

Speaker: Jyoti Mathad, M.D.

Date: February 8, 2021

Time: 5:00pm - 6:00pm

Title: Women's health issues in LMICs

Zoom info: <https://weillcornell.zoom.us/j/92937436313> **Meeting ID:** 929 3743 6313 **Passcode:** 214786

Summary: Focus on health issues that are more common in LMICs or diseases that may be managed differently in LMICs. The talk will also include issues surrounding reproductive health with discussion focused on how social and environmental factors intersect with the provision of appropriate health care in resource-limited settings.

Suggested Readings:

List of Recommendations from the Task Force on Research Specific to Pregnant Women and Lactating Women (PRGLAC)

The Sustainable Development Goals and the Global Strategy for Women's, Children's and Adolescents' Health

Mendenhall, E., & Weaver, L. J. (2014). Reorienting women's health in low- and middle-income countries: the case of depression and Type 2 diabetes. *Global Health Action*, 7(1), 22803.

<https://doi.org/10.3402/gha.v7.22803>

Case Study:

Women's Health in LMIC's Case Study: A sick postpartum women in India

Cc: dizzy and weak

HPI: 24 yo female in India presents with dizziness and weight loss for two weeks. The patient recently delivered a baby boy 8 weeks ago. Her pregnancy was uneventful except that she has a history of HIV and was only intermittently adherent to her antiretroviral therapy. At the time of delivery her HIV viral load was in the low thousands.

Two weeks ago, she was seen for her 6-wk postpartum visit and was noted to have cough, fevers, and weight loss. At that time she submitted a sputum sample that was acid fast bacilli (AFB) stain negative. However her chest Xray was notable for a left upper lobe lesion and her sputum was Gene Xpert positive. She was started on anti tuberculosis therapy that day and was encouraged to stay adherent to her antiretroviral therapy as well.

Today she presents with continued weight loss and cough and was found to be hypotensive (78/42) in the clinic. Of note, she has not been adherent with her HIV medications or her TB medications.

Discussion Questions:

- What is your differential diagnosis?
- How would you manage this patient?

List of Recommendations from the Task Force on Research Specific to Pregnant Women and Lactating Women (PRGLAC)

This information comes from the [PRGLAC Report to the HHS Secretary and Congress, September 2018](#) ([/sites/default/files/2018-09/PRGLAC_Report.pdf](#)) (PDF 7 MB).

The Task Force submits the following recommendations to the Secretary of HHS regarding research and the development of safe and effective therapies specific to pregnant women and lactating women based on information gleaned during four meetings and a public comment period. The Task Force developed these recommendations in open, public sessions and voted on each recommendation at the [May 2018 meeting](#) ([/about/meetings/2018/051418](#)).

The central theme of all recommendations is the need to alter cultural assumptions that have significantly limited scientific knowledge of therapeutic safety, effectiveness, and dosing for pregnant and lactating women. It is critical to facilitate and augment research on therapies for these populations.

1. **Include and integrate pregnant women and lactating women in the clinical research agenda**
 - Remove pregnant women as an example of a vulnerable population in the Common Rule
 - The Food and Drug Administration (FDA) should harmonize with the Common Rule and remove pregnant women as a vulnerable population
 - The Department of Health and Human Services (HHS) should develop guidance to facilitate the conduct of research in pregnant women and lactating women
2. **Increase the quantity, quality, and timeliness of research on safety and efficacy of therapeutic products used by pregnant women and lactating women**
 - Provide additional resources and funding for research to obtain clinically meaningful and relevant data for specific and co-existing conditions in pregnant women and lactating women, including but not limited to:
 - Develop preclinical models
 - Expand basic science research to inform drug development
 - Develop new tools and methods to assay therapeutic products, such as those that utilize small volumes and are sensitive to detect minute quantities in human milk
 - Develop new tools to assess pharmacodynamic response in pregnant women, lactating women, and children
 - Fund clinically relevant research and studies to inform therapeutic product use in pregnant women and lactating women
 - Design trials to capture long-term maternal, obstetric, and child outcomes
 - Utilize longer award periods by government funders (beyond the typical 5-year award), when needed, for study design and data collection

3. **Expand the workforce of clinicians and research investigators with expertise in obstetric and lactation pharmacology and therapeutics**
 - Develop and support training and career development opportunities in obstetric and lactation pharmacology and therapeutics for both clinical and basic science
 - Develop mentors in obstetric and lactation pharmacology and therapeutics for both clinical and basic science
 - Increase the knowledge and engagement of health care providers regarding obstetric and lactation pharmacology and therapeutics
4. **Remove regulatory barriers to research in pregnant women**
 - Modify subpart B of the Common Rule
 - Change 46.204(e) in subpart B to maternal consent alone
 - Given the recognized autonomy of a pregnant woman, the evolution of family structure, that for a child only one parental signature is required for research to benefit the child and to align with parental consent for pediatrics
 - Add in the option of “Minor increase over minimal risk” from subpart D to 36.046
5. **Create a public awareness campaign to engage the public and health care providers in research on pregnant women and lactating women**
 - Highlight the importance of research on therapeutic products in pregnant women and lactating women, including the impact of not taking the medication during pregnancy and lactation as well as the impact of not breastfeeding on mother and child
 - Engage stakeholders such as Department of Health and Human Services (HHS), professional societies, industry, advocacy groups, and public and global partners
6. **Develop and implement evidence-based communication strategies with health care providers on information relevant to research on pregnant women and lactating women**
 - Increase the knowledge of health care providers regarding obstetric and lactation therapeutics and research needs
 - Increase the engagement of health care providers to disseminate information from research findings to their patients
 - Increase the engagement of health care providers to discuss participation in clinical trials, research, and registries
 - Develop appropriate strategies for sharing and interpreting research findings and risk
7. **Reduce liability to facilitate an evidence base for new therapeutic products that may be used by women who are, or may become, pregnant and by lactating women**
 - Implement a liability-mitigation strategy for conducting research and evaluating new therapeutic products in pregnant women and lactating women
 - Using the Vaccine Injury Compensation Program (VICP) as a model, however include mitigation whether or not the therapeutic product achieves marketing approval
 - If liability mitigation is insufficient, consider implementing a targeted incentive program and/or strengthening FDA authority to require clinically relevant data (such as pharmacologic and clinical data) on pregnant women and lactating women to inform dosing and safety

8. **Develop separate programs to study therapeutic products used off-patent in pregnant women and lactating women using the NIH BPCA as a model**
 - Provide specific funding
 - Develop separate prioritization processes for therapies and/or conditions in pregnant women and lactating women
9. **Develop programs to drive discovery and development of therapeutics and new therapeutic products for conditions specific to pregnant women and lactating women**
 - Create separate prioritization processes for pregnant women and lactating women
 - Unmet need examples in lactation: low milk supply, mastitis
 - Unmet need examples in pregnancy: preterm labor, hyperemesis
 - Consider a Biomedical Advanced Research and Development Authority (BARDA)-like model and the NIH vaccine model that takes clinical development up to phase II
10. **Implement a proactive approach to protocol development and study design to include pregnant women and lactating women in clinical research**
 - Investigators/sponsors must specifically justify exclusion in study design
 - Ensure studies are designed to capture the time dependency of physiologic changes in pregnancy and lactation
 - Develop a systematic plan on how data for pregnant women and lactating women will be obtained in a timely fashion to include pharmacokinetics/pharmacodynamics and safety
 - Develop guidance for institutional review boards and investigators about the inclusion of pregnant women and lactating women in research
 - Develop a systematic plan for if a woman becomes pregnant in a study to include whether product should continue, if un-blinding is necessary, how to capture opportunistic information on pharmacology, clinical data, and pregnancy outcome information
11. **Leverage established and support new infrastructures/collaborations to perform research in pregnant women and lactating women**
 - Provide financial support and incentives to established and develop new multicenter infrastructures that capitalize on standard of care procedures (opportunistic studies), innovative designs, and methodologies.
 - Broaden focus of ongoing research networks to include research on therapeutic products in pregnant women and lactating women
 - Encourage networks/collaborations to engage in public-private partnerships to facilitate research
12. **Utilize and improve existing resources for data to inform the evidence and provide a foundation for research on pregnant women and lactating women**
 - Design health record systems to link mother and infant records
 - Leverage large studies and databases including health systems, health plans, surveillance systems, electronic medical records, registries
 - Use novel data resources
 - Use innovative methods of data analytics
 - Require common data elements to facilitate collaboration and use

13. Optimize registries for pregnancy and lactation

- Create a user-friendly website for registry listing
- Develop registry standards and common data elements that facilitate input of pertinent data with easy, transparent access to obtain information in real time
 - Include maternal, obstetric, and child outcomes, along with birth defects
- Facilitate access to data and transparency of information in registries
 - Use the ART registry as a model
- Develop disease/condition-focused registries
 - Move toward a single registry for all therapeutic products with input from stakeholders

14. The Department of Health and Human Services Secretary should consider exercising the authority provided in law to extend the PRGLAC Task Force when its charter expires in March 2019 (Extended March 13, 2019 – March 13, 2021)

15. Establish an Advisory Committee to monitor and report on implementation of recommendations, updating regulations, and guidance, as applicable, regarding the inclusion of pregnant women and lactating women in clinical research (*Deferred*)

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Maternal mortality

16 February 2018

Key facts

- Every day, approximately 830 women die from preventable causes related to pregnancy and childbirth.
 - 99% of all maternal deaths occur in developing countries.
 - Maternal mortality is higher in women living in rural areas and among poorer communities.
 - Young adolescents face a higher risk of complications and death as a result of pregnancy than other women.
 - Skilled care before, during and after childbirth can save the lives of women and newborn babies.
 - Between 1990 and 2015, maternal mortality worldwide dropped by about 44%.
 - Between 2016 and 2030, as part of the Sustainable Development Goals, the target is to reduce the global maternal mortality ratio to less than 70 per 100 000 live births.
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Maternal mortality is unacceptably high. About 830 women die from pregnancy- or childbirth-related complications around the world every day. It was estimated that in 2015, roughly 303 000 women died during and following pregnancy and childbirth. Almost all of these deaths occurred in low-resource settings, and most could have been prevented (1).

In sub-Saharan Africa, a number of countries halved their levels of maternal mortality since 1990. In other regions, including Asia and North Africa, even greater headway was made. Between 1990 and 2015, the global maternal mortality ratio (the number of maternal deaths per 100 000 live births) declined by only 2.3% per year between 1990 and 2015. However, increased rates of accelerated decline in maternal mortality were observed from 2000 onwards. In some countries, annual declines in maternal mortality between 2000–2010 were above 5.5%.

The Sustainable Development Goals and the Global Strategy for Women's, Children's and Adolescents' Health

Seeing that it is possible to accelerate the decline, countries have now united behind a new target to reduce maternal mortality even further. One target under Sustainable Development Goal 3 is to reduce the global maternal mortality ratio to less than 70 per 100 000 births, with no country having a maternal mortality rate of more than twice the global average.

Where do maternal deaths occur?

The high number of maternal deaths in some areas of the world reflects inequities in access to health services, and highlights the gap between rich and poor. Almost all maternal deaths (99%) occur in developing countries. More than half of these deaths occur in sub-Saharan Africa and almost one third occur in South Asia. More than half of maternal deaths occur in fragile and humanitarian settings.

The maternal mortality ratio in developing countries in 2015 is 239 per 100 000 live births versus 12 per 100 000 live births in developed countries. There are large disparities between countries, but also within countries, and between women with high and low income and those women living in rural versus urban areas.

The risk of maternal mortality is highest for adolescent girls under 15 years old and complications in pregnancy and childbirth is a leading cause of death among adolescent girls in developing countries (2), (3).

Women in developing countries have, on average, many more pregnancies than women in developed countries, and their lifetime risk of death due to pregnancy is higher. A woman's lifetime risk of maternal death – the probability that a 15 year old woman will eventually die from a maternal cause – is 1 in 4900 in developed countries, versus 1 in 180 in developing countries. In countries designated as fragile states, the risk is 1 in 54; showing the consequences from breakdowns in health systems.

Why do women die?

Women die as a result of complications during and following pregnancy and childbirth. Most of these complications develop during pregnancy and most are preventable or treatable. Other complications may exist before pregnancy but are worsened during pregnancy, especially if not managed as part of the woman's care. The major complications that account for nearly 75% of all maternal deaths are (4):

- severe bleeding (mostly bleeding after childbirth)
- infections (usually after childbirth)
- high blood pressure during pregnancy (pre-eclampsia and eclampsia)
- complications from delivery
- unsafe abortion.

The remainder are caused by or associated with diseases such as malaria, and AIDS during pregnancy.

How can women's lives be saved?

Most maternal deaths are preventable, as the health-care solutions to prevent or manage complications are well known. All women need access to antenatal care in pregnancy, skilled care during childbirth, and care and support in the weeks after childbirth. Maternal health and newborn health are closely linked. It was estimated that approximately 2.7 million newborn babies died in 2015 (5), and an additional 2.6 million are stillborn (6). It is particularly important that all births are attended by skilled health professionals, as timely management and treatment can make the difference between life and death for both the mother and the baby.

Severe bleeding after birth can kill a healthy woman within hours if she is unattended. Injecting oxytocin immediately after childbirth effectively reduces the risk of bleeding.

Infection after childbirth can be eliminated if good hygiene is practiced and if early signs of infection are recognized and treated in a timely manner.

Pre-eclampsia should be detected and appropriately managed before the onset of convulsions (eclampsia) and other life-threatening complications. Administering drugs such as magnesium sulfate for pre-eclampsia can lower a woman's risk of developing eclampsia.

To avoid maternal deaths, it is also vital to prevent unwanted and too-early pregnancies. All women, including adolescents, need access to contraception, safe abortion services to the full extent of the law, and quality post-abortion care.

Why do women not get the care they need?

Poor women in remote areas are the least likely to receive adequate health care. This is especially true for regions with low numbers of skilled health workers, such as sub-Saharan Africa and South Asia. Globally in 2015, births in the richest 20 per cent of households were more than twice as likely to be attended by skilled health personnel as those in the poorest 20 per cent of households (89 per cent versus 43 per cent). This means that millions of births are not assisted by a midwife, a doctor or a trained nurse.

In high-income countries, virtually all women have at least four antenatal care visits, are attended by a skilled health worker during childbirth and receive postpartum care. In 2015, only 40% of all pregnant women in low-income countries had the recommended antenatal care visits.

Other factors that prevent women from receiving or seeking care during pregnancy and childbirth are:

- poverty
- distance
- lack of information
- inadequate services
- cultural practices.

To improve maternal health, barriers that limit access to quality maternal health services must be identified and addressed at all levels of the health system.

WHO response

Improving maternal health is one of WHO's key priorities. WHO works to contribute to the reduction of maternal mortality by increasing research evidence, providing evidence-based clinical and programmatic guidance, setting global standards, and providing technical support to Member States.

In addition, WHO advocates for more affordable and effective treatments, designs training materials and guidelines for health workers, and supports countries to implement policies and programmes and monitor progress.

During the United Nations General Assembly 2015, in New York, UN Secretary-General Ban Ki-moon launched the Global Strategy for Women's, Children's and Adolescents' Health, 2016-2030 (7). The Strategy is a road map for the post-2015 agenda as described by the Sustainable Development Goals and seeks to end all preventable deaths of women, children and adolescents and create an environment in which these groups not only survive, but thrive, and see their environments, health and wellbeing transformed.

As part of the Global Strategy and goal of Ending Preventable Maternal Mortality, WHO is working with partners towards:

- addressing inequalities in access to and quality of reproductive, maternal, and newborn health care services;
- ensuring universal health coverage for comprehensive reproductive, maternal, and newborn health care;
- addressing all causes of maternal mortality, reproductive and maternal morbidities, and related disabilities; and
- strengthening health systems to collect high quality data in order to respond to the needs and priorities of women and girls; and
- ensuring accountability in order to improve quality of care and equity.

(1) Global, regional, and national levels and trends in maternal mortality between 1990 and 2015, with scenario-based projections to 2030: a systematic analysis by the UN Maternal Mortality Estimation Inter-Agency Group.

Alkema L, Chou D, Hogan D, Zhang S, Moller AB, Gemmill A, et al. Lancet. 2016; 387 (10017): 462-74.

(2) Maternal-perinatal morbidity and mortality associated with adolescent pregnancy in Latin America: Cross-sectional study.

Conde-Agudelo A, Belizan JM, Lammers C. American Journal of Obstetrics and Gynecology, 2004, 192:342–349.

(3) Global patterns of mortality in young people: a systematic analysis of population health data.

Patton GC, Coffey C, Sawyer SM, Viner RM, Haller DM, Bose K, Vos T, Ferguson J, Mathers CD. Lancet, 2009, 374:881–892.

(4) Global Causes of Maternal Death: A WHO Systematic Analysis.

Say L, Chou D, Gemmill A, Tunçalp Ö, Moller AB, Daniels JD, et al. Lancet Global Health. 2014;2(6): e323-e333.

(5) Levels and Trends in Child Mortality. Report 2015.

The Inter-agency Group for Child Mortality Estimation (UN IGME). UNICEF, WHO, The World Bank, United Nations Population Division. New York, USA, UNICEF, 2015.

(6) National, regional, and worldwide estimates of stillbirth rates in 2015, with trends from 2000: a systematic analysis.

Blencowe H, Cousens S, Jassir FB, Say L, Chou D, Mathers C et al. Lancet Glob Health. 2016 Feb;4(2):e98-e108. doi: 10.1016/S2214-109X(15)00275-2.

(7) Global Strategy for Women's, Children's and Adolescents' Health, 2016-2030.

New York: United Nations; 2015.

SPECIAL ISSUE: EPIDEMIOLOGICAL TRANSITIONS – BEYOND OMRAN'S THEORY

Reorienting women's health in low- and middle-income countries: the case of depression and Type 2 diabetes

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Women's health in low- and middle-income countries (LMICs) has historically focused on sexual and reproductive health. However, understanding how women acquire, experience, and treat non-reproductive health conditions, such as non-communicable diseases, has become a fundamental public health concern. Special attention to the social determinants of LMIC women's health can provide socially and culturally relevant knowledge for implementation of policies and programs for women increasingly confronting these 'New Challenge Diseases'. This article uses the example of depression and Type 2 diabetes comorbidity to illustrate how attending to the social determinants of mental and physical health beyond the reproductive years contributes to a more holistic agenda for women's health. For instance, we must address the plurality of experiences that shape women's health from social determinants of depression, such as gendered subjugation within the home and public sphere, to the structural determinants of obesity and diabetes, such as poor access to healthy foods and health care. Attending to the complexities of health and social well-being beyond the reproductive years helps the women's global health agenda capture the full spectrum of health concerns, particularly the chronic and non-communicable conditions that emerge as life expectancy increases.

Keywords: *women's health; depression; Type 2 diabetes; life course; social determinants; epidemiological transition*

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The contemporary landscape of women's health in low- and middle-income countries (LMICs) is more complex than public health approaches in previous decades reflected, when the focus was primarily on sexual and reproductive health. As populations age, no longer are sexual and reproductive health the dominant themes that shape how women can live longer, healthier lives. Instead, a combined perspective of the social determinants of mental and physical health across the life course comes to the forefront. Understanding how women acquire, experience, and treat non-reproductive health conditions, such as non-communicable diseases, over the course of their lives is particularly important for women living in resource-constrained settings, who are socially and economically marginalized and often experience limited access to healthcare. This article uses the example of depression and Type 2 diabetes comorbidity to illustrate how attending to the social determinants of mental and physical health beyond the reproductive years contributes to a more holistic agenda for women's health.

This shift in priorities requires that we break down the traditional distinctions between 'chronic' and 'acute', 'communicable' and 'non-communicable' diseases because in fact they often occur together. For instance, diabetes and tuberculosis not only coexist within a given population but also can coexist within a single individual. Likewise, over- and under-nutrition can exist simultaneously in communities, households, or even individuals during different phases of their lives. In light of these complex scenarios, Knaul and Frenk have suggested that we rethink public health paradigms for the challenges of aging populations as 'New Challenge Diseases' rather than 'non-communicable diseases' (1). This approach requires that we move beyond diseased-focused silos in public health. Instead, we must address the plurality of experiences that shape women's health from social determinants of depression, such as gendered subjugation within the home and public sphere, to the structural determinants of obesity and diabetes, such as poor access to healthy foods and health care. Women living in LMICs require special attention not only because their

experiences are unique to women living in affluent nations but also because such limited research is available on their social and health problems. Bias of research from high-income nations may construe LMIC women's experiences and contribute not only to knowledge displaced from women's social experiences but also policies and programs that do not reflect the social, economic, and cultural factors surrounding women's mental and physical health problems in LMICs.

As opposed to traditional disease-based approaches in medicine and public health, a life course approach encompasses the powerful role of social and economic determinants of health in women's lives from infancy to old age (2, 3). This approach is particularly important for women who may experience disproportionate social disadvantage, gendered discrimination, and chronic, untreated depression when compared to men (4). Indeed, new global data demonstrates that women's health is overall poorer than their male counterparts around the world (5), and this is largely due to socially driven inequalities. Recognizing this is crucial for understanding and managing chronic diseases, which typically have complex etiologies rooted in long-term lifestyle choices as well as intergenerationally heritable characteristics, both genetic and behavioral. A life course perspective acknowledges, for instance, that social and economic problems related to poverty both fuel poor health and result from it, creating cycles that are difficult to break.

We present complexities of the comorbidity between Type 2 diabetes and depression to illustrate the need for a life course perspective in women's health. Type 2 diabetes, an adult-onset chronic disease, is widely known as a disease of 'modernization' that is emerging in LMICs and shifting from affluent to lower income groups all over the world (6, 7). Biologists and epidemiologists identify depression as both a cause and consequence of diabetes (8, 9), while medical social scientists have elucidated some of the complex socioeconomic and psychophysiological pathways linking the two chronic conditions (10). Despite increasing diabetes prevalence in LMICs, the research on social experiences of those living with diabetes, depression, and their comorbidity is limited. The few existing qualitative studies suggest that experiences differ between men and women (11) as well as between income groups (12).

Social and economic determinants of women's health are fundamental in the relationship of depression and diabetes, particularly among people of lower socioeconomic status (6, 13). As underscored in the 2010 Global Burden of Disease studies, experiences of social problems such as various forms of interpersonal abuse, and psychological problems such as depression and anxiety, have escalated either by detection or actual incidence among women on a global scale (5). Stress throughout the life course rooted in childhood trauma, abuse, or the chronicity of poverty may be key risk factors for

depression and/or poor eating and activity patterns that lead to obesity and its complications, such as Type 2 diabetes (10). Complicating matters is the dual burden associated with living in poverty in rapidly modernizing cities that make unhealthy foods accessible and affordable, fueling obesity epidemics in LMIC settings (7). These inequalities create a negative feedback loop, whereby social and economic problems increase the likelihood of developing depression, diabetes, and their overlap, and these illnesses together promote the development of diabetes-related complications such as loss of limbs or eyesight and subsequent physical disability, further compounding socioeconomic inequalities (10). Finally, because of stigma and limited mental healthcare services in LMICs (14), women experiencing this comorbidity are more likely to seek care for diabetes than for depression, leaving half of the comorbidity unaddressed (11).

In India, home to the second largest population of people with Type 2 diabetes in the world (13), recent epidemiological and qualitative data suggest that the illness is becoming more prevalent among the middle classes and working poor (15). In tandem, mental healthcare is limited (16). Despite active research and policies aimed at addressing chronic and mental health diseases in India (17), there remains a large gap in knowledge about how these conditions afflict various Indian communities in their everyday lives, especially poor women. Qualitative research on depression and diabetes in India indicates that lower income people experience higher rates of social stress and depression, and poorer access to health care (12). Such research also underscores the powerful role that gendered social roles play in shaping women's mental health and diabetes outcomes (18). For example, gendered behavioral norms orient Indian women strongly toward the care of others, and therefore away from the self-care activities that are usually integral to diabetes management (11). Maintaining these other-care-oriented roles appears to be good for diabetic women's mental, but not physical, health.

The recognition of social forces as part of diabetes and depression etiology in India and other LMICs presents new challenges for public health because it underscores that medicating these complex illnesses does not fully address them. Finding a better public health solution to comorbidities like Type 2 diabetes and depression will likely only occur when we understand the limitations, and harness the power of, cultural beliefs and social conditions to shape behaviors that affect chronic diseases: how people eat, move, and medicate; how economic conditions may function as a barrier to treatment; and how depression may complicate a chronic disease, both socially and physically (7).

The comorbidity between depression and diabetes among women in LMICs is but one example of the ways in which women's non-reproductive health concerns deserve more prominence in global health. It also presents a strong

case for increased attention to social and psychological determinants of women's health over the life course. The present lack of such perspectives in women's global health may result from limited funding for non-reproductive issues, lack of interest, or may simply be another manifestation of the great information gap between high-income countries and LMICs. Regardless, it should be a priority of future research, programming, and policy.

Focusing on health, not disease

Why should diabetes and depression comorbidity be on the women's health agenda? Depression has only become a major global health concern in the past decade, and has proven very difficult to address, not least because of stigma and limited human resources for mental healthcare. This is especially true for women in LMICs, whose access to mental healthcare may be virtually non-existent, and whose care-seeking behaviors and budgets typically include little, if any, room for mental healthcare. Moreover, most LMICs' health systems are poorly equipped to meet the complex prevention and management challenges associated with chronic conditions like diabetes and mental illnesses because, until very recently, infectious diseases were the dominant population health concerns.

The Movement for Global Mental Health's often-cited slogan, that there is 'no health without mental health' (14), emphasizes the need for integrated mental and physical healthcare systems to combat the next generation of public health problems. This would require an ideological and organizational shift in biomedicine, which has until recently viewed physical and mental health as separate categories of pathology requiring separate treatments, but would likely open up new avenues for cost-effective treatment. The WHO mental health Gap Action Program (mhGAP), for instance, suggests steps by which mental illness diagnosis and treatment can be integrated into primary care settings, and many initiatives are working to actualize this goal in LMICs (e.g. PRIME: <http://www.prime.uct.ac.za/>). With relatively little additional investment, basic mental healthcare could also be integrated into existing diabetes care guidelines. Such an approach is particularly important for women who face a higher burden of social problems and mental illness, which influence diabetes self-care and health outcomes. Yet, until a more integrative approach is adopted within clinics and public health agendas, healthcare silos will dominate global health dialogues, funding structures, and disease-focused (as opposed to *health*-focused) campaigns.

As the co-occurrence of mental and physical health problems gains recognition in the public health agenda, a more nuanced understanding of sociocultural influences on women's lifetime health is crucial. This is particularly important in LMIC settings where women face not only great social disadvantage but also an increasing burden of mental and physical health problems. A life course

perspective requires acknowledging that women's mental and physical health are closely linked with cultural beliefs, social experiences (both past and present), and economic conditions over time. It also recognizes that women's health status shapes their social and economic conditions, for better or worse. Strategic points of intervention can improve women's social and emotional well-being across decades, which could then empower them to identify and care for their own health problems more effectively. In this way, integrating a social and psychological approach into health agendas, from the clinical to the policy level, can make a big impact.

Main findings

- Moving beyond disease-focused silos in public health requires that we attend to the plurality of experiences that shape women's health from social determinants of depression, such as gendered subjugation within the home and public sphere, to the structural determinants of obesity and diabetes, such as poor access to health foods and health care.
- Complexities demonstrated by the comorbidity of depression and type 2 diabetes illustrate the need for a life course perspective in women's health; social and economic factors serve as both causes and consequences of these co-conditions.
- The recognition of social forces as part of diabetes and depression aetiology in low- and middle-income countries presents new challenges for public health because it underscores that medicating these complex illnesses does not fully address them; this requires that we understand the limitations, and harness the power of, cultural beliefs and social conditions to shape behaviors that affect chronic diseases.

Key messages for action

- Integrating a social and psychological approach into health agendas, from the clinical to the policy level, can make a big impact.
- Strategic points of intervention can improve women's social and emotional well-being across the life course, which could then empower them to identify and care for their own health problems more effectively.
- With relatively little additional investment, basic mental healthcare (as illustrated in the WHO mental health Gap Action Program (mhGAP)) can be integrated into existing diabetes care guidelines; such an approach is particularly important for women who face a higher burden of social problems and mental illness, which influence diabetes self-care and health outcomes.

Conflict of interest and funding

No conflict of interests declared.

References

1. Knaul FM, Frenk J. Strengthening health systems to address New Challenge Diseases (NCDs). *HSPH News*. Fall 2011.
2. Lynch J, Smith G. A life course approach to chronic disease epidemiology. *Annu Rev Public Health* 2005; 26: 1–35.
3. Worthman C, Kohrt B. Receding horizons of health: biocultural approaches to public health paradoxes. *Soc Sci Med* 2005; 61: 861–78.
4. Patel V, Kleinman A. Poverty and common mental disorders in developing countries. *Bull World Health Organ* 2003; 81: 609e–15.
5. Murray CJL, Vos T, Lozano R, Naghavi M, Flaxman AD, Michaud C, et al. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet* 2012; 380: 2197–223.
6. Leone T, Coast E, Narayanan S, Aikins A. Diabetes and depression comorbidity and socioeconomic status in low and middle income countries (LMICs): a mapping of the evidence. *Global Health* 2012; 8: 39–49.
7. Popkin BM, Adair LS, Ng SW. Global nutrition transition and the pandemic of obesity in developing countries. *Nutr Rev* 2012; 70: 3–21.
8. Golden S, Lazo M, Carnethon M, Bertoni A, Schreiner P, Roux A, et al. Examining a bidirectional association between depressive symptoms and diabetes. *JAMA* 2008; 299: 2751–9.
9. Musselman D, Betan E, Larsen H, Phillips L. Relationship of depression to diabetes types 1 and 2: epidemiology, biology, and treatment. *Biol Psychiatry* 2003; 54: 317–29.
10. Mendenhall E. *Syndemic suffering: social distress, depression, and diabetes among Mexican immigrant women*. Walnut Creek, CA: Left Coast Press; 2012.
11. Weaver LJ. *When family comes first: diabetes, social roles, and coping among women in North India*. Atlanta, GA: Emory University; 2013.
12. Mendenhall E, Shivashankar R, Tandon N, Ali MK, Narayan K MV, Prabhakaran D. Stress and diabetes in socioeconomic context: a qualitative study of urban Indians. *Soc Sci Med* 2012; 75: 2522–9.
13. International Diabetes Federation. *IDF diabetes atlas*. Brussels, Belgium: IDF; 2011.
14. Prince M, Patel V, Saxena S, Maj M, Maselko J, Phillips MR, et al. No health without mental health. *Lancet* 2007; 370: 859–77.
15. Deepa M, Anjana R, Manjula D, Narayan K, Mohan V. Convergence of prevalence rates of diabetes and cardiometabolic risk factors in middle and low income groups in urban India: 10-year follow-up of the Chennai Urban Population Study. *J Diabetes Sci Technol* 2011; 5: 918–27.
16. Patel V. The future of psychiatry in low- and middle-income countries. *Psychol Med* 2009; 39: 1759–62.
17. Patel V, Chatterji S, Chisholm D, Ebrahim S, Golapakrishna G, Mathers C, et al. Chronic diseases and injuries in India. *Lancet* 2011; 377: 413–28.
18. Weaver LJ, Hadley C. Social pathways in the comorbidity between Type 2 diabetes and mental health: concerns in a pilot study of urban middle- and upper-class Indian women. *Ethos* 2011; 39: 211–25.