission, Jhajjar District, Haryana, described the many different health care workers in his district and the efforts to ensure quality care at all levels.

Pankaj Shah, from SEWA Rural, described how in the district of Gujarat where he works, ImTECHO has been transformative largely due to the ability to integrate different levels of the health system through the use of digital rather than paper-based records. He

reported that the ASHA workers are very happy using the phones and that they feel their status has increased as a result.

Parth, from Clinton Health Initiative (CHAI), discussed issues around the reliability and availability of front-line point -of-care diagnostics for conditions such as anaemia, as well as the importance of CHW training and the knowledge and skills ASHA workers have to motivate women to seek ANC. He also discussed the potential for digital frontline health worker applications to prioritise workloads for ASHA workers, as well as streamline processes by which they receive their incentive payments.

"ASHAs are now very much happy with using these phones. They feel their status in the community has increased. Their entire manual record keeping [...] is a [source of] pride for them." (Pankaj Shah, SEWA Rural).

In Vijayawada, **Keerthi Bollineri**, President of Vasaviya Mahlia Mandali, discussed the importance of mobilising women's self-help groups and taking advantage of the vast social capital in India if we hope to make inroads into improving women's health and lives more generally. She also presented a powerful example of how staff in safe jobs with little quality checks can fail the community and individuals who rely on them.

G Nagaraju from the Hindustan Times, Vijayawada, discussed the importance of general measures



to improve health such as sanitation, as well as extending rights such as maternity leave into the private sector, are also required for transformation of health and wellbeing in India.

Professor Suryaprabha of community medicine, described how she first began researching how to improve outcomes of women with high-risk pregnancy 20 years ago, noting the importance of improving health literacy through health promotion and how digital technologies now play an important role.

"If we really want to work on NCDs, then we really want to inculcate into [mothers] that their pregnancy complication leads to a neonate who has a tendency to develop an NCD. In India... the important aspect of pregnancy is only the child, the child gets more importance."

– Professor Suryaprabha, NTR University.

KEY RECOMMENDATIONS



- *Scale programs that automatically link payments for incentive-based remuneration to completion of digital patient registration/ risk assessment/ provision of preventative and social care.*
- *Focus on providing job security for CHWs with support for pathways to promotion and recognition.*

Policy

- *Shift the focus of women's health from reproductive health to a life-course approach, recognising the social influences on women's health and the needs of post-reproductive age women.*
- *Support the scale-up of programs to identify and manage high-risk pregnancies during and after birth.*
- *Women with diabetes or hypertension detected during pregnancy should be screened in the postpartum period for high blood glucose or blood pressure.*
- *Promote digital systems that are interoperative, intuitive, reliable, secure and reduce the workload and administrative tasks of frontline workers.*



Research recommendations

- What can we learn from programs that have successfully integrated NCD screening into pregnancy care?
- How do we improve the timely identification and referral of high-risk women detected in the community and lower level health facilities?
- How can we improve compliance with and quality of screening for gestational diabetes in the community?
- Can we improve the quality of postnatal care for high-risk women? How can these women be linked to NCD prevention programs?
- What do women and communities know and understand about NCDs, pregnancy and postnatal health?
- What messages are most effective in improving maternal compliance to NCD treatment?
- What can we learn from big data analytics to make the health system more efficient and promote quality care?

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