

Diabetes, Women, & Development

Meeting Summary, Expert Recommendations for Policy Action, Conclusions and Follow up Actions

I. Introduction

In December 2006, at its 83rd plenary session, the United Nations General Assembly adopted the Resolution 61/225 titled World Diabetes Day. Paragraph two of the resolution "Invites all Member States, relevant organizations of the United Nations system and other international organizations, as well as civil society, **including non-governmental organizations and the private sector**, to observe World diabetes Day in an appropriate manner, in order to raise public awareness of diabetes and related complications, as well as its prevention and care, including through education and the mass media;..."

Paragraph three of Resolution 61/225 "Encourages Member States to develop national policies for the prevention, treatment and care of diabetes in line with the sustainable development of their health care systems, taking into account the internationally agreed development goals, including the Millennium Development Goals;..."

As a follow-up to that resolution, and in the context of the International Community's efforts to achieve the Millennium Development Goals (MDGs), including promoting gender equality and the empowerment of women (3), reducing child mortality (4), and improving maternal health (5), an expert meeting on: "***Diabetes, Women, & Development***" was held on Tuesday 8 April 2008 at the United Nations

Headquarters in Conference room 8 from 08:30 to 17:30, with a luncheon at the Delegates' Dining Room.

The meeting was sponsored by the Global Alliance for Women's Health (GAWH) and the World Diabetes Foundation (WDF), and was co-sponsored by:

World Health Organization (WHO)

The Permanent Mission of the Commonwealth of the Bahamas to the United Nations

The Permanent Mission of the People's Republic of Bangladesh to the United Nations

The Permanent Mission of the Republic of Finland to the United Nations

The Permanent Mission of the Republic of Niger to the United Nations

The Permanent Mission of the United Republic of Tanzania to the United Nations

The aim of the meeting was to spotlight the adverse relationship between diabetes and women's health and wellbeing and to influence the public policy community to incorporate critical gender equality concerns into international protocols.

At the meeting, remarks were made by notable representatives of the United Nations community, including H.E. Paulette A. Bethel, Permanent Representative of the Commonwealth of the Bahamas to the United Nations, H.E. Ismat Jahan, Permanent Representative of the People's Republic of Bangladesh to the United Nations, H.E. Ms. Kirsti Lintonen, Permanent Representative of the Republic of Finland to the United Nations, and Ms. Carolyn Hannan, Director of the Division for the Advancement of Women (DAW).

Three panels of experts addressed three major themes:

- I. Undiagnosed and untreated diabetes during pregnancy
- II. Maternal malnutrition and the future risk of diabetes and non-communicable diseases (NCDs) in the low birth-weight baby
- III. Women and Diabetes

II. Summary of Expert Group Meeting

A. Undiagnosed and untreated diabetes during pregnancy

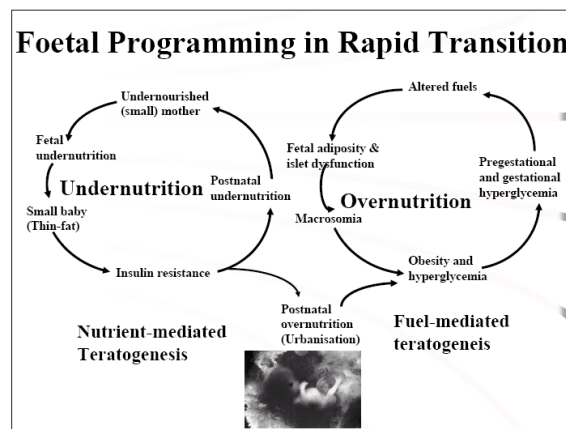
1. The rising prevalence of obesity, diabetes and impaired glucose tolerance (IGT) in the background population and the increasingly earlier onset, affecting even young adults in the reproductive age, means that increasingly more pregnancies are associated with diabetes either through women previously known to have diabetes becoming pregnant (pre-gestational diabetes), or through diabetes being first recognized during pregnancy (gestational diabetes). The reported prevalence rate of diabetes during pregnancy varies between 3 and 15% of pregnancies based on the background rates of diabetes. It is estimated that worldwide up to 10% of pregnancies may be associated with diabetes. Among high risk groups the prevalence rates may be as high as 30%. Almost 90% of all cases of diabetes during pregnancy are gestational diabetes.
2. The rapidly growing diabetes epidemic in the world means that pre-gestational and gestational diabetes contribute substantially to *'high-risk'* pregnancies, and may already be the leading cause of high risk pregnancies in some countries.
3. Undiagnosed or poorly managed diabetes or hyperglycaemia during pregnancy is associated with a significantly higher risk of maternal and perinatal morbidity and mortality as well as poor pregnancy outcomes including spontaneous abortions, still births, congenital anomalies, macrosomia (large for gestational age), need for C-section, and assisted deliveries.
4. The undesirable effects on the foetus (fetopathy) are closely linked to the timing, duration and level of exposure to high blood glucose level.
5. Children born to women with uncontrolled diabetes tend to be overweight, have higher visceral fat deposits and show early evidence of metabolic syndrome. Although genetic factors may contribute, intra-uterine exposure to hyperglycemia contributes very substantially to this risk. Some studies indicate a 4 to 8 fold increased risk of diabetes in children born to mothers with diabetes during pregnancy.

6. Between 30 to 70% of women manifesting gestational diabetes will go on to develop type 2 diabetes over time. In addition, these women are at an increased risk of cardiovascular disease. New studies indicate that conversion to type 2 diabetes may be occurring more often and more rapidly now than seen in previous studies.
7. There is now substantial evidence in different populations to show that appropriate lifestyle modification in the form of healthy eating and increased physical activity can prevent or delay the onset of type 2 diabetes. Evidence that this is applicable for women with gestational diabetes is scanty but supportive. While more studies are needed in this area, there is no reason why lifestyle intervention would not benefit women with gestational diabetes.
8. Diabetes in pregnancy is diagnosed by blood glucose values which can be measured by simple, easy to use equipment. The results of a large multi-centric study on Hyperglycemia and Adverse Pregnancy Outcomes (HAPO) will soon be published and are expected to be the basis for new recommendations for a simple, universally applicable diagnostic test.
9. In the majority of cases, gestational diabetes can be adequately controlled with dietary modifications and increased physical activity. In order to get positive pregnancy outcomes, attempts must be made to achieve optimum metabolic control to normalize blood sugar level; using appropriate and best available treatment, including close monitoring, which should be made available to attain this objective.
10. Public health initiatives to address diabetes during pregnancy can be easily integrated into the existing programs for maternal and child health, as demonstrated through an initiative in Tamil Nadu India. Awareness-raising, advocacy and training are needed. There is an urgent need to initiate such programs more widely, considering the fact that in addition to the known enhanced risk of maternal and peri-natal morbidity and mortality, undiagnosed and untreated diabetes during pregnancy may be fuelling the epidemic of diabetes through foetal programming (see below).

B. Maternal malnutrition and future risk of diabetes and other non-communicable diseases in the low birth weight baby

1. Rapid increase in IGT, diabetes and other non-communicable diseases (NCDs) in the developing world cannot be explained merely on the basis of higher genetic risk factors and rising obesity.
2. Most individuals developing diabetes and other NCDs in low income or emerging economies are not obese by BMI criteria, but are centrally obese (large waist to hip ratio) and adipose (higher body fat percent) and fit the criteria of "thin-fat."

3. Foetal programming may predispose to several chronic NCDs. Foetal programming is defined as a permanent change in structure or physiological function occurring in-utero during the period of organ development and growth



Courtesy C S Yajnik

4. There is now substantial evidence from experimental animal studies, as well as from retrospective and prospective epidemiological studies in humans, to indicate that maternal malnutrition, particularly protein and micronutrient deficiencies, are associated with small babies. These apparently small-thin babies have significantly higher abdominal fat deposits (thin-fat babies); when over nourished with calories during infancy and early childhood, they develop anthropometric and biochemical markers of metabolic syndrome and consequently an increased risk of diabetes, impaired glucose tolerance, arterial hypertension, coronary heart disease, lipid abnormalities and stroke in adult life, often prematurely.

5. Programming occurs in infants born to mothers with undiagnosed and uncontrolled gestational diabetes. Here, high levels of glucose and other circulating fuels during the period of rapid foetal growth (in the later part of pregnancy) result in a large baby.
6. Breast feeding for 3 to 6 months is associated with reduced risk of developing metabolic syndrome in both appropriate for gestational age (AGA) and small for gestational age infants (SGA).
7. Promotion of fast growth in SGA infants by nutrient-enriched formula increases risk of hypertension and metabolic syndrome.

C. Women and Diabetes

1. Diabetes affects women more severely because of their unique biological, cultural and socio-economic circumstances. These factors place women at a disadvantage not only in obtaining diagnosis and treatment but also expose them to excess risks and complications.
2. The International Conference on Population and Development (ICPD), 1994, and the UN Fourth World Conference on Women (FWCW) in Beijing, 1995, advocated an integrated approach to women's health, including health services, family planning, and women's empowerment. The critical link between women's access to health services and their empowerment was highlighted in both conferences. The Beijing Platform for Action from 1995 clearly mentions that women have the right to the enjoyment of the highest attainable standard of physical and mental health, vital for developing the ability to participate in all areas of public and private life. It also calls for all health data to be disaggregated by sex and age.
3. Health and well-being continue to elude the majority of women in the developing world, especially in the rural areas. A major barrier is continuing gender inequality.
4. Women have limited access to healthcare facilities because of illiteracy, ignorance and negative social customs. For example, in many countries

women may lack access to health facilities because inadequate transport or resources, lack of time due to heavy work burdens, or the need to be accompanied by men to the health care facilities.

5. Uncontrolled diabetes causes fatigue and restricts ability to work, thereby reducing productivity. Women with diabetes in many countries therefore face more discrimination at jobs (higher rates of job loss), at home (higher rates of divorce and separation, many times without any compensation or support). Sometimes they face allegations of malingering. Unmarried girls with diabetes in some countries may find it difficult to get married. Parents may withdraw support and care to a girl child with diabetes (including access to education).
6. As a consequence of poverty and gender discrimination in the developing world, up to a fifth of mothers are stunted, up to half may be undernourished and an even larger number are anemic. These women are likely to deliver SGA babies with a higher risk of metabolic syndrome as described above. Even during pregnancy many women may be deprived of a nutritious diet. In many countries, women and girls are traditionally the last ones to eat, which may mean they have to survive on leftovers and scraps.
7. Common misperceptions regarding pregnancy outcome further aggravate the situation. For example, the belief that a small baby is easily delivered at home and without assistance may result in pregnant women eating less to ensure a small baby.
8. In many countries tradition requires that women take care of the sick. Even when personally not suffering from diabetes, women in the family may have to bear a heavy responsibility for the care of family members with diabetes. Girls may be required to miss school in order to take care of sick family members or to carry out the work of adults suffering the complications of diabetes such as amputation and blindness.

III. Recommendations

1. In view of the large health and socio-economic impact that diabetes has in general, but particularly on women, the experts recommend that the issues as outlined above in relation to women and diabetes should be brought to the attention of all UN, Governmental and Intergovernmental bodies that are involved with the implementation of the UN Millennium Development Goals (MDGs). The expert group felt that the issues discussed in the meeting on Diabetes, Women and Development are clearly linked to the implementation of MDGs 3, 4, 5, and 6.
2. The concept of foetal programming and its consequences on adult diseases is paradigm changing. It illustrates that pregnancy offers a great window of opportunity to provide maternal care services not only to reduce the traditionally known maternal and peri-natal morbidity and mortality indicators, but also for intergenerational prevention of several chronic diseases such as diabetes, arterial hypertension, cardio-vascular diseases and strokes. High quality interventions related to maternal and child health services have the potential to achieve far reaching health and economic benefits.
3. The expert group unanimously supports and recommends that health and nutrition of the girl child is paramount and investments in this area will have far reaching economic benefits and consequences for human health.
4. A life-cycle rather than lifestyle approach to prevention of diabetes must be promoted as this will accrue multigenerational benefits.
5. Maternal and child health programs should provide services for universal screening and care for diabetes during pregnancy. They must ensure proper follow up of women detected with diabetes during pregnancy through community action in order to promote healthy living in mother and child with the aim to prevent future diabetes. This single initiative would have significant positive effects on the overall health of the family and the community. The experts realize that resource-constrained low and middle income countries would need developmental assistance to support such programs and therefore encourage funding agencies and donors to support such efforts.

6. Most pregnant women with access to information and care are likely to comply with the advice provided in order to ensure a safe pregnancy and a healthy baby. All women should have access to information on how healthy eating habits and physical activity have both short term (pregnancy outcome) and long term (chronic disease prevention for herself and her offspring) benefits.
7. Breast feeding should be recommended and encouraged whenever possible, always keeping in mind the health and nutritional status of the mother.
8. Because of its potential to enhance future risk of metabolic syndrome, nutrient-enriched formula feeding strategy for rapid weight gain in SGA infants is a matter of concern. This area needs further investigation. Until further evidence is available, such a strategy should be used with caution and only when necessary. On the other hand, attempts at growth limitation to prevent metabolic syndrome by energy restriction of nutrition (below general recommendations) in SGA infants should be avoided.
9. There is a need for concerted efforts to increase information and awareness about diabetes at all levels of society, with special attention to women in rural areas. All data should be disaggregated by sex and age. The differential impact of diabetes on women, the importance of primary prevention through interventions during pregnancy, and the major roles that women can play through their care giving roles and through encouraging healthy lifestyle in children, must be acknowledged and taken into account in all work on diabetes, for the benefit of women, their families, and for future generations. Initiatives to train and support community health workers drawn from women in the given community to do peer-to-peer education to promote healthy lifestyles and provide support for people with diabetes and other chronic diseases need to be encouraged.
10. In view of the importance of the issue the experts suggested a slogan for promoting women's health - **Women's Health is a Nation's Wealth.**

IV. Conclusions and Follow up Actions

The experts acknowledged the critical role played by a core group of UN Member States including Angola, the Bahamas, Bangladesh, Burkina Faso, Chile, Finland, Malawi, Niger and Tanzania in continuing to keep diabetes awareness, prevention, treatment and care at the top of the United Nations' agenda.

The experts thanked the Global Alliance for Women's Health, World Diabetes Foundation and World Health Organization for the initiative and sponsorship.

The experts commended the Global Alliance for Women's Health for its role in continuing to maintain close contact with this ad-hoc group of member states. At the time of the meeting, it was suggested that this ad-hoc group be given a formal name, "Friends of the UN Diabetes Resolution."

Having in mind major 2008 Global fora, including the April conference on MDG 3 in Copenhagen, Denmark, the meeting of the Global Network of Leaders for MDGs 4 and 5, and the 29th November follow-up on International Conference on Financing for Development in Doha, Qatar, the experts expressed the view that GAWH, in its capacity as secretariat of this experts' meeting, should continue coordinating the Friends of the UN Diabetes Resolution, and especially with H.E. Ms. Ismat Jahan, Permanent Representative of the People's Republic of Bangladesh to the United Nations, with a view to insure the widest possible dissemination of the present report. Further, the experts encouraged GAWH to take the opportunity of the next session of the United Nations Commission on the Status of Women (CSW) to carry forward the advocacy on diabetes through the organization of a parallel event emphasizing the direct effect of gestational diabetes on the epidemic of type 2 diabetes; they called upon public and private partners to provide all possible assistance for the organization of this event.

Follow up sensitization should be done with key offices for MDGs 3, 4 and 5 in WHO, UNFPA and UNICEF as these are the agencies with the lead on action in the pursuit of achievement of these MDGs.

The possibility of linking up with "March of Dimes" was proposed.

Experts encouraged WHO and International Diabetes Federation (IDF) to consider making “Women, Diabetes and Pregnancy” the theme of a forthcoming World Diabetes Day campaign.

Experts commended the World Diabetes Foundation for initiating projects related to diabetes in pregnancy to support policy action as in the case of Tamil Nadu India and encouraged further similar initiatives.

The experts mandated Dr. Elaine Wolfson, President of the Global Alliance for Women's Health, and Dr. Anil Kapur, Managing Director of the World Diabetes Foundation to convey their heartfelt gratitude to the Permanent Missions to the United Nations of the Commonwealth of the Bahamas, the People's Republic of Bangladesh, the Republic of Finland, the Republic of Niger and the United Republic of Tanzania, as well as to Ms. Carolyn Hannan, Director of the Division for the Advancement of Women (DAW).

Experts encouraged the publication of the proceedings of the meeting in a scientific journal. A proposal for publication in the International Journal of Gynecology (IJGO), the official journal of the International Federation of Gynecology and Obstetrics (FIGO), as well as a proposal for a follow up meeting during the Diabetes in Pregnancy Congress, Sorrento, Italy, 26th -28th March 2009, were proposed by Prof. Moshe Hod and supported by others. In addition, the experts encouraged the wide dissemination of the summary report and recommendations through different means and mandated the organizers of the meeting to take appropriate actions.

List of Speakers and Experts

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H.E. Kenneth L Brown

US Ambassador (ret.); President Association for Diplomatic Studies and Training; Executive Board Member Global Alliance for Women's Health, New York NY USA

Prof. Juliana Chan, M.D.

Prof of Medicine and Therapeutics, The Chinese University of Hong Kong, Prince of Wales Hospital, Hong Kong, China

Prof. Edward John Coetzee

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Ms. Carolyn Hannan, Ph.D.

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Prof. Moshe Hod, M.D.

Director, Division of Maternal Fetal Medicine, Helen Schneider Hospital for Women, Rabin Medical Centre, Sackler faculty of Medicine, Tel Aviv University, Tel Aviv, Israel

H.E. Ms. Ismat Jahan

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Dr. Lois Jovanovic, M.D., FACECEO

Chief Scientific Officer, Sansum Diabetes Research Institute, Santa Barbara, CA, USA

H.E. Ms. Joyce CN Kafanabo

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Dr. Anil Kapur, M.D.

Managing Director, World Diabetes Foundation, Copenhagen, Denmark

Prof. Pierre Lefèbvre, M.D.

Emeritus Professor of Medicine, University of Liege, Belgium; Past President,
International Diabetes Federation; Chairman, World Diabetes Foundation

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Prof. Hajera Mehtab M.D.

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Prof. Ida Nicolaisen

Senior Research Fellow, Nordic Institute of Asian Studies, Copenhagen University,
Denmark; Vice Chair, United Nations Permanent Forum on Indigenous Issues

Dr. Michelle Owens, M.D.

Behavioural Scientist, Division of Diabetes Translation, US Centers for Disease
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Dr. Gojka Roglic, M.D.

Medical Officer of the Diabetes Program, Department of Chronic Diseases and Health Promotion, World Health Organisation, Geneva, Switzerland

Prof. V Seshiah, M.D.

Emeritus Professor of Diabetology, Madras Medical College; Medical Director, Diabetes Unit Apollo Hospitals, Chennai; Chairman, Dr. V Seshiah Diabetes Care and Research Institute , Chennai, India

Prof. Allan Vaag, M.D., Ph.D.

Chief Physician, Steno Diabetes Centre, Gentofte, Denmark; Adjunct Professor, Lund University, Sweden

Dr. Elaine M Wolfson, Ph.D.

President, Global Alliance for Women's Health, New York, NY, USA

Prof. CS Yajnik M.D., F.R.C.P.

Director, Diabetes Unit, King Edward Memorial Hospital, Pune, India;
Vice President, Society for Natal Effects on Health in Adults (SNEHA India)

Lexicon

Appropriate for gestational age (AGA): baby born same size as average peers for the given duration of pregnancy

Adipose: higher than normal body fat percent

Anthropometric markers: indicators of body measures (size and shape)

Biochemical markers: indicators of body chemistry

Body Mass Index (BMI): an anthropometric measure of body mass, defined as weight in kilograms divided by height in meters squared

Fetopathy: a morbid condition of the fetus or embryo

Foetal programming: a permanent change in structure or physiological function in the fetus or embryo occurring while in the womb during the period of organ development and growth as a result of a defined stimulus

Gestational diabetes: diabetes being first recognized during pregnancy

Hyperglycemia: higher than normal level of blood sugar

Impaired Glucose Tolerance (IGT): higher than normal level of blood glucose developing after a carbohydrate-rich meal or test dosage of glucose (usually 75 g), not reaching levels diagnostic of diabetes mellitus; a strong indicator of future risk of diabetes and cardiovascular disease

Macrosomia: large body

Metabolic syndrome: a clustering of cardiovascular risk factors such as glucose intolerance, hypertension, obesity, hypertriglyceridemia, reduced HDL cholesterol.

Pre-gestational diabetes: existing diabetes that predates the pregnancy

Small for gestational age (SGA): baby born smaller than average peers for the given duration of pregnancy

"thin-fat": person who apparently looks thin but has higher than normal body fat percent

Type 1 diabetes: a severe form of diabetes mellitus, often brittle, usually of abrupt onset during the first two decades of life but can develop at any age; characterized by low plasma insulin levels, susceptibility to ketoacidosis and caused by immune-mediated destruction of pancreatic B cells, need daily insulin replacement and long term survival depends on it

Type 2 diabetes: a form of diabetes mellitus, usually of slow onset during adult life but can occur at an earlier age, characterised by insensitivity to insulin action and no evidence of immune mediated destruction of pancreatic B cells, may need insulin therapy at some point in the course of the disease

Visceral fat deposit: deposit of fat within the abdominal cavity as opposed to the subcutaneous tissues

List of Acronyms

AGA: Appropriate for gestational age

BMI: Body Mass Index

CSW: Commission on the Status of Women

DAW: Division for the Advancement of Women

FIGO: International Federation of Gynecology and Obstetrics

FWCW: United Nations Fourth World Conference on Women

GAWH: Global Alliance for Women's Health

HAPO: Hyperglycemia and Adverse Pregnancy Outcomes

ICPD: International Conference on Population and Development

IGT: Impaired glucose tolerance

IJGO: International Journal of Gynecology and Obstetrics

MDGs: Millennium Development Goals

NCDs: Non-communicable diseases

SGA: Small for gestational age

UN: United Nations

UNFPA: United Nations Population Fund

UNICEF: United Nations Children's Fund

WDF: World Diabetes Foundation

WHO: World Health Organization