



TECHNICAL REPORT

Gender Issues Influencing Zika Response in Ecuador

MAY 2020

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Acronyms

ANC	Antenatal care
ASSIST	USAID Applying Science to Strengthen and Improve Systems Project
CEDHU	Ecumenical Commission on Human Rights (<i>Comisión Ecuánica de Derechos Humanos</i>)
CSaZ	Congenital Syndrome associated with Zika
ENSANUT	National Survey on Health and Nutrition (<i>Encuesta Nacional de Salud y Nutrición</i>)
FGD	Focus group discussion

FP	Family planning
GBS	Guillain-Barré syndrome
GBV	Gender-based violence
GDI	Gender Development Index
GDP	Gross domestic product
GII	Gender Inequality Index
HAQ	Health Care Access and Quality Index
HCI	USAID Health Care Improvement Project
HDI	Human Development Index
IHDI	Inequality-adjusted Human Development Index
IMR	Infant mortality rate
iDARE	Identify, Design, Apply/Assess, Record, Expand
INEC	National Institute of Statistics and Census (<i>Instituto Nacional de Estadística y Censos</i>)
IPV	Intimate partner violence
LAC	Latin America and the Caribbean
M&E	Monitoring and evaluation
MNCH	Maternal, newborn, and child health
MMR	Maternal mortality ratio
MOH	Ministry of Health
MSP	Ministry of Public Health (<i>Ministerio de Salud Pública del Ecuador</i>)
OECD	Organization for Economic Co-operation and Development
PAHO	Pan American Health Organization
STI	Sexually transmitted infection
TFR	Total fertility rate
UNFPA	United Nations Population Fund
UNICEF	United Nations International Children's Emergency Fund
URC	University Research Co., LLC
USAID	United States Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

After initial detection in Brazil in May 2015, the recent emergence of Zika virus rapidly swept across the Americas, with cases notified in Ecuador in early 2016. By February 2016, the World Health Organization declared Zika virus infection a Public Health Emergency of International Concern due to its associations with microcephaly and other neurological disorders. As of the last Pan American Health Organization (PAHO) report on Zika cases in January 2018, there have been 2,397 confirmed cases of Zika, 3,954 suspected cases of Zika, and 14 confirmed cases of microcephaly in Ecuador, although this is probably underreported. While there are various programs in Ecuador that promote practices to prevent vector-borne and sexually transmitted Zika, and health system strengthening activities to link families with children affected by Zika to the care they need, to best help families respond to Zika, response and prevention programs need to integrate gender-sensitive interventions that address the variances of needs and behaviors of women, men, boys, and girls.

This desk review looks at several key Zika prevention and response areas where gender plays a role in Ecuador, drawing on sex-disaggregated qualitative and quantitative data and background information on gender and social inclusion considerations for the purpose of exposing gaps that would impact RMNCH care and emergency preparedness and the response related to Zika. The review highlights key insights to guide programmatic strategies and provides initial recommendations based on the findings.

Factors in the Zika response addressed in this review are:

Gender and the Division of Labor and Care: Gender norms influence the roles that men and women have in the formal and informal division of labor, particularly regarding childcare responsibilities for children with CSaZ. While the labor force participation rate for women is substantially lower than it is for men, women participate more in the informal sector and are paid much less than men in Ecuador. While men are perceived as the financial providers, women are expected to take care of the home and the children. This burden of care could be further skewed in families that have children with CSaZ and other disabilities that require higher social, financial, and labor costs to the primary takers, in most cases fall to the mother but also potentially higher financial costs for the father. The burden is potentially different for men and women and this should be considered when health providers support families and bring them together as couples. Single-headed households also need special consideration as the burden of care can be enormous.

Gender and Reproductive Health: Gender norms contribute to the autonomy of women, which can impact women's ability to access health services, particularly reproductive health services. Limitations in access to reproductive health services also affect women's capacity to take preventive measures related to Zika, including preventing unwanted pregnancies and/or by using condoms during intercourse during pregnancy to protect from exposure to Zika virus. Only 10.7% of women ages 15 to 49 reported using condoms in their last sexual encounter, and no data are available on rates of condom use during pregnancy, when it is particularly important for prevention of Zika sexual transmission. Under traditional gender norms, where women are expected to be faithful, this could cause tension and discourage women from asking their partner to use a condom.

Gender-Based Violence: Six out of ten women in Ecuador report experiencing some type of gender-based violence (GBV) in their lifetime, and in most cases, it is perpetrated by their

partner (76%). Reflecting trends globally, these numbers are likely an underestimation since most incidents of gender-based violence go unreported and few are officially documented. Since the impact of Zika is still recent, evidence on the association between gender-based violence and Zika infections is limited. However, research demonstrates links between GBV and other sexually transmitted infections (STIs), such as HIV, particularly as related to women's limited control or power to negotiate methods to prevent pregnancies and STIs.

Maternal Child Health Systems: Early and regular attendance at antenatal care (ANC) appointments are critical for pregnant women to access information and commodities for Zika prevention. During ANC, condoms are distributed for prevention of sexually transmitted Zika, and early screening is available for Zika infection and microcephaly. In Ecuador, 95% of mothers attend at least one antenatal care visit, but only 79.5% of mothers attended the recommended five or more ANC visits during their last pregnancy. Little is known about rates of male-partner engagement in antenatal care appointments and any affects this may or may not have on the uptake of Zika prevention practices. Regular attendance of well-baby care appointments and a strong screening and follow-up system are also critical for identifying developmental delays that may be caused by Zika. Most infants (97.7%) attended at least one health visit within three months of birth, and 89.0% of infants born between 2007 and 2012 received weight screening within seven days postpartum. However, this coverage isn't equitable across populations as infants born in rural areas and born to indigenous women were less likely to receive weight screening (79.2% and 59.7%, respectively).

Vulnerable Populations: Youth, indigenous, and minority populations experience several challenges that can make them more vulnerable to Zika infection, and less likely to access care and treatment. Youth are engaging in sexual activity, some have multiple partners, and most are not using condoms as protection. Indigenous populations face three times the rate of poverty than non-indigenous populations, which makes it more likely they will have inadequate sanitation systems, more mosquito-breeding sites, and therefore greater vulnerability to Zika infection. Indigenous and Afro-Ecuadorian women also have higher rates of non-contraceptive use, at 30.7% and 34.0%, respectively, and are more likely to experience sexual violence from their partners than non-indigenous and non-Afro-Ecuadorian women.

Recommendations from this desk review to address gender issues in Zika response include: strengthen education and outreach; increase access to health services for women; increase the availability of modern contraceptives; promote condom use during pregnancy; do no harm by avoiding actions that could increase gender-based violence; target youth with reproductive health counseling; and address stigma towards marginalized groups and ethnic minorities.

I. INTRODUCTION

The USAID Applying Science to Strengthen and Improve Systems Project (ASSIST) has worked globally since 2012 to improve the quality and outcomes of health care and other services by enabling host country providers and managers to apply quality improvement evidence. ASSIST seeks to build the capacity of host country service delivery organizations in USAID-assisted countries to improve the effectiveness, efficiency, client-centeredness, safety, accessibility, and equity of the health and family services they provide.

As part of USAID's emergency response to Zika, ASSIST has been implementing health systems strengthening efforts in Latin America and the Caribbean since 2016. ASSIST works to improve the capacity of Zika-related health services to deliver consistent, evidence-based, respectful, high-quality care with a focus on pregnant women, newborns, and women and girls of reproductive age.

ASSIST achieved improved capacity by supporting Ministries of Health and Social Security Institutions in the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Paraguay, Peru, St. Vincent and the Grenadines, St. Kitts and Nevis, Antigua, and Dominica to:

- Increase health care provider and client knowledge about Zika risks and prevention measures, such as condom use to prevent sexual transmission during pregnancy;
- Improve clinical screening for signs and symptoms of Zika infections during pregnancy and implementation of recommended care;
- Improve clinical screening for microcephaly and other manifestations of congenital Zika syndrome in newborns and increase the number and proportion of affected infants receiving recommended care; and
- Strengthen the provision of high-quality psycho-emotional support services for women and families affected by Zika.

From 2018-2019, ASSIST worked in Ecuador to support local actors to improve the capacity of health service providers to deliver consistent, evidence-based, respectful, high-quality Zika-related care with a focus on pregnant women, newborns, and women of reproductive age. The project supported improvements in prenatal care, family planning services, delivery and newborn care, and assessment of the children's physical growth and development.

WI-HER, LLC, a women-owned small business and international development consulting firm, provided technical leadership on integrating gender into the Zika emergency response under the USAID ASSIST Project. To integrate gender, WI-HER developed an innovative, results-oriented approach that draws directly from the science of quality improvement, called iDARE, which is an acronym for Identify, Design, Apply/Assess, Record, Expand [1].

The *Identify* and *Design* steps ensure that contextually appropriate interventions are implemented. These steps have a gender perspective that takes the different needs and behaviors of women, men, girls, and boys into consideration. The final three steps ensure that this approach is continuously examined, evaluated, and adjusted to ensure consistent effectiveness and improved development and humanitarian outcomes. The iDARE approach has been proven effective at multiple levels and across 35 countries in Africa, Asia, Eastern Europe, Latin America, and the Middle East.

To inform training for ASSIST staff in Ecuador on barriers to and opportunities for addressing gender considerations within RMNCH services and supporting health systems, and ultimately to improve the effectiveness of the Zika response in reaching women and vulnerable populations, WI-HER conducted an extensive desk review of gender-related barriers to Zika prevention and care. Findings listed below, with accompanying recommendations, were incorporated into a gender-integration training for ASSIST staff and subsequently for health providers in the health facilities where they work.

The review identified issues that affect the quality and effectiveness of family planning, antenatal care, and male engagement in reproductive health. Some of these issues included: limited decision-making power of women and girls over their sexual and reproductive health; resistance to condom use by couples in long-term relationships, including during pregnancy; and unequal division of unpaid labor and childcare.

This report presents the main findings of the desk review and offers recommendations for how to address social integration and gender issues in the Zika response. These recommendations were discussed with the ASSIST Ecuador team during implementation and are now provided for a wider audience to inform future interventions to combat mosquito-borne and sexually transmitted diseases in Ecuador.

These issues need to be addressed as part of quality improvement of the Zika response at health facilities and through community-based activities to reach populations with limited access to health facilities. It is critical to ensure that women, men, girls, and boys can take the steps necessary to prevent and respond to Zika through access to comprehensive family planning services, screening, and education.

II. BACKGROUND

Zika is a flavivirus transmitted by the *Aedes* species mosquito that was first discovered in Uganda in 1947. Between the 1960s and 1980s, human infections were found across Africa and Asia. In 2007, the first large outbreak of the infection was reported in the Federated States of Micronesia. As the infection spread across the Pacific, researchers started to link it to other health challenges such as Guillain-Barré syndrome (GBS), an illness affecting the nervous system that can result in muscle weakness and paralysis. In 2015, Zika virus infection made its way to South America arriving first in Brazil in May, arriving in Ecuador in early 2016. By July, Brazilian health authorities reported an association between Zika and GBS, and by October the infection was linked with another significant health challenge - microcephaly, a congenital birth defect whereby a baby's head is smaller than expected when compared to babies of the same age and sex. (Microcephaly has also been associated with other birth defects and neurological conditions in children and adults.) Zika virus infection quickly swept across the Latin America and Caribbean region. By February 2016, the World Health Organization declared Zika virus infection a Public Health Emergency of International Concern due to its associations with microcephaly and other neurological disorders.

The Centers for Disease Control and Prevention in the United States identifies multiple Zika transmission pathways [2]:

- Through the bite of an infected *Aedes* mosquito;
- From a pregnant woman to her unborn child during pregnancy or around the time of birth;

- Through breast milk, though it is important to clarify that there have been no reports of health problems in babies resulting from breast milk from a mother with Zika virus infection;
- Through sex, from a person who has Zika to his or her partners;
- Through blood transfusion;
- Through exposure to the virus in a laboratory or health care setting.

Zika infection is a serious public health concern because Zika transmission during pregnancy can cause Congenital Syndrome associated with Zika (CSaZ), which can include microcephaly and a range of other fetal brain defects and developmental delays.

International recommendations on Zika prevention and public health response efforts rarely take gender and social context into account. Gender refers to the social norms, roles, relationships, and behaviors attributed to males and females (adults, youth, and adolescents) by society and can influence a person's exposure to Zika infection and subsequent risk of disease and his/her access to prevention and care [3]. Government recommendations that encourage women to avoid or delay pregnancy, practice safer sex using condoms, or abstain from sex during pregnancy assume that women have high levels of reproductive control and autonomy and universal access to contraception [4,5]. However, these recommendations ignore the realities in Latin America and the Caribbean, where in some cases there is limited access to contraceptives and other sexual and reproductive health services and there are high rates of sexual and gender-based violence (GBV) and barriers to autonomous reproductive health decision-making that result in high rates of unintended pregnancies, particularly among youth [5]. Understanding the needs and vulnerabilities of women, men, girls, and boys helps us tailor responses and dedicate resources where they are most needed.

This is the first analysis of gender issues in the Zika response in Ecuador. Therefore, this report aims to fill an important gap. This document offers an overview of these issues, identifies critical gender concerns, and explains how to address these concerns with contextually appropriate interventions.

III. METHODOLOGY

The authors implemented the desk review looking at gender and social inclusion statistics across the country and exploring specific gender considerations in relationship to health to identify key challenges or barriers and opportunities for addressing gender considerations within quality improvement activities and for addressing related impact within RMNCH services and supporting health systems. During the desk review, the team gathered available sex-disaggregated qualitative and quantitative data and background information on gender and social inclusion considerations for the purpose of exposing gaps that would impact RMNCH care and emergency preparedness and the response related to Zika and that would provide insights to guide programmatic strategies.

Materials appraised for these reviews included peer-reviewed publications, policy papers, gender analyses, case studies, literature reviews, publicly available data, government and international policies and documents, relevant donor-funded program documents, grey literature, and other relevant materials. Only recent data and publications from reputable journals or organizations were considered, along with policies and data produced by the Government of Ecuador. To the extent possible, only literature from the past 10 years was

considered, along with the most recent publicly available policies, strategies, and guidance documents.

The analysis was guided by USAID's 2012 [Gender Equality and Female Empowerment Policy](#) and the USAID Automated Directives System Chapter 205: *Integrating Gender Equality and Female Empowerment in USAID's Program Cycle* as a framework to identify key issues, informational gaps, challenges, and opportunities for gender equity health improvements. WI-HER's research team worked closely together to evaluate, discuss, analyze, and triangulate information for conclusions and initial recommendations presented in this desk review.

IV. DESK REVIEW FINDINGS

A. Ecuador: Sociodemographic Overview

Ecuador is a country of 256,370 square kilometers of land in northwestern South America [6]. The country borders the nations of Colombia, Peru, and Brazil and has coastline on the Pacific Ocean [6]. Ecuador has four topographical regions: the Costa region, which runs along the coast with the Pacific; the Sierra region, which includes portions of the Andes Mountains; the Oriente region, which is located in the eastern portion of the country and contains parts of the Amazon Basin [7]; and the Galápagos Islands which comprise 19 islands located in the Pacific Ocean [7]. Ecuador is positioned along the "Ring of Fire" in the Pacific Ocean, which leaves it vulnerable to volcanic activity and earthquakes [7]. The country has also been negatively impacted by landslides, floods, fires, and drought in recent history which has caused substantial disaster-related mortality and economic losses [8].

The *Instituto Nacional de Estadística y Censos*' (INEC) official census in 2010 determined the population to be 14,483,499 and projected growth to 17,023,408 by 2018 [9,10]. The estimated annual rate of population change between 2015 and 2020 is 1.42% [11]. The birth rate in 2017 was 17.2 births per 1,000 residents [12]. The ratio of males to females is projected to be 99.8 females for every 100 males in 2020 [11]. Approximately 44.8% of the population will be under the age of 25 in 2020 [6]. Almost 64% of the population lives in urban areas, and the annual rate of urbanization between 2015 and 2020 is projected to be 1.66% [13]. The majority of the population identifies as mestizo (71.9%), but other minority groups exist, including the Montubio or Montuvio (7.4%), Afro-Ecuadorians (7.2%), indigenous groups (7.0%), whites (6.1%), and other (0.4%) [6]. The majority of the population identifies as Roman Catholic [7].

1. Economic and Human Development Indicators

The World Bank classifies Ecuador as an upper middle-income country [14]. The 2017 GDP was \$103.057 billion with 2.962% annual GDP growth that year although, the annual GDP growth was projected to fall to 2.2% in 2018 and to 0.9% in 2020 [14]. These changes in GDP are largely linked to fluctuations in international oil prices [15]. As of 2017, 21.5% of the population was living below national poverty levels [14], and in 2014, around 5.7% of the population was living in extreme poverty [16]. The wealthiest 20% of the population held more than half of the income share for the nation (50.5%) as of 2016, and the poorest 20% of the population only held 4.7% of the income share [17]. Ecuador's Gini coefficient¹ in 2016 was 45,

¹ The OECD defines the Gini coefficient as "measur[ing] the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution... A Gini index of zero represents perfect equality and 100, perfect inequality." [23]

placing it nearly on the center of the continuum between perfect equality and perfect inequality [18].

Ecuador's Human Development Index (HDI)² value in 2017 was 0.752, which situates the country in the high human development group and ranks it at 86 out of 189 countries [19]. This HDI is slightly below average for the high human development group (HDI = 0.757) and the Latin American and Caribbean region (HDI = 0.758) [19]. The Inequality-adjusted HDI (IHDI)³ is 0.603, which represents a 19.8% loss in human development due to inequality [19]. This is lower than the loss due to inequality for the Latin America and Caribbean region (21.8%), but higher than the loss due to inequality for the high human development group (16.0%) [19]. The Gender Development Index (GDI)⁴ for Ecuador is 0.978, which is slightly higher than the GDI for Latin America and the Caribbean (GDI = 0.977) and for the high human development group (GDI = 0.957) [19]. The Gender Inequality Index (GII)⁵ measures inequality in three different dimensions and represents a loss in development due to inequality in these areas [19]. The GI for Ecuador in 2017 was 0.385, and the country was ranked 88 out of 160 [19].

2. Health Indicators

Life expectancy is estimated to be 74.8 years for males and 78.7 years for females in Ecuador [20]. Leading causes of death in Ecuador include ischemic heart disease, chronic kidney disease, and stroke, while road injuries and neonatal disorders are the leading causes of premature death [20]. Lower back pain, headache disorders, and diabetes are the leading causes of disability [20]. Neonatal disorders are the thirteenth highest cause of mortality and the sixth highest cause of disability [20].

In term of reproductive health indicators, the estimated national fertility rate is 2.4 per woman which matches the average for LAC region [21]. The 2017 infant mortality rate (IMR) in Ecuador was 9.7 deaths per 100,000 live births, and the neonatal mortality rate was 5.6 deaths per 100,000 live births [12]. The maternal mortality ratio (MMR) was 42.8 deaths per 100,000 live births, 96.4% of births occurred with medical assistance [21], and 49.0% of births in 2015 were by Caesarean section [22]. Both the IMR and MMR are half of what the regional average is, illustrating the strides the *Ministerio de Salud Pública del Ecuador* (MSP) and the health system have made. (See **Table 1.**)

Ecuador's Health Care Access and Quality (HAQ)⁶ Index increased annually by 1.2% between 2000 and 2016 to reach 62.2 in 2016 [20]. Health care spending doubled between 2010 and 2015 (from \$1.153 billion to \$2.570 billion) and accounted for 9.2% of GDP in 2015 [6]. As of

² HDI is a summary measure for assessing long-term progress in three basic dimensions of human development: a long and healthy life, access to knowledge, and a decent standard of living.

³ IHDI takes into account inequality in all three dimensions of the HDI by 'discounting' each dimension's average value according to its level of inequality.

⁴ GDI is defined as the ratio of the female to male HDI.

⁵ GII measures gender-based inequalities in three dimensions – reproductive health (measured by maternal mortality and adolescent birth rates), empowerment (measured by the share of parliamentary seats held by women and attainment in secondary and higher education by each gender), and economic activity (measured by the labor market participation rate for women and men).

⁶ HAQ "provides a summary measure of health care access and quality for a given location. This measure is based on risk-standardized mortality rates or mortality-to-incidence ratios from causes that, in the presence of quality health care, should not result in death – also known as amenable mortality." [20]

2009, there were 16.87 physicians for every 10,000 residents in Ecuador and 19.83 nursing and midwifery personnel per 10,000 residents [22].

Table 1. Reproductive health indicators – Ecuador and Latin America and the Caribbean

	Ecuador	Latin America and Caribbean Regional Average
Infant Mortality Rate (IMR)	9.7 per 1,000 live births [7]	14.9 per 1,000 live births [24]
Maternal Mortality Ratio (MMR)	42.8 per 100,000 live births [7]	85 per 100,000 live births [25]
Total Fertility Rate (TFR)	2.4 children per woman [7]	2.1 children per woman [26]

Patterns of Migration

Migration patterns are also critical to understanding broader health, economic, and social patterns within Ecuador. The net out-migration rate in Ecuador between 2015 and 2020 is estimated to be -0.4 per 1,000 residents [11]. Between 10% and 15% of the population has lived outside of Ecuador since the 1980s, with out-migration being fueled by financial difficulties in the nation but also some evidence of some return migration since 2010 [27]. Ecuadorians living outside of Ecuador play a key role in the Ecuadorian economy; around 3% of GDP in 2010 was attributable to remittances from those living abroad, and 7% of households reported receiving at least one remittance in 2010 [27]. Ecuador also hosts a large number of refugees. The government reported the arrival of around 48,000 refugees in 2017, most of whom were from Colombia, and UNHCR also reported the arrival of 93,000 people from “refugee-like” situations in Colombia and Venezuela [28]. Most recently, southern provinces of Ecuador have seen an influx of Venezuelan refugees with more than 547,000 Venezuelan refugees arriving in 2018 [29]. This prompted the Ecuadorian government to briefly close and then re-open borders [30, 31].

B. The Zika Virus Outbreak: Timeline and Spread

The World Health Organization (WHO) defines an outbreak as “the occurrence of cases of disease in excess of what would normally be expected in a defined community, geographical area or season. An outbreak may occur in a restricted geographical area or may extend over several countries. It may last for a few days or weeks, or for several years” [32]. When tracking the Zika virus outbreak and spread specifically, the WHO uses the following terms:

- **Suspected case** – a person presenting with rash and/or fever and at least one of the following signs and symptoms (arthralgia, arthritis, conjunctivitis)
- **Probable case** – a suspected case with presence of the antibody against Zika virus and an epidemiological link such as contact with a confirmed case or, a history or a history of residing in or traveling to a Zika-affected area in the prior two weeks
- **Confirmed case** – a person with laboratory confirmation of Zika virus infection [33]

The first reported case of Zika Virus in Ecuador occurred in Epidemiological Week 2 of 2016 [34]. As of Epidemiological Week 52 of 2016, Ecuador reported a total of 2,946 mild cases of Zika (with 242 among pregnant women), two infant deaths, 15 cases of microcephaly, and three people with neurological complications [35]. Zika was reported in 17 out of the 24 provinces,

with Esmeraldas, Guayas, Manabí, and Santo Domingo de los Tsáchilas having the highest incidence [34]. These are predominantly coastal regions. Zika cases reached a peak in mid-2016 and have since decreased [34].

In the period from 2016 to 2019, the cumulative incidence reached a total of 5,731 cases with 80% of them concentrated in the provinces of Manabí and Guayas. There was an observed spike in Zika cases in the Manabí province after the 2016 earthquake [36]. There have been 965 cases of Zika among pregnant women, 20 confirmed cases microcephaly and five under investigation, and seven cases of Zika-related neurological complications (four with encephalitis and three cases of Guillain-Barré in El Oro, Santa Elena, Nueva Loja, and Sucumbíos) [35].

C. Zika Response Programs

The MSP published its official Zika response plan in November 2016 [37]. The plan included explicit instructions for the diagnosis and surveillance of patients with Zika and associated syndromes [37]. It also assigned responsibility for the dissemination of Zika public health messaging via television, radio, social media, internet, telephone, audiovisual materials, and other means of communication to different national-level agencies [30]. The plan incorporated objectives and public health messaging targeted towards key groups, including women of reproductive age and their partners, pregnant women, and youth [37]. There are guidelines associated with sexual and reproductive health promoting contraceptive use among women of reproductive age, education about the sexual transmission of Zika, and the use of male and female condoms [39]. Official government messaging to the public has recommended that women of reproductive age delay pregnancy [37, 48]. Specific communications and recommendations for pregnant women address Zika symptoms, protection, and modes of transmission [37, 38]. The MSP partnered with the *Ministerio de Educación* to develop educational materials for use with youth in schools [40].

The guidelines recommend strengthening the existing vector control programs in place for dengue and chikungunya in response to Zika [37]. These programs include activities to prevent mosquito breeding like using contained or covered water storage, cleaning water storage containers, and preventing the accumulation of standing water [37]. Additionally, the guidelines promoted the utilization of protective netting to prevent mosquitoes from entering homes or buildings and the uptake of personal protective activities to prevent mosquito bites (i.e., protective clothing, repellent use) [37].

The Government of Ecuador has also partnered with a number of international actors to implement programs around Zika prevention. Between October 2016 and May 2017, UNICEF established programs of *brigadas* in the Esmeraldas and Manabí provinces to visit pregnant women and their families to deliver messages about Zika risk and prevention [41]. Each pregnant woman was given a kit of protective supplies including a mosquito net, mosquito repellent, condoms, a brush for water tank cleaning, and educational materials [41]. Families living in close proximity to pregnant women were given an educational talk, educational materials, and a brush for water tank cleaning [41]. UNICEF also delivered educational sessions in schools and provided risk and prevention communication messaging [41].

D. Public Perception of Zika

CARE Ecuador completed a study of knowledge, attitudes, and practices associated with Zika in three provinces (El Oro, Esmeraldas, and Manabí) in August and September 2018 [42]. The study found that 77.84% of the respondents believed they could contract Zika in their

neighborhoods or communities [42]. This percentage was slightly higher among pregnant women (81.4%) and lower among men (72.36%) [42]. Almost 83% believed that Zika was an important problem in their community [37]. The majority of respondents were aware Zika could be transmitted by mosquito bite (93.9%), but only 13.9% were aware Zika is sexually transmitted [42]. The three most commonly known methods of Zika prevention were eliminating standing water (423 out of 668 respondents), using a mosquito net (406), and cleaning or sanitizing water containers (345) [42]. Respondents were most likely to receive information about Zika from health workers in a health center (287), from television (216), or from family (135) [42]. More than half of respondents (59.28%) believed that all people infected with Zika present symptoms [42].

Respondents identified the following groups as being at high risk for Zika: pregnant women (79.9%), children (37%), the elderly (26.5%), and women of reproductive age (23.5%) [42]. Respondents thought that Zika could cause pregnant women to suffer a miscarriage (40.3%), have difficulties in birth (38.6%), or become sick (30.8%), and 19.8% reported not knowing any risks for pregnant women with Zika [42]. About half of respondents (46.4%) knew that babies born to pregnant mothers infected with Zika were at risk for microcephaly; 46.7% knew that there is a relationship between Zika and microcephaly, while 65.72% did not know if there was a relationship between Zika and GBS [42].

Within the study, 67.7% of respondents believed they had a high or medium risk of Zika, which was most associated with the presence of mosquitos in their area (94.4% reported this as the reason for their risk) [42]. For those perceiving low or no risk of Zika, their justification was that their water was covered (75.2%), their outdoor areas were clean without mosquito breeding areas (62.4%), and that they use a mosquito net (49.6%) [42]. Respondents most commonly believed it was the responsibility of individuals or health care workers to prevent Zika [42]. Overall, 44.61% of respondents were in high agreement that women should avoid becoming pregnant at this time because of Zika; the most common reason for this was that there is a risk between Zika and having a baby born with a disability (47.3%) [42]. More than 56% of respondents either did not agree or were in complete disagreement that pregnant women with Zika were at risk of suffering discrimination [42].

Over half of the respondents (59.43%) said they did not have sufficient information about Zika [42]. The majority (91%) would like more information about Zika, especially about the modes of transmission and treatment options [42]. Of those who had received information about Zika, 42.8% reported that the messages were clear and easy to understand [42].

Almost 65% of respondents had taken measures to avoid Zika, of which 48% reported taking measures to prevent Zika in their community [42]. The most common approaches to prevent Zika were using a mosquito net all night (76.0%), using mosquito repellent all over the body (47.5%), and eliminating standing water (39.2%) [42]. The most common community-level prevention measures were cleaning water receptacles (80.1%) and covering water receptacles (57.0%) [42]. For those who had not tried to prevent Zika at the individual level, they cited lack of risk (22.0%), lack of knowledge (20.5%), and lack of time (16.6%) as reasons they had not taken measures [42]. Lack of time (20.4%) was the most common reason for not taking prevention measures at the community level [42].

The majority of respondents said they would go to a health center if they thought they had Zika, and 79.19% believed they should have a Zika test if they had a fever at this time [42]. Ninety

percent of all respondents believed that pregnant women who thought they had Zika should go to the health center; the percentage was slightly higher among pregnant women (96.90%) [42].

Forty percent of respondents said they or their partner had not taken any measures to prevent unwanted pregnancies [42]. Condoms were the most commonly used contraceptive (38.6%) and 24.9% and 19.3% reported oral contraceptive use and injectable use, respectively [42]. Forty-nine percent of pregnant women reported using condoms [42]. It is evident that in the general population there are still knowledge gaps regarding Zika, particularly sexually transmitted Zika and the importance of using condoms, and an even larger gap between knowledge and practicing Zika prevention behaviors.

E. Factors to Consider in Zika Response

1. Gender and the Division of Labor and Care

Economic challenges in Ecuador have decreased labor productivity and have increased the number of people employed in the informal sector, which has impacted employment for women; women are typically employed in lower quality jobs, work in more informal sectors, have higher underemployment rates, and make less income than men [43]. Overall, women only earn 87% of what men earn, and men's hourly wages are 6% higher on average [43]. Around 62% of women work in informal employment, compared to 50% of men [43]. The labor force participation rate for women is substantially lower than it is for men. While 77.1% of working-age men are employed, only 16.0% of women of working age are employed [44]. Youth labor force participation rates also vary highly for young men (62.8% participation) and young women (15.0% participation) [44]. More than 25% of young women are not involved in education, employment, or training, while only 10% of young men are not involved in education, employment, or training [43].

Additionally, female-headed households are more likely to be in poverty and less likely to have access to basic services like water and sanitation in comparison to male-headed households [43]. Many of these gaps are exacerbated for women who are rural, indigenous, or Afro-Ecuadorian [43]. This is important because poorer households with less access to clean water and sanitation are more likely to have mosquito breeding sites and are therefore at higher risk for Zika infection.

Gender norms also influence the division of unpaid labor in the household where women are usually expected to take care of the home and children and men are expected to be the financial provider. According to respondents to the National Survey on Health and Nutrition (*Encuesta Nacional de Salud y Nutrición*, ENSANUT), an estimated 70% of fathers live with their children, and of fathers who live with their children, 86.8% help care for their child when the child is sick [45]. In addition, 76.5% of mothers reported needing monetary contributions from the father of their child to buy medicine for the child, and 14.4% of fathers said that they give permission before the mother takes their child to a health facility [45].

Furthermore, women in Ecuador spend substantially more time on average performing unpaid work than men; 37.1 of the 57.8 hours women spend working per week are dedicated to unpaid labor, including childcare, while men spend 9.6 hours of the 53.6 hours they work on unpaid labor [46]. This burden of care could be further skewed in families that have children with CSaZ and other disabilities. Slower brain development may lead to problems progressing in speaking, learning, moving, and playing and these children need specialized services, resources, and additional home care needs. These babies may also need additional tests, exams, and

therapies from various specialists, some of whom may be difficult to reach or find. The family may require the assistance of a social worker, insurance provider, friends, and other family and community members to help with transport, care, and services. Looking at long-term care, it is evident that raising a child affected by Zika can come at a high financial and social cost for the caretaker and the family [47,48]. Based on other studies in the region, childcare typically falls to the mother or other female relatives in her network. The extra care involved for a child with disabilities places higher time and labor costs on the mother and potentially higher financial costs for the father [47,48]. The burden is potentially different for men and women, and this should be considered when health providers support families and bring them together as couples.

In other studies in the region (the Dominican Republic and Brazil), there are reports of spouses abandoning the other if there is a child with CSaZ, most often the father [47,48]. More research is needed to understand if these trends also apply to Ecuador. However, communication and outreach programs need to account for this vulnerable population. Depending on what other kinds of family and community support the single parent may have, they may have difficulties finding the time, money, and transportation to attend a health facility and they may have unique psychosocial support needs.

2. Gender and Reproductive Health

Gender norms and their associated social and behavioral expectations are a contributing factor to the transmission of Zika in Ecuador. In LAC, traditional gender norms impose expectations that women will be more submissive and faithful in relationships, and that men will serve as the providers and dominant force in families. *Machismo*, which refers to the expectation that men should be more aggressive and strong, contributes strongly to power dynamics between men and women [49, 50]. *Machismo* also promotes the notion that men should be sexually dominant and can encourage men to demonstrate their strength and virility by engaging in multiple concurrent partnerships. Due to the sexual transmission of Zika, multiple concurrent sexual partnerships can serve as a driver of transmission [49, 50].

Gender norms also impact both men and women's ability to access and choose health services and take preventive measures related to Zika, including preventing unwanted pregnancies through contraceptives. The first line of defense for preventing CSaZ is to help women and families prevent unwanted pregnancies in the first place. As of 2018, the contraceptive prevalence rate in Ecuador among women ages 15-49 was 79% for all methods and 71% for modern methods [21]. UNFPA estimates that 92% of contraceptive demand is satisfied and that 83% of contraceptive demand is satisfied with modern methods [21]. Contraception is critical for preventing and delaying pregnancy due to the potential negative consequences of contracting Zika during pregnancy, yet the UNFPA estimates that 7% of women have an unmet need for family planning [21]. The Population Reference Bureau estimates lower levels of demand satisfaction (75.1%) and a slightly higher level of unmet need (9.1%) [51].

Married women reported using contraceptive methods at slightly higher rates than sexually active unmarried women (except in indigenous and Afro-Ecuadorian populations, in which sexually active unmarried women have marginally higher rates) [45]. The most commonly cited reason for contraception use is not wanting additional children (41.5%), followed by not wanting any more children yet (22.2%) and wanting to space pregnancies (19.5%) [45]. The average desired family size reported between 1999 and 2004 was 2.6 children per woman [52].

The modern contraceptive mix in Ecuador includes the following methods: vasectomy, female sterilization, implants, injectables, contraceptive pills, male and female condoms, emergency contraceptive pills, copper intrauterine device, and vaginal methods (i.e., spermicides) [45]. Notably, emergency contraception is legal and free in Ecuador without a prescription in public health facilities (a prescription is required in private health facilities) [53, 54, 55]. Emergency contraception was integrated into the national family planning program in 2013 in part to discourage women from seeking illegal or unsafe abortions [53, 54, 55].

In the 2012 ENSANUT survey, 98% of women ages 15 to 49 reported being aware of at least one method of contraception, and 97.9% reported being aware of a modern method of contraception [40]. Another 71.3% of women ages 15-49 reported knowing at least one traditional method of contraception, with oral contraceptive pills having the most recognition (92.7%) followed by contraceptive injections (91.1%), male condoms (90.2%), and female sterilization (89.6%) [45]. Girls ages 12 to 14 reported much lower levels of contraceptive knowledge, with 79.5% reporting knowledge of at least one method [45]. Women with lower levels of education and indigenous women reported lower levels of contraceptive knowledge [45].

There is a gap between levels of contraceptive knowledge and past and present contraceptive use, with 73.5% of women ages 15 to 49 reporting using a method of contraception in the past and only 54.7% of women reporting present use of any method of contraception [45]. The methods with highest rates of past use include female sterilization (20.6%), contraceptive injections (18.5%), and intrauterine devices (12.1%) [45]. Those with the highest levels of present use were female sterilization (20.5%), contraceptive injections (7.8%), and oral contraceptive pills (7.4%) [45].

Condoms, which are particularly important to prevent sexual transmission of Zika, are the most well-known method of HIV and STI prevention among the general population (63.5%) [45]. However, condoms are traditionally a difficult method to promote in stable and long-term partners in the LAC region because having sex without them is a sign of trust in a partnership. A married person asking his or her partner to use a condom can be construed as an accusation that they are unfaithful or a sign that she or he has been unfaithful [58,59,60]. Under traditional gender norms, where women are expected to be faithful, this could cause tension and discourage both women and men from asking their partner to use a condom [56,57,58]. This is reflected in the 2012 ENSUNAT survey when only 10.7% of women ages 15 to 49 who know about or have heard of HIV reported using a condom during their last sexual encounter [45]. Over half of women (56.7%) who did not use a condom in their last sexual encounter did not do so because they used another method [45]. If a partner proposed condom use, 55.8% of women ages 15 to 49 who know about HIV would agree to using a condom, while 34.9% would not agree [45].

Although the levels of contraceptive use have increased steadily since 1979 in Ecuador [45], there is still unmet need for modern contraception. Preventing unwanted births is the first line of defense in preventing children with CSaZ and it is therefore critical to provide contraception to women who want it during and after the outbreak. It is also critical to address gender norms around condom use, particularly among pregnant women in stable unions, since it is a crucial step for prevention. Finally, the distribution of condoms and contraception is not equitable throughout the country, there remains consistently lower level among indigenous populations and this urgently needs to be addressed.

3. Gender-based Violence

Six out of ten women in Ecuador report experiencing some type of gender-based violence (GBV) in their lifetime, and reflecting trends globally, these numbers are likely an underestimation since most of gender-based violence goes unreported and few are officially documented [59, 60]. Levels of GBV do not vary greatly by province with all of the provinces in Ecuador reporting GBV levels above 50% [59]. However, experiences of GBV do vary by ethnicity. Indigenous women report the highest levels of experiences of violence at 67.8%, followed by Afro-Ecuadorian women (66.7%), Montubia women (62.9%), white women (59.7%), and Mestiza women (59.1%) [61]. Rates of violence are also higher amongst women with lower levels of education (70%) [61]. Further, women with disabilities are more likely to experience violence [59].

Of women who experienced violence, 53.9% experienced psychological violence, 38.0% experienced physical violence, 25.7% experienced sexual violence, and 16.7% experienced patrimonial (or economic) violence [59]. Seventy-six percent of women who had experienced violence reported that their partner perpetrated the violence [59]. Partners perpetrated 87% of physical violence, 76.3% of psychological violence, and 53.6% of sexual violence [59]. Of women who were married or in a union and experienced violence from their partner, 88.2% of them did not think about separating from their partner [59]. GBV is also entrenched within norms with 38.2% of women identifying at least one reason for which partner violence against women is acceptable [62].

Around 50% of women who experienced partner violence identified their partner's alcohol or drug use as a contributing factor to the violence they experienced [63]. Jealousy was cited in 47.4% of cases of partner violence [63]; 37.2% of women experiencing partner violence reported that their partner was having another romantic relationship, and 36.4% cited economic problems as a contributor to the violence they experienced [63].

About one fifth (20.6%) of women who had experienced violence from their present or past partner had gone to an institution of justice or protection to seek help, receive information, or report the violence [61]; 54% of the women who sought help from these institutions went to specialized women's and family police stations [61]. Eleven percent of women who experienced violence went to institutions of justice or protection to file a report about the violence they experienced, and only 20% of those continued in the legal process [61]. Only 10% of all reported cases of violence end in a condemnatory sentence, and only 1% end in a legal sanction [61]. It is important to note that marital rape is illegal within Ecuador, but global observatory agencies report that the law is not enforced [63].

The general rate of homicide in Ecuador in 2015 was 10.2 homicides per 100,000 populations, which represents a decline from the rate in 2010 (19.8 homicides per 100,000 population) [63]. The rate of homicide is higher among males at 17.9 homicides per 100,000 population compared to the rate among females, which is 2.6 homicides per 100,000 population [63]. *La Comisión Ecuatoria de Derechos Humanos* (CEDHU) reports that there were 113 cases of femicide in 2015 [62]. News sources in Ecuador report that CEDHU identified 151 femicides in 2017, and 64 femicides between January and October 2018 [65, 66]. Between 57% and 66% of all femicides are perpetrated by partners or ex-partners [63].

Several studies demonstrate that high rates of GBV, particularly intimate-partner violence (IPV), limit women's control over their bodies and their ability to negotiate sexual activity and a method

to prevent pregnancy and STIs. Women's fear of violence when requesting condom use is a pathway that links IPV to inconsistent condom use. Since the Zika outbreak is quite recent, there are not yet studies examining the association between IPV and Zika infections, however similar comparisons have been drawn between HIV and IPV, and given that both diseases are transmitted sexually, the connection is probable. A 2013 WHO systematic global review and analysis of studies across different HIV epidemic settings found that IPV increases the risk for HIV infection among women and girls by more than 50%, and in some instances up to four-fold increases in risk [67]. There is a two-way link between IPV/GBV and STIs: victims of GBV are more likely to acquire STIs, and having an STI makes women more vulnerable to violence [68]. The WHO also reported that forced sex is directly linked to HIV infection and highlighted that the younger women are at the time of their first sexual intercourse, the higher probability that the sexual encounter was non-consensual or forced [69].

In the region, studies also associate IPV during pregnancy with a limited number of prenatal care visits. For example, in one of the major maternal perinatal hospitals in Peru, patients that are survivors of IPV were eight times more likely to attend fewer than six prenatal care visits compared to patients that did not experience violence [70]. More research is needed to understand if this trend is relevant in the Ecuadorian context, however it is important to understand within context of Zika transmission, as prenatal care visits provide women with the opportunity to gain health education about Zika risk and prevention. It is possible to infer that women who experience violence may be less likely to access prenatal care and, thus, would be less likely to receive health messaging about Zika during pregnancy.

4. Maternal and Child Health Systems

Early and regular attendance at antenatal care appointments is critical for reaching pregnant women with information about Zika prevention, condoms for prevention of sexually transmitted Zika, and early screening for Zika infection and microcephaly. In Ecuador, 95% of mothers who gave birth between July 2007 and June 2012 attended at least one antenatal care visit [45], while 79.0% of mothers went to their first antenatal visit during their first trimester [40]. Additionally, 79.5% of mothers attended five or more antenatal care visits during their pregnancy [45]. Between 2007 and 2012, 90% of women had medical assistance during their birth; this has increased to 96.4% as of 2017 [12,45]. Fifty-one percent of mothers attended at least one postpartum appointment, and 46.0% of mothers attended the first postpartum appointment within 40 days after giving birth [45]. These trends are promising, but there is still room for improvement, particularly when reaching more vulnerable women in hard-to-reach areas. In addition, little is known about rates of male-partner engagement in antenatal care appointments and any affects this may have on the uptake of Zika prevention practices.

Women most commonly report receiving care relating to sexual and reproductive health in public health facilities. Of women who received antenatal care, 45.7% attended visits in an MSP health center and 24.6% attended visits in an MSP hospital or maternity center [40]. Almost 50% of women gave birth in an MSP hospital or maternity center; the second most common place to give birth was in a private clinic at 22.0% [45]. The majority of women report that they would give birth in a health care facility if they were to become pregnant (90.1%), while 6.3% reported they would give birth at home [45]. However, only 62.8% of indigenous women said they would give birth in a health care facility [45]. In decision-making about birth locations, 33.8% of respondents report that partners should make the decision together, 24.8% report that

women should make the decision alone, and 12.2% report that the woman's spouse should make the decision [45].

Regular attendance at well-baby care appointments and a strong screening and follow-up system are also critical for identifying developmental delays that may be caused by Zika. In Ecuador, 92.1% of all births between 2007 and 2012 were officially registered, and 89.0% of infants born between 2007 and 2012 received weight screening within seven days postpartum [45]. However, this coverage isn't equitable across populations as infants born in rural areas and born to indigenous women were less likely to receive weight screening (79.2% and 59.7%, respectively) [45]. Most infants (97.7%) attended at least one health visit within three months of birth, and 79.1% of these post-birth health visits took place in MSP health facilities [45]. The MSP does have a robust neonatal screening program, which screens for Congenital Hypothyroidism, Galactosemia, Congenital Adrenal Hyperplasia, and Phenylketonuria [71]. In 2013, 225,436 newborns were screened in the program, which represents the majority of all 294,441 newborns in 2013 [12, 71].

Finally, psychosocial support services are important for mothers and families that have children with CSaZ. Only 1.2% of Ecuador's public health budget is apportioned to mental health services, the majority of which is used for inpatient psychiatric services [72]. There is weak informal support for mental health or psychosocial support in communities, although national policies around mental health and psychosocial support focus on promotion, prevention, and the integration of services are woven into the primary health care system [72].

F. Vulnerable Populations

1. Adolescents and Youth

Youth, and particularly adolescent girls and young women, may have increased vulnerability to Zika infection and therefore need a tailored response. Between 2007 and 2011, Ecuador had a public health program specifically dedicated to adolescent health care [73, 74]. The program sensitized health professionals to the needs of adolescents, and adolescent health access increased during the program's implementation [73]. However, after 2011, the MSP took a new integrated care approach and eliminated the specific focus on adolescent health [73].

Youth engaging in sexual relationships must also be considered in Zika response, as they are at risk for sexual transmission of Zika. Based on data collected in the 2012 ENSANUT, the median age that women ages 15 to 24 reported engaging in their first sexual encounter is 18.4 years [45]. In addition, 34% of women ages 15-19 and 43% of women ages 20-24 report engaging in their first sexual relationship before the age of 18 [45]. While 67.7% of women ages 15 to 24 reported that they did not use any method of contraception in their first sexual encounter; 25.0% reported using a condom [45]. The 2007 Global School-based Student Health Survey collected information about sexual health from students ages 13 to 15 in Guayaquil, Quito, and Zamora [75, 76, 77]. In Guayaquil, 15.7% of students reported having had sexual intercourse (26.0% of boys and 7.1% of girls) and 12.2% of students in Guayaquil had sexual relationships with two or more people (18.0% of boys and 6.4% of girls) [75]. Of the sexually active students in Guayaquil, 47.4% had used a condom in their last sexual experience (52.7% of boys and insufficient data for girls) [75]. There were similar findings in Quito and Zamora. This shows that adolescents are engaging in sexual activity, some have multiple sexual partners, and less than half are using protection. This leaves youth vulnerable to unplanned pregnancy, STIs, and Zika infection through sexual transmission.

In terms of adolescent pregnancy, the adolescent birth rate between 2006 and 2017 was 111 per 1,000 women ages 15 to 19 [21]. A small, qualitative study of family planning practices and knowledge among just delivered adolescents in Guayaquil found that 91.9% had prior knowledge of condoms but only 34.1% had used a condom in the past [78]. This reveals a knowledge-to-practice gap around condom use and could be attributed to multiple factors, including lack of access to condoms, provider bias, and religious, community, familial, and cultural undertones.

A qualitative study in Cuenca exploring parental views of adolescent sexuality found that parents had a restricted view on sex education [79]. Their views were grounded in traditional and religious ideas, and they viewed sexuality as dangerous for adolescents [79]. Virginity was highly valued and especially emphasized for girls [79]. Some parents expressed willingness to address sex with their children but lacked resources [79]. For parents who had discussed sex with their children, their main objective was to encourage abstinence [79]. These findings align well with results from the ENSANUT, in which the majority of women ages 15 to 24 report learning about sex education topics from various levels of schooling rather than from parents [45].

Finally, a significant age difference in partners can also lead to uneven power dynamics that may impede a woman's ability to negotiate a condom with her partner to either prevent pregnancy or prevent Zika transmission. The legal age of marriage in Ecuador was raised in 2015 to be 18 years old regardless of gender [80]. Previously, girls could legally be married at age 12, and boys could be legally married at age 14 [80]. As of 2017, 22% of girls in Ecuador were married by age 18, and 4% of girls were married by age 15 [80]. In the most recent ENSANUT in 2012, 32.4% of women ages 15-49 report being in their first union or marriage by age 20 [45].

2. Ethnic Minorities: Indigenous Groups and Afro-Ecuadorians

Indigenous groups and Afro-Ecuadorians face a variety of factors that make them vulnerable to Zika infection. As mentioned previously, poorer households tend to have inadequate sanitation systems that act as a breeding ground for mosquitos and raise the risk of Zika infection. Indigenous populations face substantially higher rates of poverty; 53% of indigenous populations meet the national poverty guidelines, which is three times the poverty level of Mestizos [81].

Access to contraceptives is critical to prevent unwanted cases of pregnancy and prevent potential cases of CSaZ. Indigenous and Afro-Ecuadorian women also have higher rates of non-contraceptive use, at 30.7% and 34.0%, respectively [6]. Further, a study among Northern Ecuadorian Amazon indigenous populations found a fertility rate of 7.0 per woman, which is significantly higher than the national rate [81]. The same study found that only 19.0% of Northern Ecuadorian Amazon indigenous women used a modern method of contraception and that there was a 47% unmet need for family planning [81].

Additionally, indigenous women experience physical and psychological violence at higher rates than all other ethnic groups [45]. They face the second highest rate of sexual violence, with Afro-Ecuadorian women having the highest rate of sexual violence [45]. Almost 60% of indigenous women report experiencing violence from a partner or ex-partner, which is the highest rate of any ethnic group [45]. Afro-Ecuadorian women face the second highest rate of partner violence at 55.3% [45].

V. RECOMMENDATIONS AND CONCLUSION

Actors engaged in Zika prevention and response should pay special attention to gender norms and cultural practices that may affect successful efforts such as contraceptive uptake, family planning, and condom use; family dynamics in decision-making and childcare; gender-based violence; and to vulnerable groups such as youth, indigenous, and minority populations who face their own unique challenges in protecting their health. These gender considerations can complement the efforts of the MSP and partners in efforts to strengthen health systems and address the impact of Zika.

Evidence presented in this report indicates that the relationships, norms, and behaviors between women, men, partners, families, and health care providers can impact a woman's access to and choice to use contraception, the prevention of Zika during pregnancy, including the likelihood of sexual transmission of the infection or risk of sexual transmission where GBV is present, and the division of childcare practices, particularly for the children with CSaZ and disabilities. This report also highlights that gender is not the only factor that is important to consider – identities are intersectional, and age, ethnicity, socioeconomic background, and sexual orientation all affect a person's ability to access and utilize health services and adopt Zika prevention practices. Programming and communication materials about Zika should be tailored to these different populations, and health providers should be trained on how to provide gender-sensitive, stigma-free, confidential, and human rights-based health services for them.

Initial recommendations to incorporate social integration and gender issues for improved Zika response are:

- **Strengthen education and outreach.** Raise awareness of the causes of and preventions against Zika infection through increased health education and outreach, specifically targeting those populations that may be less educated or have less access to health facilities and health information. Use materials and public awareness campaign materials that are in languages of the area and have visual images to convey messages for those that may not read or easily understand written messages conveyed.
- **Increase access to health services for women.** Target women, perhaps with home visits or through social engagements, to educate and inform them on Zika prevention. Women in rural areas and poor populations have less access to health information and health services than other members of the family. Implement interventions that increase ANC and well-baby visits and follow-up.
- **Modern contraceptives.** Increase availability of modern contraceptive methods, through supply chain, distribution, and counseling so that men and women have choices to delay pregnancy during Zika outbreak or suspected risk.
- **Promote condom use.** Explore cultural contexts and collaborate with local stakeholders and community members to shift perceptions of condom use in monogamous relationships so that the use of condoms is seen as a protective and responsible measure rather than as evidence of unfaithfulness.
- **'Do No Harm.'** In all interventions prioritize the principal of 'Do No Harm' in order to mitigate risks of unintended consequences that may put individuals, particularly women, at risk. As GBV is a significant challenge in Ecuador, take measures to address GBV and intimate-partner violence. Further, work with couples to build understanding of how

partner cooperation and collaboration may best engage effective practices to prevent Zika.

- **Target youth.** Create safe spaces and easy access for youth to talk with health service providers, receive counseling, particularly around reproductive health, and obtain contraceptives and condoms.
- **Address stigma.** Stigma, health worker bias, and discrimination thwarts access of marginalized groups and ethnic minorities to care and services. These populations are at greater risk for Zika infection and suffer the consequences exponentially. Community sensitization, provider performance guidelines and oversight, and trained, targeted outreach are needed to shift attitudes and protect these populations from discrimination and abuse.
- **Psycho-social support.** Establish mechanisms and processes across the health system that will address psycho-social challenges that occur during Zika outbreaks or other emergency situations, which may further exacerbate GBV risks or may create increased vulnerabilities for women, marginalized groups, and the poor.
- **Economic relief.** Develop plans and funded strategies to provide economic relief to families with children born with complications and disabilities resulting from Zika. As resource and care requirements create significant economic strain for these families, institutionalized relief is critical.

This report has also revealed several areas where additional research and information would be beneficial. There is little formal research on male engagement in antenatal care and well-baby care services, and what impact it could have on adopting Zika prevention practices and for a child's development in Ecuador. There is also little information on patterns of condom use during pregnancy, which is key in Zika prevention.

Ultimately, Ecuador is making strides to implement Zika response efforts, and considering gender and social inclusion can help provide more equitable health information and services so that children, families, and communities can be educated, make informed decisions, and prosper.

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