



ADDRESSING GENDER AND WOMEN'S EMPOWERMENT IN MHEALTH FOR MNCH

An Analytical Framework

MADHU DESHMUKH

PATRICIA MECHAEL

MHEALTH ALLIANCE, UN FOUNDATION

March 2013



TABLE OF CONTENTS

Acknowledgments	4
List of Acronyms and Abbreviations	6
Glossary of Gender Terminology	7
Introduction: The Analytical Framework—the Why, the What, and for Whom	9
Background: MNCH, mHealth and Gender	9
Why MNCH?	9
Why mHealth?	10
Why Address Gender? Why Women's Empowerment?	10
The Need for an Analytical Framework	11
Framework Development: Evidence, Inquiry and the Process	12
The MNCH, mHealth, and Gender Framework: Domains	15
mHealth Intervention Components	15
The Technical Health Intervention	15
The Technology Strategy	15
The Community Mobilization or the Operational Approach	16
The Policy Context	16
The Analytical Framework	18
Domain: Development of Technology and Related Content	18
Domain: Policy-making and Implementation	19
Domain: Providers of Health Services	19
Domain: Women as Primary Clients of mHealth Services	20
Critical Focal Issues	20
Gender Based Violence	21
Engaging Men and Other Community Gatekeepers	21
Social and Cultural Norms	22
Moving Forward: Applying the Framework	22
Recommendations	23
References	25

ACKNOWLEDGMENTS

This analytical framework was made possible due to the contributions, insights, assistance, and efforts of several individuals. I would firstly like to express my sincere gratitude to Patty Mechael, the Executive Director of the mHealth Alliance, whose leadership, vision and commitment to mHealth, gender and women's empowerment is encouraging and inspiring. This framework would not have been possible without the guidance, inputs and support from Patty as a leader, colleague and a friend!

I would also like to express gratitude to all the amazing individuals as experts in the areas of ICT, development, health, policy and gender, who participated in the Women, ICT and Development (WICTAD) Forum hosted by US Secretary of State's Office of Global Women's Issues and UNWomen in Washington DC in January 2013. The deliberations over the two-days at this forum, and several individual and small group conversations with the participants generated thoughtful discussions that helped to inform this analytical framework. I would specifically like to acknowledge members of the WICTAD Health and Gender subgroup, Brooke Partridge from Vital Wave Consulting, Veronique Thovenot from the Millennia2015 -Women and eHealth International Working Group, Yunkap Kwankam from the International Society for Telemedicine and eHealth, Susan Mensah from ArtWorks for Change, Kirsten Gagnaire from MAMA for their insightful remarks, thoughts and inputs in identifying the key issues for gender and mHealth.

I would like to express my gratitude to the mHealth Alliance Innovation Working Group (IWG) catalytic grant implementing partners. The lessons learned from these innovative projects through their reports as well as the conversations at the IWG workshop held in December 2012 provided valuable insights.

I would also like to thank the mHealth Alliance team for their contributions through various conversations, information sharing and editing support. I would like to especially thank and acknowledge Francis Gonzales for his support and contributions based on the learnings from the IWG catalytic grants and other mHealth initiatives, as well as Jamee Kuznicki for doing such a thorough job of proof reading. The analytical framework is also informed by the

work and experiences of several staff at CARE including at the country office level working on issues of maternal and child health, gender and women's empowerment. In particular, I would like to thank Christina Wegs, for her sharp insights on issues of RMNCH, women's empowerment, and gender equality.

A special mention and thanks to my colleague and friend, Bill Philbrick for his insights based on his work and rich experiences. Bill ensured that he always made himself available for debates and discussions, asked strategic and tough questions, and provided the much needed support and encouragement throughout this process.

I would like to acknowledge and thank Margeaux Akazawa for her support in review of literature and information, analysis and writing of the framework. This framework would not have been possible without Margeaux's hard work, dedication and commitment to addressing women and children's health.

Last but not the least, I owe my gratitude to all the women and men, who have shared their stories of successes of being the change and addressing the gender and social norms, achieving health for themselves and their families; their stories of struggles and thus the courage and resilience demonstrated by each one of them in the conditions they live in, the challenges they faced. The stories of these women and men are truly inspirational and humbling.

This framework is not intended to be a blue print – rather, is presented as a tool for analysis. I hope that this framework is used by practitioners, academics, researchers, policy makers, and policy advocates to enhance the mHealth communities' understanding of the gender barriers, gaps and implications for mHealth, and contribute to further sharpening the framework and its use, and thereby ensuring the success of mHealth interventions in achieving the health goals as well as of gender equity and women's empowerment.

Madhu Deshmukh



LIST OF ACRONYMS AND ABBREVIATIONS

ANC	Antenatal Care	IWG	Innovation Working Group	PMTCT	Prevention of Mother To Child Transmission of HIV/AIDS
ANM	Auxiliary Nurse and Midwives	LMICs	Low- and Middle-Income Countries	PNC	Prenatal Care
ARV	Antiretroviral	MAMA	Mobile Alliance for Maternal Action	RFID	Radio Frequency Identification
CBO	Community Based Organization	MDGs	UN Millennium Development Goals	SAM	Severe Acute Malnutrition
DHS	Demographic and Health Surveys	M&E	Monitoring and Evaluation	SMS	Short Message Service
eHealth	The use of electronic information and communication technologies (ICT) for health	mHealth	The use of mobile communication technologies for health	TAT	Turnaround Time
EID	Early Infant Diagnosis	MNCH	Maternal, Newborn, and Child Health	WHO	World Health Organization
FLW	Frontline Worker	NFC	Near Field Communication	WICTAD	Women, ICT, and Development Forum organized by UN Women and the US Secretary of State's Office of Global Women's Issues, January 10–11, 2013, Washington DC
GBV	Gender Based Violence	NGO	Non-Governmental Organization		
HMIS	Health Management Information Systems	Norad	Norwegian Agency for Development Cooperation		
ICT	Information and Communications Technologies				
IVR	Interactive Voice Response				



GLOSSARY OF GENDER TERMINOLOGY*

Gender Identifies the social relations between men and women. It refers to the relationship between men and women, boys and girls, and how this is socially constructed. Gender roles are dynamic and change over time. Gender differs from sex, in that it is social and cultural in nature rather than biological. Gender attributes and characteristics – encompassing, *inter alia*, the roles that men and women play and the expectations placed upon them – vary widely among societies and change over time. But the fact that gender attributes are socially constructed means that they are also amenable to change in ways that can make a society more just and equitable.

Gender Equity Entails the provision of fairness and justice in the distribution of benefits and responsibilities between women and men. The concept recognizes that women and men have different needs and power and that these differences should be identified and addressed in a manner that rectifies the imbalances between the sexes.

Gender Equality Equal enjoyment by women and men of socially and economically valued goods, opportunities, resources and rewards. Achieving gender equality requires changes in the institutional practices and social relations, which reinforce and sustain disparities. It means an equal visibility, empowerment and participation of both sexes in all spheres of public/private life.

Women's Empowerment The sum total of changes needed for a woman to realize her full human rights. This includes the combined effect of changes in her own aspirations and capabilities, the environment that influences or dictates her choices, and the interactions she engages in each day.

Gender Analysis The systematic assessment of policy and practice on women and men, respectively, and of the social and economic relationships between the two. The application of a gender perspective to each development issue addressed requires a variety of quantitative and

qualitative data: an analysis of the gender division of labor; the identification of the needs and priorities of women and men; the identification of existing opportunities and constraints to the achievement of development objectives; and the choice of an explicit intervention strategy to address these. Gender Analysis is the process of analyzing information in order to ensure development benefits and resources are effectively and equitably targeted to both women and men, and to successfully anticipate and avoid any negative impacts development interventions may have on women or on gender relations.

Sex-Disaggregated Data For a gender analysis, all data should be separated by sex in order to allow differential impacts on men and women to be measured.

Gender Planning Refers to the process of planning developmental programs and projects that are gender sensitive and which take into account the impact of differing gender roles and gender needs of women and men in the target community or sector. It involves the selection of appropriate approaches to address not only women and men's practical needs, but also identifies entry points for challenging unequal relations (*i.e.*, strategic needs) and for enhancing the gender-responsiveness of policy dialogue.

Gender Mainstreaming The process of ensuring that women and men have equal access to and control over resources, development benefits and decision-making, at all stages of the development process, projects, programs or policy. It is a globally accepted strategy that situates gender equity/equality issues at the center of broad policy decisions, institutional structures and resource allocations. It includes both men's and women's views and priorities with regard to decision-making about development goals and processes. Gender integration is not an end in itself, but rather a strategy and approach used to achieve the ultimate goal of gender equality (agreed conclusions of the UN Economic and Social Council 1997/2).

* This glossary of gender terminology is compiled from a variety of sources.^{1,2,3,4,5}



**WOMEN AND CHILDREN
SHOULD NOT BE THE
BENEFICIARIES OF
MHEALTH PROJECTS,
RATHER, WOMEN SHOULD
BE EQUAL PARTICIPANTS
IN THE DEVELOPMENT
AND IMPLEMENTATION OF
MHEALTH INTERVENTIONS.**

INTRODUCTION: THE ANALYTICAL FRAMEWORK—THE WHY, THE WHAT, AND FOR WHOM

The proposed analytical framework for addressing gender and women's empowerment within mHealth and MNCH programs builds on a review of existing evidence and gaps, a review of existing mHealth projects, and consultations with experts at key events. The framework is premised on the fact that addressing gender equity and women's empowerment is critical to successfully achieving health goals and that issues related to gender equality and women's empowerment are not yet fully understood in the context of mHealth. The framework therefore proposes four domains of analysis based on mHealth intervention components. The framework highlights the fact that women's voices and participation is central to their access and use of mobile phones and technology for better health. Additionally, women's empowerment and participation needs to be seen in a context while engaging men as well as other relevant gatekeepers, and addressing social and cultural norms that inform and shape the gender relations, behaviors and thus practices. This holistic view is critical to achieve the health goals related to Millennium Development Goals (MDGs) 4, 5 and 6. The framework is meant to serve as a tool to further examine, understand and analyze gender related issues and implications within mHealth interventions, including the unintended negative consequences of mHealth such as violence against women, in order to address them by developing meaningful mHealth intervention strategies and approaches. The framework is meant to serve as a 'living' framework, which will be further informed by the evidence and analysis gathered henceforth. The proposed framework may be used by practitioners, including national governments and NGOs, to further examine the issues on the ground, by academics and researchers to undertake further research in this area, by policy makers to examine gender sensitive mHealth and eHealth policies, and by donors and other partners to support gender transformative mHealth interventions.

BACKGROUND: MNCH, MHEALTH AND GENDER

Why MNCH?

The global public health community has prioritized maternal, newborn and child health (MNCH) in order to eliminate poverty and disparity in low- and middle-income countries (LMICs). This global commitment to MNCH outcomes is reflected in the three health-related MDGs, i.e. reducing child mortality (MDG 4), improving mothers' health (MDG 5) and combating HIV/AIDS, malaria and other major infectious diseases (MDG 6). While there has been progress toward achieving these goals by the target date of 2015, there are still significant obstacles and gaps in achieving improved outcomes for women and children.⁶ To reach these goals by the target date, the international community, in partnership with involved humanitarian organizations, must develop innovative solutions. As noted in the UN Global Strategy for Women's and Children's Health, "Innovative approaches can achieve even more, eliminating barriers to health and producing better outcomes. These approaches need to be applied to all activities: leadership, financing (including incentives to achieve better performance and results), tools and interventions, service delivery, monitoring and evaluation."⁷ The strategy recognizes the unprecedented potential of mobile phones as innovation to increase efficiency and impact on women and children's health.

MHEALTH PROJECTS HAVE THE POTENTIAL:

To reach women with lifesaving health information:

- 84% of women want better health care-related information.⁸
- 39% of women express an interest in receiving health information through their mobile phones.⁹

To empower women:

- 9 out of 10 women who use mobile phones feel safer and more connected with family and friends.¹⁰
- 85% of women who own mobile phones report feeling more independent because of their mobile phone.¹¹
- 41% of female mobile phone owners enjoy increased economic and professional opportunities due to owning a mobile.¹²

Why mHealth?

Mobile technology, particularly mobile telecommunication technology, is increasingly becoming an important tool in global health programs.¹³ For women and newborns in many low- and middle-income countries (LMICs), the rapid expansion of mobile technology infrastructure presents an unprecedented opportunity to increase access to health care and save lives that are lost from preventable and avoidable conditions. Logistical and geographic barriers to health care services and access can be met through the speed and remote abilities of telecommunication technologies.¹⁴ The low ratio of health care providers to the communities they serve is a significant barrier in terms of providing health care.¹⁵ Mobile technologies can improve quality of care by connecting clients with health care providers, streamlining data collection, providing diagnostic treatment and support, and facilitating health care worker training and communication. These technological capabilities can be realized, given that the

past decade has seen a marked proliferation of mobile phones in LMICs, accounting for more than 80 percent of the 660 million new mobile-cellular subscriptions added in 2011.¹⁶ In MNCH, combining mobile technologies with existing health system resources offers significant potential to provide women and newborns with adequate and appropriate care through interventions that stimulate demand for available services, promote improved access, and lead to efficiencies in care delivery and management practices.¹⁷ This evidence presents the opportunity to provide greater access and uptake of health care services through mHealth interventions.

Why Address Gender? Why Women's Empowerment?

Gender inequity and women's low social status and disempowerment have significant impact on women's health, maternal health and overall demand for maternal health care services. Many reproductive health problems are directly linked to gender inequity, including maternal mortality, unintended pregnancies, the feminization of the HIV pandemic, and gender-based violence.¹⁸ Gender equity and health objectives are thus mutually reinforcing.¹⁹ In many conservative communities, cultural and social norms restrict women's mobility and prevent them from seeking health care.²⁰ In most cases, where gender inequality exists, it is generally women who are excluded or disadvantaged in relation to decision-making and access to economic and social resources. Gender equality implies a society in which women and men enjoy the same opportunities, outcomes, rights and obligations in all spheres of life. Equality between men and women exists when both sexes: are able to share equally in the distribution of power and influence; have equal opportunities for financial independence through work or through setting up businesses; and enjoy equal access to education and the opportunity to develop personal ambitions. Therefore a critical aspect of promoting gender equality is the empowerment of women, with a focus on identifying and redressing power imbalances and giving women more autonomy to manage their own lives. Gender equality does not mean that men and women become the same; only that access to opportunities and life changes is neither dependent on, nor constrained by, their sex.²¹ Achieving gender equality requires women's empowerment to ensure that decision-making at private and public levels

and access to resources are no longer weighted in men's favor, so that both women and men can fully participate as equal partners in productive and reproductive life.²²

Addressing empowerment of woman is not to the exclusion of men; the achievement of gender equality implies changes for both men and women. Gender relations are also influenced by cultural and social norms. It is therefore crucial not to overlook gender as an aspect of men's social identity. This fact is, indeed, often overlooked, because the tendency is to consider male characteristics and attributes as the norm and those of women as a variation of the norm. Engaging men as equal partners and addressing notions of 'masculinity' is critical to achieving changes in desired behaviors and practices.^{23,24}

Thus, achieving gender equality and women's empowerment as key components of a program with specific and defined outcomes of health, education or livelihoods can help achieve the desired program goals successfully. Programs focused on gender measures can have benefits that go beyond programs focused only on education and poverty reduction.²⁵

While the digital divide between the developed and developing world continues to shrink, women do not have equal participation in this technological advancement. A woman in the developing world is 21% less likely to own a cell phone than a man.²⁶ Most critically, while women and children are commonly the *beneficiaries* of many mHealth projects, women are *not equal participants* in the development of interventions; mHealth interventions that aim to improve clinical outcomes alone will not achieve significant impact unless the interventions take into account the social, cultural and gender norms that can affect both the success of the intervention and the health of the clients of the services.

Given the unequal access to mobile phones and technology, and related gender implications that prevent women from using or accessing mobile phones such as fear of their husband's suspicion, an mHealth intervention can have the unintended negative consequence of domestic violence. An analytical gender framework is crucial to analyze both: the positive outcomes of addressing gender inequality and empowerment in

order to further strengthen and scale up the successful approaches; as well as unintended and negative consequences and implications in order to address and close these gender gaps and unlock the potential of mHealth projects to achieve impact on health, empowerment and gender equality.

The Need for an Analytical Framework

The proposed framework builds on the mHealth Alliance's vision of gender as a strategic area and key to accelerating progress towards MNCH goals. Review of related literature, existing gaps and discussions with several mHealth, health and gender experts have highlighted the need to have an analytical framework to further understand the nuances and implications of gender issues and mHealth. As stated in the report "mHealth for Development", it is "important to understand the whole ecosystem of a woman as it impacts if she can access technology."²⁷

The purpose of this framework is to provide mHealth interventions with an outline through which to analyze and understand gaps and issues related to gender, and develop appropriate gender transformative mHealth interventions to achieve sustainable health and empowerment outcomes.

This framework examines three key questions within mHealth interventions:

1. What are the key barriers, implications and positive or negative consequences, related to gender and women's empowerment within specific mHealth interventions and solutions?
2. How do mobile phones and related technologies address gender issues and empower women?
3. How does successfully addressing gender issues and empowerment of women by mHealth contribute to improved health outcomes in a given mHealth intervention?

Practitioners, academics, researchers and policy makers can apply this framework to understand the gender dynamics and implications of mHealth interventions.

FRAMEWORK DEVELOPMENT: EVIDENCE, INQUIRY AND THE PROCESS

The framework was informed by an extensive review of existing evidence and gaps,^{28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43} lessons learned and best practices from the field of mHealth highlighting issues of gender, as well as by dialogue and discussions with experts in areas of gender, technology, public health and policy. It draws from reviews of project experiences, published reports, and gender and women's empowerment frameworks from organizations involved in international development.^{44,45,46,47,48,49} The evidence base for this framework is additionally informed by the Innovation Working Group (IWG) catalytic mHealth grants initiative's implementing partners (Table 1). Overall management and coordination support to this initiative is provided by the mHealth Alliance.

Evidence gaps, gender issues and priority areas for the proposed framework were also informed by the discussions and deliberations at the Women, ICT and Development (WICTAD) International Development Forum organized by UN Women and the US Secretary of State's Office of Global Women's Issues and held in Washington DC on January 10–11, 2013.^{50,51} Experts in technology, gender, policy and public health from academia, government and the private sector participated in the health work stream for this conference to discuss the existing gaps and future recommendations for the consideration of women and ICT in development goals.

EVIDENCE GAPS IDENTIFIED BY EXPERTS AT THE WOMEN, ICT AND DEVELOPMENT (WICTAD) INTERNATIONAL DEVELOPMENT FORUM

Discussions prior to and during the two-day conference yielded the following gender issues and gaps in mHealth interventions:

- There exists a need for more mHealth/eHealth projects to address social and cultural contexts to create appropriate mHealth interventions.
- Currently, there is a lack of understanding of both positive and negative unintended consequences of mHealth and eHealth interventions for women.
- There is an urgent need for mHealth projects to address Gender Based Violence (GBV) issues.
- There is a need to address involvement of men, other members of the family and community leaders in mHealth projects, as they are key gatekeepers influencing women's decisions and ability to access health services.
- The available evidence of successful approaches to changing opinions and behavior of men and other stakeholders is limited.
- There is an urgent need for mHealth projects to develop and use evidence and data generated to inform and influence national policies and their implementation.
- Very little is known about linkages between primary education, economic empowerment, technology and information, and women's access to health care.

Table 1.**Mobilizing the mHealth Community towards MNCH: The IWG mHealth Catalytic Grant Implementing Partners**

The IWG mHealth catalytic grants, coordinated by the mHealth Alliance in partnership with the World Health Organization (WHO) and funded by the Norwegian Agency for Development Cooperation (Norad), support innovative uses of mobile technology to advance MNCH, with a focus on expanding programs to wide-scale implementation.⁵²

ROUND 1 GRANTEE	COUNTRY	PROJECT
Cell-Life	South Africa	SMS messaging for ANC, PNC and HIV testing
Clinton Health Access Initiative	Nigeria	SMS printers to reduce TAT of EID results
Dimagi, Inc.	India	Case management tool for Accredited Social Health Activists (ASHAs) to deliver MNCH care
D-Tree International	Zanzibar	Decision support tool to treat SAM
Grameen Foundation	Ghana	Voice messaging to women for improved health behaviors
Interactive Research and Development	Pakistan	Electronic vaccine registry
Ministry of Health Rwanda	Rwanda	Applications to track pregnant women and collect and report data at the community level
SMS for Life	Cameroon, Tanzania, Ghana	Stock tracking to reduce stock outs of anti-malarials and blood supplies
ROUND 2 GRANTEE	COUNTRY	PROJECT
Changamka Microhealth	Kenya	Mobile access to savings, health insurance and health information
Clinton Health Access Initiative	Malawi	FrontlineSMS used to improve patient follow up for PMTCT
International Institute for Communication and Development	Mali and Senegal	Mobile apps used to improve collection of localized data and clinical communication to respond to malaria outbreaks
Malaria No More	Tanzania	Mobile messaging to increase use of bednets
Praekelt Foundation	South Africa	Pregnancy and infant care messaging
Medic Mobile	India	SMS reminders to improve vaccination rates
Society for Elimination of Rural Poverty	India	Mobile app used to strengthen health and nutrition services at community level
VillageReach	Malawi	Toll-free hotline to improve case management of MNCH

A photograph showing two women. A woman on the left, wearing a red sari and white blouse, is looking down at a smartphone held by a woman on the right. The woman on the right is wearing an orange sari with a floral pattern and several silver bangles on her wrist. They appear to be in a dimly lit indoor setting with a brick wall in the background.

**“I FEEL PROUD USING
THIS WITH WOMEN IN MY
VILLAGE. IT INCREASES
MY VALUE IN THEIR EYES.”**

—FRONT LINE WORKER FROM THE
CARE, IFHI BIHAR PROJECT

THE MNCH, MHEALTH AND GENDER FRAMEWORK: DOMAINS

mHealth Intervention Components

Analysis of various mHealth interventions on the ground, several reports and evidence, and consultations described above have highlighted four key components of mHealth interventions: 1) the technical health intervention; 2) the technology strategy; 3) community mobilization or the operational approach; and 4) national and local policies.

Technical Health Intervention The health outcomes of interest (MNCH, family planning, immunization, HIV prevention) and provision of related and appropriate health care information and services; improved outcomes for health care workers to enhance the delivery of quality health care services.

Technology Strategy The technology infrastructure, particularly technology platforms, applications using mobile phones such as SMS, voice-recorded messages or IVR, call centers, data forms, job aids and other mobile phone applications.

Community Mobilization or Operational Approach Geographical locations, communities where mHealth intervention is implemented; this includes members of the community (i.e., women as clients, male partners, family members and other stakeholders such as community leaders and influencers) and takes into account the context—social norms, community values, traditions, beliefs and practices.

Policy Context Policy related to mHealth, national eHealth and mHealth strategies, national health strategies on MNCH, HIV/AIDS, etc., monitoring and accountability as well as social accountability—mechanisms for people to hold the governments accountable for the implementation of policies.

Furthermore, the proposed framework focuses on the thematic areas of MNCH, HIV and AIDS, including PMTCT, and TB and malaria, keeping in mind the focus on MDGs 4, 5 and 6.

THE TECHNICAL HEALTH INTERVENTION

The health intervention component comprises the health outcome of interest and the target audience that will benefit from the intervention, as well as identifying appropriate areas of focus for the intervention. Examples include provision of stage appropriate information on pregnancy through SMS, developing appropriate tools for supply chain management, developing electronic registries for immunization and other services, job aids for health care workers, and data forms for collecting data for monitoring. As mentioned, these interventions focus on improving the delivery of high quality services, and thus working with health care providers, as well as improving the access of information to the end users, i.e., clients in the community. In Zanzibar, D-Tree uses the nutrition software eNUT, which streamlines the management of information and supports the decision-making needs of health workers, helping them to implement the national guidelines for providing effective treatment to children suffering from malnutrition.

Understanding the health outcome of interest as it manifests itself in the community is important for determining the technology strategy that is appropriate for the mHealth intervention. In India, Dimagi noticed that health care workers felt uneasy discussing stigmatizing or sensitive topics such as HIV with clients, particularly if they were part of the community in which they worked. Video explanations accessed through the health worker's mobile phone proved an innovative strategy to address sensitive health issues by removing the burden placed on the health care worker.⁵³

THE TECHNOLOGY STRATEGY

The technology strategy component of mHealth interventions takes into account the platforms and software (for example, CommCare, MOTECH, FrontlineSMS), particular applications that will be used for the intervention (SMS, IVR, Call in centers), the content, various tools (clinical protocols, data forms, job aids, reporting systems), local technological infrastructure, as

well as the phone itself – the make and model. For example, in Pakistan, Interactive Research and Development (IRD) implements the Interactive Alerts program, which enables health workers to track individual children enrolled in the program using a phone-based radio frequency identification (RFID) system supported by near field communication (NFC) Nokia 6131 phones to ensure each child completes the scheduled vaccines on time. The context in which the project is implemented should determine the technology strategy for reaching women in the community. For some projects, such as Cell-Life in South Africa, high literacy rates allow for the effective use of SMS messaging. Others such as the Grameen Foundation in Ghana and VillageReach in Malawi have opted for IVR and call in centers because those best meet the needs of the women they serve. In these cases, messaging content is developed through extensive qualitative data collection with the intended users.

THE COMMUNITY MOBILIZATION OR THE OPERATIONAL APPROACH

In addition to the technology strategy and targeted health outcome of interest, mHealth interventions also involve the specific community. Interventions must take into account the local context including the language, local norms, traditions, beliefs and practices. The MAMA messaging used by Cell-Life and the Praekelt Foundation in South Africa was translated into five languages and developed through consultation with maternal health experts, a literature review, healthcare worker interviews, interviews with women in the target market, and SMS review by experts. The result is a culturally appropriate messaging service that provides quality health information and leads to improved MNCH outcomes.

Aspects of community dynamics that affect mHealth interventions include inter-relationships within the households and the community. Thus, working with members of the community, i.e., women as clients of mHealth, as well as other household members including husbands, mothers-in-law, and community leaders, is critical. In Ghana, Grameen found that a woman's ability to act on information provided by their Mobile Midwife service, which provides actionable health information to pregnant women, was mediated by husbands and

strongly influenced by elders and community leaders. Similarly, in these populations mobile phones are usually owned by men, not women; even if women can access the phone, they are often not very mobile-phone literate, thus presenting a challenge to mHealth programs in effectively reaching the target population. To address the challenge of men influencing women's ability to act on the health messaging information, some of the messages are targeted specifically to men. Furthermore, branding and marketing materials for the program usually portray couples working together to have a healthy pregnancy and often refer to "pregnant parents" rather than "pregnant women." In communities where women's phone ownership is low, volunteers are equipped as "mobile midwife agents" who coach women on phone usage and give women access to a communal phone to listen to their messages.

THE POLICY CONTEXT

Addressing the local context and communities also includes taking into account the national and local policies that influence health and gender issues. The mHealth interventions need to factor in and address impact of policies on gender issues affecting access, use of technology and related health care services. For example, in a recent case in a village in Bihar, India, the local government authorities banned the young women in that community from possessing and using mobile phones as they believed that mobile phones were "debasing the social atmosphere" by promoting elopements.⁵⁴ Thus, influencing global, national and local policies that contribute to addressing and transforming gender issues, as well as to empowering women, are critical to achieving sustained positive health outcomes. Experiences of the mHealth implementing partners mentioned in Table 1 suggests that involving and working with national governments from the initial stages of design and implementation of mHealth interventions is crucial.

A key issue to address the effective implementation of the policies is accountability, i.e., holding the national governments accountable through effective governance mechanisms. Through use of mHealth interventions and e-governance mechanisms, the citizens, including women, can jointly monitor the progress of the international and

national policies and initiatives towards achieving the targets. Governance mechanisms and accountability initiatives between the citizens and health care providers can also contribute to and determine the high quality and consistent provision of health care services. Citizens can also use the mHealth and e-governance forums to report discrimination, particularly against women being able to access quality services. For example, the “*Mera Swasthya, Meri Awaaz*” campaign⁵⁵ in India encouraged women to assist with monitoring the quality and affordability of health services through mobile phones by calling a toll-free number to report informal fees for services.

Mobile phones also hold potential for ensuring women's voices and participation in policy-making. ‘Women for Women International’ in Kosovo ensured that voices of poor and marginalized women were heard as state leaders of Kosovo were establishing the foundations of a new constitution, after Kosovo declared its independence in February 2008.⁵⁶ In less than 48 hours, 250 women gathered from around the nation to participate in the forum to emphasize to the leaders the need to consider women's issues in drafting the constitution. This mobilization was possible because of mobile phones and their networking capabilities.⁵⁷

However, these four components of mHealth interventions are not mutually exclusive since each component is informed by and informs the others in order to determine a holistic approach to mHealth interventions.

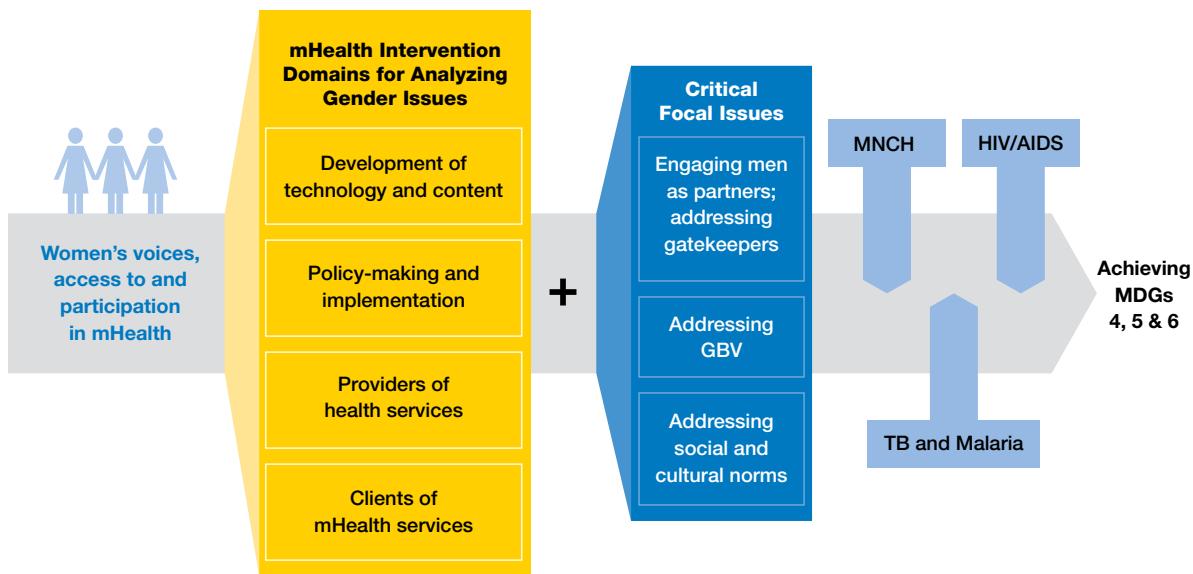
It is thus proposed that gender issues be understood, analyzed and addressed for each of these components. The social and cultural norms in a given context influence and shape the attitudes, behaviors and thus practices that can lead to gender inequality, unequal power relations, and disempowerment of women, are also critical for understanding of gender gaps and issues. “...The theory of empowerment presupposes that good analysis of power and gender are crucial rather than optional, and that a programmatic focus only on women – rather than more expansively on gender and, therefore, men and women together – will not lead to sustainable gains.”⁵⁸

The proposed gender framework consists of four main domains for analysis to ensure and encourage women's voices, participation and access to mHealth interventions, while underscoring the need and importance to *engage men and other community influencers and gatekeepers, as well as analyze and address the existing social and cultural norms*: 1) in the development of technology and content; 2) in policy-making and implementation; 3) as providers of health services; and 4) as clients of mobile and related technology.

The proposed framework has not yet been tested or validated, and thus is meant to serve as a tool for further analysis and understanding of gender related issues. The following description of the framework and the domains thus attempts to raise some questions and issues that should serve as a starting point for further discussions and analysis by users of the framework.



Figure 1.
mHealth and MNCH: Addressing Gender and Women's Empowerment—A Framework for Analysis



The Analytical Framework

DOMAIN: DEVELOPMENT OF TECHNOLOGY AND RELATED CONTENT

There are several gender gaps in terms of women's representation and participation in the development of technology. Women remain underrepresented in technology development: female participation in the computer sciences is less than 40% globally⁵⁹ with women representing only 1.5% of developers on open source projects in the US.⁶⁰ Additionally, once the technology solutions, i.e., platform, channel such as SMS, IVR etc., are developed it is important that they benefit the women they are meant to serve. That is to say, the content of the technology must address women's specific needs and concerns. Not only must the technology address low literacy rates among women in the developing world, it must also consider technology literacy, as 22% of women reported not wanting a phone out of fear of not knowing how to use it.⁶¹ Hence, it is important to understand the gender issues in this domain – how many women are present as 'technology developers or programmers'? how many technology solutions take into account women's

needs and concerns while developing channels and content, i.e., who should the technology solution address and in what form or shape, in order to support women's ability to deliver effective health services as a provider or be able to access the information and take action as clients of services?

In addition to the above, key questions to consider are: How can the technology solution also include and address men and other gatekeepers, for example, the mother-in-law? How can the technology solutions and the content development best take into account the existing cultural and social norms, i.e., understand and acknowledge the impact of technology in addressing existing norms both positive (transformative and supportive of empowerment and gender equity) or negative (reiterating or contributing to harmful practices and behaviors impacting gender)?

An example of encouraging women's voices and participation in the content and development of technology is the MAMA South Africa/Praekelt Foundation project. The MAMA South Africa-based service provides new and

expectant mothers with health information through social networking and interactive services that are easy to use and meet the needs and desires of the women who use them. As explained by one of the senior team members of the Praekelt Foundation/MAMA South Africa project, the project conducted research with a group of women to understand their needs and preferences for technological channels, as well as the content.

DOMAIN: POLICY-MAKING AND IMPLEMENTATION

Encouraging women's participation and voice in informing the development of, as well as implementation of, national health care policies is critical to achieving desired health goals and holding government accountable. And yet, this remains a key gap and an issue, with women experiencing limited ability to participate in policy-making, influencing, monitoring and accountability. Women are often unable to report any gaps in implementation of the policies that are meant for them such as providing free medical services for institutional delivery in a government clinic, provision of ARVs at the health centers for mothers who are HIV+, provision of counseling for HIV+ mothers, etc. Women often are not provided the services meant for them or are discriminated against when they try to access those services. Mobile phones provide a tool for women to voice their opinions and become active participants in policy.⁶² As illustrated with the Mera Swasthya, Meri Awaaz⁶³ campaign in India, women can assist in actively monitoring the quality and affordability of health services through mobile phones. By calling a toll free number to report out-of-pocket health care expenses, women assist in the mapping and tracking of informal fees. 'Women for Women International' in Kosovo ensured that voices of poor and marginalized women were heard as state leaders of Kosovo were establishing the foundations of a new constitution, after Kosovo declared its independence in February 2008.⁶⁴

DOMAIN: PROVIDERS OF HEALTH SERVICES

Those providing health services include doctors, nurses, auxiliary nurses and midwives (ANMs), front line workers (FLWs) and community health care workers. Several health care providers, including male and female FLWs, face a number of challenges in delivering high quality health care services. FLWs, both female and in some cases male, are not able to effectively reach various

households or deliver key services including counseling, due to social status and gender issues. There is a need to further understand gender implications for FLWs providing effective health services to the women in households to understand whether and why the services and messages by them are not readily accepted by the household members, potentially due to the influence of the men in the households or the mother-in-law. Early lessons from CARE India's Integrated Family Health Initiative (IFHI),⁶⁵ in Saharsa district, Bihar, India working with FLWs—Accredited Social Health Activist (ASHA) and Anganwadi Workers (AWW), along with technical support from CommCare and MOTECH, indicate that in addition to lack of knowledge and training, the low status of FLWs also present a barrier to the effective delivery of services to the households. Through the development of suite of applications including job aids, algorithms and clinical protocols, and tools such as home visit planners and organizers, supportive supervision tools, coupled with training and handholding support to FLWs, early lessons from the project indicate that the intervention is helping build capacity of the FLWs. FLWs are now using the mobile phone applications comfortably and seamlessly. Additionally, mHealth projects on the ground report that the use of mobile phones and applications has further empowered FLWs, which has resulted in increased self-efficacy and confidence levels to deliver high quality and timely messages and services to the households. Quotes by the FLWs from the IFHI project indicate the same:

- “I feel proud using this with women in my village. It increases my value in their eyes.”
- “I can't read. But, as the phone reads out questions—I can use it.”
- About Job-aid: “Showing videos to clients makes our job easier. They also believe us more when I show videos in the mobile.”
- “Home visits are more exciting with this mobile.”

However, systematic efforts need to be undertaken to understand and measure empowerment of FLWs especially female FLWs because of the mobile phone. The question of how the mHealth intervention has

increased their ability, and thus feeling of empowerment, to deliver better and timely health services needs to further understood, analyzed and evaluated. It is still not known if and what implication this enhanced feeling of empowerment by a female FLW has within her household context, i.e., does it lead to violence against her by her husband who feels threatened? Does it help her in making joint decisions with her husband on household matters? Similarly, are there any specific gender implications faced by male FLWs while providing services to women in the communities? How do the women in the community react to male vs. female health care providers and workers? These are some of the issues that still need to be explored and documented.

DOMAIN: WOMEN AS PRIMARY CLIENTS OF MHEALTH SERVICES

While technological content may be tailored to women, their active and effective role as clients of mobile services is dependent on their ability to access information, make decisions and act upon the information they get through these mobile technologies. The various statistics stated earlier in the document have demonstrated that the ownership of mobile phones by women is very low compared to men. More often than not, it is the man in the house who owns and controls the mobile phone. It is also known that due to unequal power relations and gender dynamics within a household, the decision maker is most often the man of the household and/or the mother-in-law. Thus, even though the mHealth interventions through various technology solutions (SMS, IVR, etc.) target women, very little is known or systematically documented as to whether the woman is able to access the information, given that she does not own or have access to a cell phone. Is the woman able to access messages on time? Even if she does receive the message, is she able to act upon it by making decisions to seek the appropriate health care or service? These are some of the questions that still remain to be systematically studied, understood and analyzed in order to determine appropriate solutions.

Key issues concerning women as clients of services that the mHealth intervention can address are stigma, discrimination and isolation. Mobile phones can help build a collective and virtual social network that the women in the community can rely on to get accurate information on

issues, referrals, moral support and counseling without feeling discriminated against. Project Zumbido in Mexico,⁶⁶ which created virtual communities for stigmatized HIV positive patients, was found to be particularly empowering for female participants. The social network created through the mobile phone reduced isolation and encouraged women to continue using the phones after the pilot and arrange meetings with former group members. In this way, women are not simply beneficiaries of services but active clients in the technology. The power of mHealth in creating these social networks is that it can further empower the woman in her ability to access accurate and timely information, referrals, and social support and encourage her to obtain appropriate health care services, adhere to treatments and promote behavioral change such as infant feeding practices. However, the impact of social networking through mHealth interventions needs to be further studied and understood within different contexts. Similarly, the Praekelt Foundation, as part of the MAMA South Africa service, provides new and expectant mothers with health information through social networking and interactive services that are easy to use and meet the needs and desires of the women who use them.

Within these four domains, through the review of the evidence gaps and discussion with experts, three priority areas have emerged that affect gender related issues and women's empowerment, and thus need to be addressed:^{67,68} 1) Gender based violence (GBV); 2) Engaging men as partners and addressing other stakeholders; and 3) social, gender and cultural norms in the community of implementation. There is a strong need to gather evidence highlighting and addressing these priorities within mHealth. The proposed analytical framework takes into account these priorities and recommends further research and evidence gathering.

Critical Focal Issues

Empowerment goals cannot be achieved simply by enhancing women's participation and voices in the four domains outlined above. Experiences from the field reveal that women's participation is mediated by male partners, gatekeepers and other stakeholders, and social and cultural norms of the society. Gender inequities are often defined and perpetuated by social norms and culture, and reflect differences in power between men and women

both within the household and in the wider society.⁶⁹ Gender based violence, while a potential unintended consequence of mHealth interventions, is an additional priority area in itself that must be addressed to achieve MNCH and empowerment goals.

According to "Striving and Surviving: Exploring the lives of women at the base of the pyramid":⁷⁰

- 82% of married women who own a mobile phone say it makes their husbands suspicious.
- 72% of married women said their husband would not allow them to own a mobile phone.
- The husband is most likely to get the first handset in a household, where women are living on less than US\$2 a day.

GENDER BASED VIOLENCE

Gender-based violence (GBV) is a challenge of epidemic proportions. It is one of the most pervasive and widespread human rights violations in the world, and has grave consequences for health and development. GBV is also a concern for reproductive health, such as contraceptive use and HIV/AIDS, as these health topics are particularly sensitive issues in conservative societies.⁷¹ GBV is linked to a wide range of long-term physical and mental health problems. It helps fuels the spread of HIV, and women who have experienced violence are up to three times more likely to be infected with HIV than those who have not.^{72,73} Fear of GBV may also keep people from accessing family planning and reproductive health (FP/RH) services, thereby increasing the risk of unintended pregnancy. High rates of GBV during pregnancy endanger the health of both mother and child and contribute to maternal and child mortality.⁷⁴ Women seeking information on reproductive health and HIV positive women are often targets of abuse and stigmatization and thus lack networks of support. Intimate partner violence is common for pregnant women in many countries, and several women face disrespect and physical and verbal abuse during childbirth.⁷⁵

Thus, GBV emerged as a priority theme for mHealth through a review of the evidence and discussions with experts in the field from IWG partners and participants at WICTAD. Domestic violence and abuse can be unintended consequence of mobile phone ownership and use-related issues.⁷⁶ Hence, mHealth interventions should strive to prevent and address GBV because it adversely affects health outcomes and is a major human rights violation. Therefore, mHealth interventions focusing on women's health areas must consider addressing gender and cultural norms, issues of privacy, confidentiality to prevent GBV and further stigmatization, as well as facilitate reporting, care, legal and counseling support for those impacted by GBV.

ENGAGING MEN AND OTHER COMMUNITY GATEKEEPERS

The achievement of gender equality implies changes for both men and women. More equitable relationships need to be based on a redefinition of the rights and responsibilities of women and men in all spheres of life, including the family, the workplace and society at large. It is therefore crucial not to overlook gender as an aspect of men's social identity. This fact is, indeed, often overlooked, because the tendency is to consider male characteristics and attributes as the norm and those of women as a variation of the norm. But the lives of men are just as strongly influenced by gender as those of women. Societal norms and practices about "masculinity" and expectations of men as leaders, husbands or sons create demands on men and shape their behavior.⁷⁷ Women and men both seek "interdependent, mutually supportive relations. Seeking gender equality and empowerment of women requires new ways of relating between women, men, girls and boys that expand the opportunities and capabilities of all people involved. Programs focusing on change in the relations between men and women are more effective than those striving for change in *women alone*.⁷⁸

Although most of the mHealth interventions are targeted towards the woman and her child, the woman is often not the decision-making unit in the household. In order to achieve gender equality and health goals, men need to be involved as equal partners. Engaging men as partners is crucial to achieving health goals. For instance, Grameen discovered that many women using the MoTech service accessed their personal messages on their husband's

phone. The women's husbands were often present at the time messages were played. By addressing messages to these male partners, the MoTech service was able to inform both men and women of positive MNCH behaviors. mHealth interventions that do not account for male partners, as well as family and community stakeholders, run the risk of increasing gender based violence or failing to improve the health outcomes of the target group. Experiences from VillageReach's 'Facilitating MNCH Care Seeking among Rural Women in Malawi: Scale-up of Chipatala cha pa foni services initiative' in Malawi indicate that several men may be hesitant to approach the health centers for more information regarding their wife's health due to cultural taboos and norms where men are not supposed to accompany their wife. However, many men do want to seek information, reach out and support their wife through delivery, child care or even other illnesses. VillageReach's initiative has reported a higher number of men calling into the helpline to ask questions about their wives' pregnancy and children's health. mHealth interventions need to work closely with men to ensure that they are not discriminated against and have access to accurate stage appropriate information and referral services.

SOCIAL AND CULTURAL NORMS

Evidence and experience has shown that successful mHealth interventions must be tailored to the social and cultural norms present in the community of implementation. Mobile phones hold tremendous potential for empowering women, altering power dynamics, in addition to increasing awareness of, access to and delivery of quality health care services. However, like any other products introduced into an existing system or structure, they will be embedded within and thus influenced by existing social and cultural structures, norms and practices. Thus mHealth interventions will be influenced by and, in turn, can influence, positively or otherwise, the social and cultural context. An enhanced understanding and analysis of these links between mHealth intervention and social and cultural context can ensure and enable mHealth interventions to contribute effectively and positively in addressing positive outcomes and behaviors of actors within that system. Language barriers such as local dialects and difficulty in capturing language nuances in text form are cultural considerations that must be addressed

when developing mHealth interventions. Beyond language, mHealth interventions must be sensitive to gender norms and social rules, particularly in conservative societies. IRD's experience in Pakistan shows that mothers were uncomfortable talking to male service providers over the phone. Thus mHealth interventions must account for social, cultural and gender norms in the community of implementation to maximize effectiveness and produce the greatest impact.

MOVING FORWARD: APPLYING THE FRAMEWORK

This analytical framework is a high-level illustration of the mHealth Alliance's approach, evidence and lessons learned from various contexts across countries. The analytical framework is meant to serve as a tool for analyzing gender related dynamics and issues for each of the intervention domains, thereby providing the implementation teams with further information and analysis to conceptualize their interventions. In analyzing gender dynamics, gaps and issues related to women's empowerment, the framework also allows the teams to capture contextual nuances such as local cultural and social norms that further affect the gender dynamics. It highlights the need to understand and take into account the important role of men as partners, as well as the need to bring in key gatekeepers such as mothers-in-law or community leaders. The information and analysis gathered by using the framework can also inform the assessment and measurement of women's empowerment, gender equality and their contribution to achieving health outcomes, as well as capture lessons learned and challenges. It can serve as a model for organizing discussions at the community, national and global levels for influencing programs and policies. As the global mHealth community enhances its understanding, the framework can further evolve from the analysis to incorporate the lessons learned.

Recommendations

- a. **Conduct gender gap analysis** within mHealth interventions to further examine the issues related to gender and women's empowerment and their interaction with other issues such as engagement of men, GBV, social norms and related implications in an mHealth intervention. A thorough review of existing gender gap analysis tools will need to be considered for adaptation to mHealth interventions.⁷⁹
- b. **Generate evidence** related to mobile phone technology, women's empowerment and their contribution to achieving the desired health outcomes.
- c. **Design gender transformative mHealth interventions** to achieve greater gender equality, enhanced women's empowerment and desired health goals.
- d. **Undertake a review of existing tools, manuals and guides to mainstream gender** issues within health programs for further adaptation to mHealth interventions.
- e. **Develop indicators to measure women's empowerment and address gender** issues within mHealth interventions. Explore ways to further support the inclusion and measurement of gender-related indicators into existing national M&E systems such as HMIS and DHS.
- f. Identify and **document best practices and successful approaches** within mHealth interventions that have successfully addressed gender and social norms and empowerment of women to achieve health goals.





REFERENCES

1. UNFPA. Gender Equality: Empowering Women. Population Issues. <http://www.unfpa.org/gender/empowerment.htm>.
2. CARE. What is meant by gender [organizational note]. 2011, 2012.
3. CARE. Strong Women, Strong Communities: CARE's Holistic Approach to Empowering Women and Girls in the Fight Against Poverty. Atlanta: CARE; 2010.
4. Sachdeva N and Peebles D. Gender Evaluation Final Report: Pan Asia Networking Program, International Development Research Centre, Kartini International. March 2010.
5. World Bank. Glossary of Gender Terms. Gender and Development: A Trainer's Manual. <http://info.worldbank.org/etools/docs/library/192862/introductorymaterials/Glossary.html>
6. United Nations. The Millennium Development Goals Report 2012. New York: The United Nations; 2012.
7. Global Strategy for Women's and Children's Health. United Nations. 2010. www.everywomaneverychild.org/images/content/files/global_strategy/full/20100914_gswch_en.pdf
8. GSMA mWomen Programme. Striving and Surviving: Exploring the Lives of Women at the Base of the Pyramid. 2012.
9. Id.
10. GSMA Development Fund. Women and Mobile: A Global Opportunity: A Study on the Mobile Phone Gender Gap in Low and Middle Income Countries. 2010.
11. Id.
12. Id.
13. Philbrick, William. mHealth and MNCH: State of the Evidence. UN Foundation mHealth Alliance. June 2012.
14. mHealth Alliance. Leveraging mobile technologies to promote maternal and newborn health: the current landscape and opportunities for advancement in low resource settings. Oakland, California: The Center for Innovation & Technology in Public Health and Public Health Institute. 2013.
15. Save the Children. Women on the Front Lines of Health Care: State of World's Mothers 2010. Westport, Connecticut: Save the Children. 2010.
16. Intel. Women and the Web: Bridging the Internet Gap and Creating New Global Opportunities in Low and Middle Income Countries. 2012.
17. mHealth Alliance. Leveraging mobile technologies to promote maternal and newborn health: the current landscape and opportunities for advancement in low resource settings. Oakland, California: The Center for Innovation & Technology in Public Health and Public Health Institute. 2013.
18. Paruzzolo S, Menhra R, Kes A, Ashbaugh C. Targeting Poverty and Gender Inequality to Improve Maternal Health: Executive Summary. Women Deliver Conference 2010.
19. USAID and IGWG. A Manual for Integrating Gender into Reproductive Health and HIV Programs: From Commitment to Action (2nd edition). August 2009.
20. Paruzzolo S, Menhra R, Kes A, Ashbaugh C. Targeting Poverty and Gender Inequality to Improve Maternal Health: Executive Summary. Women Deliver Conference 2010.
21. UNFPA. Gender Equality: Empowering Women. Population Issues. <http://www.unfpa.org/gender/empowerment.htm>.
22. CARE. What is meant by gender [organizational note]. 2011, 2012.
23. Id.
24. CARE. Strong Women, Strong Communities: CARE's Holistic Approach to Empowering Women and Girls in the Fight Against Poverty. Atlanta: CARE; 2010.
25. MEASURE Evaluation. Influence of Gender Measures on Maternal and Child Health in Africa: MEASURE Evaluation Technical Report supported by USAID. August 2011.
26. GSMA Development Fund. Women and Mobile: A Global Opportunity: A Study on the Mobile Phone Gender Gap in Low and Middle Income Countries. 2010.
27. Vital Wave Consulting. mHealth for Development: The Opportunity of Mobile Technology for Healthcare in the Developing World. Washington DC and Berkshire UK: UN Foundation-Vodafone Foundation Partnership. 2009.
28. Global Strategy for Women's and Children's Health. United Nations. 2010. www.everywomaneverychild.org/images/content/files/global_strategy/full/20100914_gswch_en.pdf
29. Philbrick, William. mHealth and MNCH: State of the Evidence. UN Foundation mHealth Alliance. June 2012.
30. mHealth Alliance. Leveraging mobile technologies to promote maternal and newborn health: the current landscape and opportunities for advancement in low resource settings. Oakland, California: The Center for Innovation & Technology in Public Health and Public Health Institute. 2013.
31. Intel. Women and the Web: Bridging the Internet Gap and Creating New Global Opportunities in Low and Middle Income Countries. 2012.

REFERENCES

32. Save the Children. Women on the Front Lines of Health Care: State of World's Mothers 2010. Westport, Connecticut: Save the Children. 2010.
33. Paruzzolo S, Menhra R, Kes A, Ashbaugh C. Targeting Poverty and Gender Inequality to Improve Maternal Health: Executive Summary. Women Deliver Conference 2010.
34. USAID and IGWG. A Manual for Integrating Gender into Reproductive Health and HIV Programs: From Commitment to Action (2nd edition). August 2009.
35. UNFPA. Gender Equality: Empowering Women. Population Issues. <http://www.unfpa.org/gender/empowerment.htm>.
36. CARE. What is meant by gender [organizational note]. 2011, 2012.
37. CARE. Strong Women, Strong Communities: CARE's Holistic Approach to Empowering Women and Girls in the Fight Against Poverty. Atlanta: CARE; 2010.
38. MEASURE Evaluation. Influence of Gender Measures on Maternal and Child Health in Africa: MEASURE Evaluation Technical Report supported by USAID. August 2011.
39. Vital Wave Consulting. mHealth for Development: The Opportunity of Mobile Technology for Healthcare in the Developing World. Washington DC and Berkshire UK: UN Foundation-Vodafone Foundation Partnership. 2009.
40. GSMA mWomen Programme. Realising the mWomen Opportunity: A Framework for Designing the mWomen Business Case. March 2012.
41. Thouvenot, Véronique Inès. Women and eHealth: the Preliminary 10 Key findings. Millennia 2015 WeHealth. 2011.
42. Concept note and PowerPoint on Gender and Health: WICTAD Forum Health Workteam. December 2012. https://extranet.unwomen.org/WomenandICTDWorkingGroup/_layouts/PowerPoint.aspx?PowerPointView=ReadingView&PresentationId=/WomenandICTDWorkingGroup/Resources/Women%20and%20Girls%20in%20mHealth%20WICTAD%20breakout%20session%20ppt_01_07_2013.pptx&DefaultItemOpen=1
43. WICTAD International Forum (Women, ICT, and Development). PowerPoint summary of the two-day international forum Jan 10-11, 2013 deliberations and conclusions, Twitter: #WICTAD, extranet.unwomen.org/WomenandICTDWorkingGroup/.
44. Paruzzolo S, Menhra R, Kes A, Ashbaugh C. Targeting Poverty and Gender Inequality to Improve Maternal Health: Executive Summary. Women Deliver Conference 2010.
45. CARE. What is meant by gender [organizational note]. 2011, 2012.
46. CARE. Strong Women, Strong Communities: CARE's Holistic Approach to Empowering Women and Girls in the Fight Against Poverty. Atlanta: CARE; 2010.
47. Sachdeva N and Peebles D. Gender Evaluation Final Report: Pan Asia Networking Program, International Development Research Centre, Kartini International. March 2010.
48. USAID EQUATE. Gender Equality Framework. 2008.
49. WHO: Department of Gender and Women's Health. Gender Analysis in Health: a Review of Selected Tools. Geneva, Switzerland: WHO; 2002.
50. Concept note and PowerPoint on Gender and Health: WICTAD Forum Health Workteam. December 2012. https://extranet.unwomen.org/WomenandICTDWorkingGroup/_layouts/PowerPoint.aspx?PowerPointView=ReadingView&PresentationId=/WomenandICTDWorkingGroup/Resources/Women%20and%20Girls%20in%20mHealth%20WICTAD%20breakout%20session%20ppt_01_07_2013.pptx&DefaultItemOpen=1
51. WICTAD International Forum (Women, ICT, and Development). PowerPoint summary of the two-day international forum Jan 10-11, 2013 deliberations and conclusions, Twitter: #WICTAD, extranet.unwomen.org/WomenandICTDWorkingGroup/.
52. mHealth Alliance. Innovation Working Group and mHealth Alliance Announce 2012 Grant Winners. <http://www.mhealthalliance.org/news/press-releases/43-innovation-working-group-and-mhealth-alliance-announce-2012-grant-winners>
53. Treatman D and Lesh N. Strengthening Community Health Systems with Localized Multimedia [self-assessment]. https://docs.google.com/viewer?a=v&q=cache:Pdn-5hVLfNsJ:www.asc.upenn.edu/ict4datpenn/BinaryData.aspx?path=%3Dfiles/pdf/Lesh_Strengthening_Community_Health_Systems_with_Localized_Multimedapdf+Strengthening+community+health+systems+with+localized+multimedia&hl=en&gl=us&pid=bl&srid=ADGEESigeGiWOH1XrVupL9UxDst0-H81D6amU4uRNubG5tYEsGVwOEFCrYRoJAd4GKk3vt7JgN-L_susKSjtEjUdHJTJl8MvA16o3_McYAeZEUbmlgTcialEsfAvq3ddEG4dKiXFEu&sig=AHIEtbSzxSw1cntlRANIGkW4irr92YxTew
54. Bihar village bans mobile phone use by women. (2012, December 05). Reuters. <http://in.reuters.com/article/2012/12/05/india-bihar-village-phone-banned-elopeme-idINDEE8B403320121205>
55. About the Project. Mera Swasthya Meri Aawaz Project. <http://meraswasthyameriaawaz.org/page/index/2>

REFERENCES

56. GSMA Development Fund. Women and Mobile: A Global Opportunity: A Study on the Mobile Phone Gender Gap in Low and Middle Income Countries. 2010.
57. Id.
58. CARE. Strong Women, Strong Communities: CARE's Holistic Approach to Empowering Women and Girls in the Fight Against Poverty. Atlanta: CARE; 2010.
59. Galpin Vashti. Women in Computing Around the World. ACM SIGCSE Bulletin- Women and Computing 34 (2), June 2002: 94-100.
60. James, Justin. IT gender gap: where are the female programmers? Tech Republic. Published online April 6 2010. <http://www.techrepublic.com/blog/programming-and-development/it-gender-gap-where-are-the-female-programmers/2386>.
61. Global Strategy for Women's and Children's Health. United Nations. 2010. www.everywomaneverychild.org/images/content/files/global_strategy/full/20100914_gswch_en.pdf
62. Vital Wave Consulting. mHealth for Development: The Opportunity of Mobile Technology for Healthcare in the Developing World. Washington DC and Berkshire UK: UN Foundation-Vodafone Foundation Partnership. 2009.
63. About the Project. Mera Swasthya Meri Aawaz Project. <http://meraswasthyameriaawaz.org/page/index/2>
64. GSMA Development Fund. Women and Mobile: A Global Opportunity: A Study on the Mobile Phone Gender Gap in Low and Middle Income Countries. 2010.
65. CARE. Continuum of Care Services (CCS) Pilot: an Overview of CARE IFHI. December 2012.
66. GSMA Development Fund. Women and Mobile: A Global Opportunity: A Study on the Mobile Phone Gender Gap in Low and Middle Income Countries. 2010.
67. Concept note and PowerPoint on Gender and Health: WICTAD Forum Health Workteam. December 2012. https://extranet.unwomen.org/WomenandICTDWorkingGroup/_layouts/PowerPoint.aspx?PowerPointView=ReadingView&PresentationId=/WomenandICTDWorkingGroup/Resources/Women%20and%20Girls%20in%20mHealth%20WICTAD%20breakout%20session%20ppt_01_07_2013.pptx&DefaultItemOpen=1
68. WICTAD International Forum (Women, ICT, and Development). PowerPoint summary of the two-day international forum Jan 10-11, 2013 deliberations and conclusions, Twitter: #WICTAD, extranet.unwomen.org/WomenandICTDWorkingGroup/.
69. Paruzzolo S, Menhra R, Kes A, Ashbaugh C. Targeting Poverty and Gender Inequality to Improve Maternal Health: Executive Summary. Women Deliver Conference 2010.
70. GSMA mWomen Programme. Striving and Surviving: Exploring the Lives of Women at the Base of the Pyramid. 2012.
71. WHO. Addressing violence against women in HIV testing and counselling: A meeting report, Geneva, 16–18 January 2006. Department of Gender, Women and Health, Department of HIV/AIDS, World Health Organization; 2006.
72. UNAIDS. AIDS Epidemic Update. Geneva: UNAIDS; 2009.
73. Population Reference Bureau. The World's Women and Girls 2011 Data Sheet. Washington, DC: Population Reference Bureau; 2011
74. UNFPA. State of World Population 2005: The Promise of Equality: Gender Equity, Reproductive Health and the Millennium Development Goals. 2005.
75. Interagency Gender Working Group. Maternal Health and Gender-Based Violence: Research on and Responses to Service Provider Abuse in Childbirth and Intimate Partner Violence During Pregnancy. <http://www.igwg.org/Events/maternalhealthmay2012event.aspx>
76. Wakunuma, K. J. (2012, December 4). Implicating mobile phones in violence against women: What's gender got to do with it? GenderIT. <http://www.genderit.org/resources/implicating-mobile-phones-violence-against-women-what-s-gender-got-do-it>
77. Interagency Gender Working Group. Maternal Health and Gender-Based Violence: Research on and Responses to Service Provider Abuse in Childbirth and Intimate Partner Violence During Pregnancy. <http://www.igwg.org/Events/maternalhealthmay2012event.aspx>
78. Concept note and PowerPoint on Gender and Health: WICTAD Forum Health Workteam. December 2012. https://extranet.unwomen.org/WomenandICTDWorkingGroup/_layouts/PowerPoint.aspx?PowerPointView=ReadingView&PresentationId=/WomenandICTDWorkingGroup/Resources/Women%20and%20Girls%20in%20mHealth%20WICTAD%20breakout%20session%20ppt_01_07_2013.pptx&DefaultItemOpen=1
79. Thouvenot, Véronique Inès. Women and eHealth: the Preliminary 10 Key findings. Millenia 2015 WeHealth. 2011.



The mHealth Alliance champions the use of mobile technologies to improve health throughout the world. Working with diverse partners to integrate mHealth into multiple sectors, the Alliance serves as a convener for the mHealth community. The mHealth Alliance also hosts Health Unbound (HUB), a global online community for resource sharing and collaborative solution generation. For more information, visit mHealthAlliance.org.