



CLIAS

CENTRO DE INTELIGENCIA
ARTIFICIAL Y SALUD
PARA AMÉRICA LATINA
Y EL CARIBE

Challenges and opportunities in applying Artificial Intelligence (AI) to improve access and quality of care for sexual, reproductive, and maternal health in Latin America and the Caribbean.

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1. Presentation

This document, prepared by the Center for Implementation and Innovation in Health Policies (CIIPS) of the Institute for Clinical and Health Effectiveness (IECS), is part of a series of Technical Documents on Artificial Intelligence and Health.

These documents are intended to contribute to the region's knowledge, addressing different axes and relevant perspectives in the analysis of this topic.

Aimed at health teams, formulators of health programs and policies, and decision-makers at all levels and the general population, with special interest in the digital transformation of the health sector and its link to sexual, reproductive, and maternal health (SRMH), this series of documents on AI that we are preparing are complemented by the activities carried out by the CLIAS (Center for Artificial Intelligence in Health for Latin America and the Caribbean) that is carried out at the CIIPS, with the support of International Development Research Center (IDRC). For more information on CLIAS, visit <http://clias.iecs.org.ar>

This technical document addresses the current situation of SRMH in Latin America and the Caribbean (LAC) from a regional perspective. Likewise, the challenges and opportunities presented in the implementation of AI in the field of SRMH are explored.

As a framework for analyzing the SRMH situation in the region, the axes of Universal Health Coverage (coverage and access, quality and financing) were chosen. Finally, and based on these axes, the opportunities for implementing AI solutions are considered to contribute to reducing the existing gaps in this area.



2. Key messages of the document

Universal Health Coverage (UHC) is fundamental to guarantee that all people receive all the necessary health services, with quality and without having to face financial difficulties at the time of their use. This involves ensuring equitable access to a wide range of health services, ensuring quality of care, and protecting people from financial risks related to health care.

International commitments, such as the Montevideo Consensus and the Nairobi Summit, have renewed and reaffirmed the commitment of Latin America and the Caribbean to sexual and reproductive health, establishing goals for the year 2030. Participation and assumption of commitments international organizations are key to advancing towards the Sustainable Development Goals (SDGs) and promoting UHC in the region.

Access, quality, and financing of health in general and SRMH in particular continue to be challenges in the region. Millions of unintended pregnancies and unsafe abortions occur yearly, and many women do not receive adequate prenatal care. In addition, the HIV/AIDS epidemic affects the region heterogeneously, especially the Caribbean. Disparities in access to health services are exacerbated by factors such as educational level, geographic location, and socioeconomic status.

Equity in access and coverage is a key objective within SDG 3 on health and well-being. However, many people in the region do not seek medical attention when needed due to multiple barriers, such as geographic, organizational, financial, cultural, and religious, among others. Women, girls, adolescents, racial and ethnic minorities, migrants, and the LGBTQI+ population are groups that require special attention as they have specific sexual, reproductive, and maternal (SRHS) health needs.

In this context, Artificial Intelligence (AI) emerges as a tool with great potential to address health challenges. However, the application of these tools presents both promises and uncertainties.

As observed in [CLIAS Technical Document 1](#), in Latin America and the Caribbean, the development of AI in the health field is still in an exploratory stage, which creates challenges in terms of the integration and implementation of strategies that aim to cover priority health needs in general and sexual and reproductive health in particular.

Women and vulnerable groups continue to face difficulties in accessing education and digital technologies, in addition to facing stereotypes and biases in algorithms. In this sense, when developing AI solutions, it is necessary to consider various aspects to avoid widening gender, social, economic, and cultural gaps.

The lack of a clear direction from the Governments or Ministries of Health and a clear and consistent regulatory framework for their specific use in the health, education, and research sectors can limit the adoption of innovative solutions and create barriers to collaboration between different actors.



Although not all health problems are solved with these tools, to fully harness the potential of AI in health in general and in sexual, reproductive, and maternal health in particular, it is essential to promote the participation of women and minority groups in the research and development of these tools. Including these groups in the process can address their needs and ensure a more equitable implementation.

In addition, it is crucial to continuously evaluate the impact of AI solutions implemented in sexual, reproductive, and maternal health to ensure equity and efficiency in health services without compromising the protection of privacy and ethics in data management.



3. Introduction

Sexual, reproductive, and maternal health and rights are essential to universal health coverage (UHC). In moving towards UHC, countries need to consider how to meet the sexual, reproductive, and maternal health (SRMH) needs of their populations throughout the life course, from infancy and childhood through adolescence, adulthood, and old age.

UHC is a key element of the 2030 Agenda for Sustainable Development. To achieve the proposed objectives, it is essential to effectively address the SRMH needs of the population, as well as the political, social, cultural, economic, and gender barriers that limit these rights. The Sustainable Development Goals (SDGs) explicitly recognize the importance of sexual and reproductive health as a fundamental component for achieving well-being and health (SDG 3), establishing specific targets in areas such as maternal care, family planning, and reducing maternal mortality. In addition, the SDGs emphasize gender equality (SDG 5), advocating for the elimination of discrimination and violence against women, as well as the promotion of sexual rights and reproductive rights.¹

Currently, there are large disparities between and within countries in Latin America and the Caribbean (LAC). Socially and economically disadvantaged women, including those who are young, poor, poorly educated, and living in rural areas, have the most difficulty obtaining the services that they need to avoid unintended pregnancies, stay healthy during pregnancy, childbirth, and puerperium and ensure the health of their newborns. In addition, highly vulnerable populations that include systematically marginalized groups such as indigenous populations; Afro-descendants; Lesbians, gays, bisexuals, trans, queer and intersex (LGBTQI+), people with disabilities, older adults, migrants, girls, adolescents, among others, frequently suffer discrimination and stigmatization that profoundly affects their rights to health and access to services. All these conditions of vulnerability are enhanced when they coexist.

To minimize health gaps, a comprehensive life cycle approach is required, focusing on political, social, cultural, economic, and gender barriers that limit rights and SRH.

Artificial Intelligence (AI) has the potential to transform health systems at all levels of care, facilitating the planning, diagnosis, treatment, rehabilitation, and palliation processes. This potential also includes access to SRMH services. However, developing AI strategies in health poses significant technical, ethical, political, regulatory, and human resources challenges. If these dimensions are not analyzed simultaneously as technological development occurs, human rights may be violated, and existing gaps may be exacerbated. In this sense, it is essential to remember that the true objective of digital health is to contribute to the achievement of a UHC that tends to reduce inequities by allowing all people, regardless of ethnicity, creed, geography, type of health coverage or socioeconomic levels access the benefits offered by technological platforms.



4. UHC and SDG: a comprehensive approach to guarantee Sexual, Reproductive and Maternal Health

According to the World Health Organization (WHO), **UHC exists when all people receive the quality services they need without having to go through financial difficulties at the time of use.** In this way, the UCH has two fundamental objectives. First, all people can access various health services, including promotion, prevention, treatment, rehabilitation, and palliative care. The second is that people are protected against the financial risks that health care entails.

The **Montevideo Consensus³** and the **Nairobi Summit**, both focused on the issue of **Population and Development**, were two milestones of international relevance to renew and reaffirm the commitments related to ensuring health and sexual and reproductive rights for the year 2030.

Participation and the assumption of international commitments in rights and sexual and reproductive health are essential for the region to advance jointly towards achieving the Sustainable Development Goals by 2030 and promote **Universal Health Coverage**, guaranteeing access to sexual health and reproductive health services, regardless of gender, age, geographic location, health coverage, or socioeconomic situation. These objectives can be seen in Table 1.

Table 1. Specific SSRM and UHC objectives for the 2030 Agenda

SDG 3: Health and Well-being	
3.1	Reduce the global maternal mortality ratio to less than 70 per 100,000 live births
3.2	End preventable deaths of newborns and children under 5 years of age, ensuring that all countries reduce neonatal mortality to at least 12 per 1,000 live births, and mortality of children under 5 years of age to at least 25 per every 1,000 live births
3.3	End the epidemics of HIV/AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, waterborne and other communicable diseases
3.7	Ensure universal access to sexual health and reproductive health services, including family planning, information and education, and the integration of reproductive health into national strategies and programs
3.8	Achieve universal health coverage, including protection against financial risks, access to quality essential health services and access to safe, effective, quality and affordable medicines and vaccines for all
SDG 5: Gender Equality	
5.2	Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation



5.3	Eliminate all harmful practices, including child, early and forced marriage and female genital mutilation
5.6	Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Program of Action of the International Conference on Population and Development, the Beijing Platform for Action and the final documents of its conferences of exam
	<ul style="list-style-type: none"> a. Undertake reforms that give women equal rights to economic resources, as well as access to ownership and control of land and other types of assets, financial services, inheritance and natural resources, in accordance with national laws b. Enhance the use of enabling technology, particularly information and communication technology, to promote women's empowerment c. Pass and strengthen sound policies and enforceable laws to promote gender equality and the empowerment of all women and girls at all levels

Source: United Nations ^{6,7}

Advancing towards UHC, then, requires including universal access to SRMH services throughout the life course and adopting a transversal and intersectoral approach to address the disparities faced by the region's different populations, whether gender, political, cultural, ethnic or socioeconomic. **The most vulnerable people generally have less access to health in general and to SRMH in particular.**

Based on agreements, WHO publications, and human rights treaties and principles, the Guttmacher-Lancet Commission ⁸ proposes a definition of the services and interventions needed to address the sexual and reproductive health needs of all people. In addition, it addresses issues such as violence, stigma, and bodily autonomy, the needs and rights of disadvantaged groups such as children and adolescents, indigenous populations, Afro-descendants, the LGBTQI+ population, people with disabilities, older adults, and migrants, among others.

Essential sexual health and reproductive health services must be available, accessible, acceptable, and of high quality, following the principles of the right to health so that all people can exercise their rights in this area and receive care appropriate to their needs throughout the life course. In this sense, for universal access to SRMH services to become a reality, national policies and the implementation of plans and strategies must be addressed comprehensively and according to the different needs of the person's life stage. This type of approach will allow, at a low cost, to benefit different populations, save lives, and improve people's income and health. ¹

According to the Guttmacher-Lancet Commission⁸ and as reflected in Table 2, to guarantee these rights, services must include:

Table 2. Essential interventions to guarantee universal accessible and quality access to SRMH services throughout the life course.



Accurate information and counseling on sexual and reproductive health, including evidence-based comprehensive sexuality education
Information, advice and care related to sexual function and satisfaction
Prevention, detection and management of sexual and gender-based violence
Variety and availability of safe and effective methods of birth control to choose from
Safe and effective prenatal, intrapartum and postnatal care
Safe and effective abortion care and services
Prevention, management and treatment of infertility
Prevention, detection and treatment of sexually transmitted infections, including HIV, and reproductive tract infections
Prevention, detection and treatment of cancers of the reproductive organs

Source: Guttmacher -Lancet, 2018.

It is important to mention that the Commission's framework does not directly contemplate health interventions in the area of gender identity. In this sense, **the LGBTQI+ community faces inequities in access to health derived from the discrimination they experience due to their sexual orientation or gender identity.** Both health professionals and the health care system can participate in this discrimination or, on the contrary, contribute to its reduction by guaranteeing access to health that addresses the specific needs of this population. These include infertility and assisted reproductive technologies, testing and treatment of sexually transmitted infections and HIV, services related to reproductive cancers, detection and support for sexual and intimate partner violence, and hormonal treatments, among others. ⁹

Given these needs, an approach is essential both at the individual and structural level, to contribute to changes that favor the reduction of these inequalities and help achieve equity in health.

4.1. Access, quality, and financing in the region

Every year in Latin America and the Caribbean, 11 million unintended pregnancies and 4 million abortions are performed in unsafe conditions. Of the 10 million women who give birth each year, 8% do not have access to adequate prenatal care. In addition, 354,000 of these women and 445,000 of the newborns do not receive the necessary care for the main complications. Furthermore, 7,600 women die from causes related to pregnancy and childbirth. ¹⁰

According to projections by the United Nations Population Division, at the beginning of 2020, **11.4% of women who wanted to avoid pregnancy had an unmet need for modern contraceptive methods.** ¹¹ **For every 1,000 adolescents between the ages of 15 and 19 in the region, 61 had a newborn each year.** ¹²

On the other hand, **the HIV/AIDS epidemic occurs in a very heterogeneous way among the region's countries, and the data indicates that the Caribbean is one of the most affected territories in the**

world. In Latin America and the Caribbean, the estimated prevalence of HIV/AIDS in adults aged 15-49 years is 0.5% [0.4-0.5%] and 1.2% [1.0-1.3%], respectively. However, in both regions, the median prevalence among people belonging to key groups -such as sex workers and transgender people, among others- is significantly higher compared to the general population.¹³ **The lack of access to timely testing allows to estimate that 23% of people living with HIV/AIDS do not know their diagnosis,** while in terms of access to antiretroviral treatment, the percentage ranges from 60% in Latin America to 63% in the Caribbean.

Moving towards universal health implies that SRMH services, products, and facilities are available in sufficient quantities, are accessible both physically and financially, are acceptable from a medical ethics perspective, and are culturally appropriate and sensitive to gender and life cycle needs.

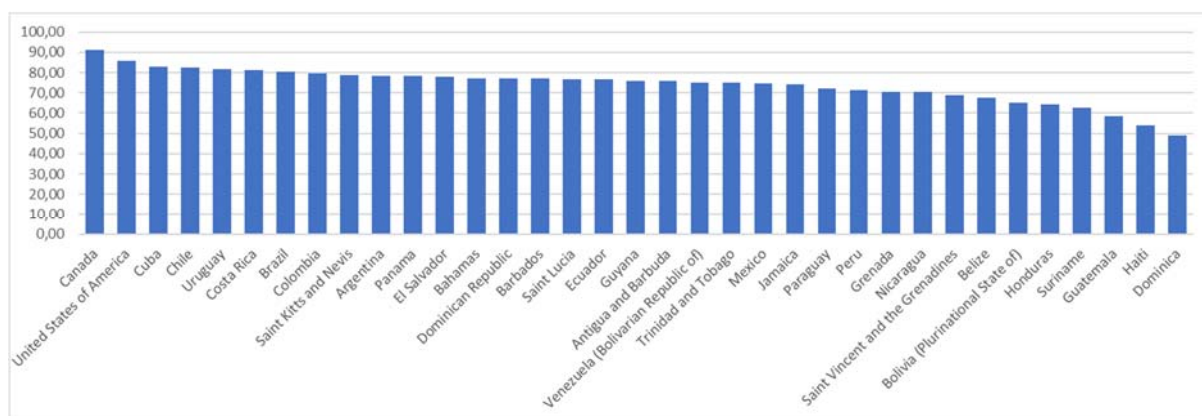
4.2. Equity in access and coverage

Within SDG 3, “Health and Well-being,” goal 3.8, which aims to achieve UHC, has two indicators to systematically monitor and examine this progress¹⁴. These are:

- **3.8.1.** Coverage of essential health services (defined as the average coverage of essential services among the general population and the most disadvantaged, estimated from tracer interventions such as those related to reproductive, maternal, newborn, and child health, infectious diseases, noncommunicable diseases, and the capacity of and access to services).
- **3.8.2.** Proportion of the population with large out-of-pocket health expenses (catastrophic expenses) per household as a percentage of total household income or expenses.

According to the Coverage Index of indicator 3.8.1 prepared by the WHO, which ranks the coverage of essential health services between 1 (minimum) and 100 (maximum), the Americas region shows deep disparity. At the top end are Canada and the US, with the highest scores of 91 and 86, respectively, followed by Cuba and Chile, with 83 and 82 points. At the bottom end are Dominica and Haiti, with 49 and 54 points each. The regional median is 76 points.

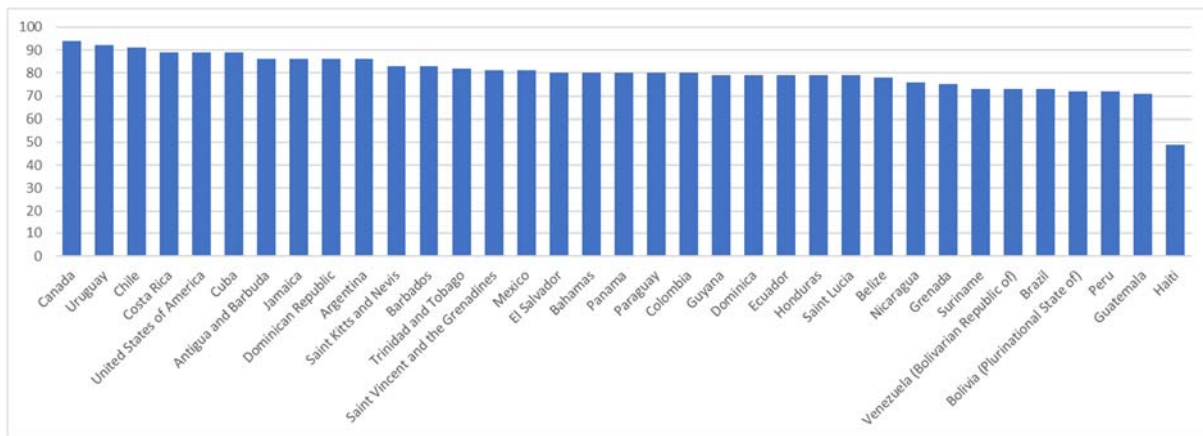
Illustration 1. CUS service coverage index. 2021.



Source: World Health Observatory, WHO.

Regarding coverage and access to SRMH, this index has a sub-index that measures from 1 (minimum) to 100 (maximum) access to reproductive, maternal, and newborn health services¹⁶. According to these data, it can be observed that Canada, Uruguay, and Chile, with 94, 92, and 91 points, respectively, lead the list, while Haiti, Guatemala, and Peru are located at the lower end of the index with 49, 71, and 72 points.

Illustration 2. The subindex of coverage of CUS services on reproductive, maternal, neonatal, and child health. 2021.



Source: World Health Observatory, WHO.

The analysis of health coverage in the countries of the region reveals a regional median of 80 points, which suggests a certain uniformity in terms of the availability of health services. However, it is crucial to recognize that coverage alone does not guarantee effective and equitable access to health care.

Access to health involves aspects such as the geographic proximity of health services, economic affordability, cultural acceptability, and the quality of care received.

According to the Pan American Health Organization (PAHO), on average, around **a third of the people in the countries of the region do not seek health care when they need it due to various access barriers such as organizational, financial, cultural, and acceptability**. This problem is even more evident in low- and middle-income countries than high-income countries.¹⁷

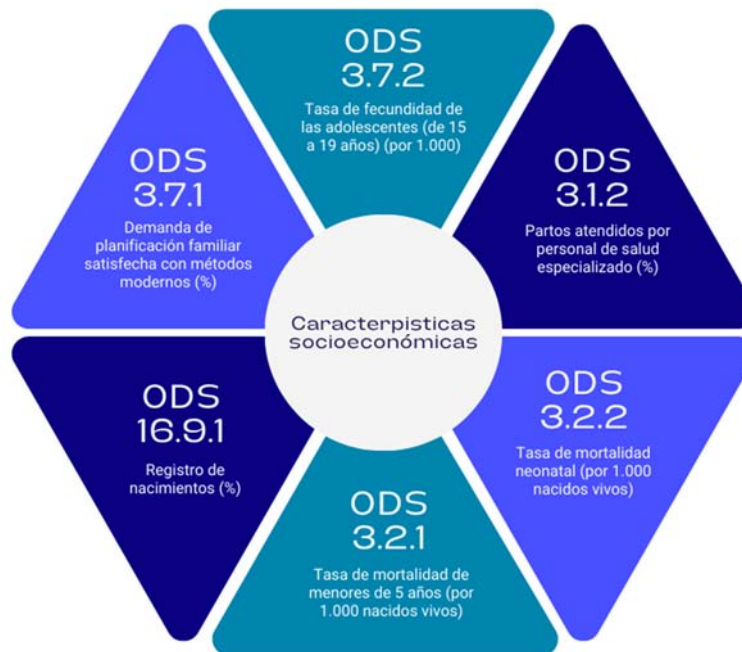
Unequal access to health services generates disparities in life expectancy and health outcomes. A recent report by PAHO and the United Nations Children's Fund evaluated social inequalities in health in 22 countries in Latin America and the Caribbean¹⁸. Based on SDG 3, data from the countries were analyzed concerning five priority indicators of coverage and health results focused on the health of women, children, and adolescents: the demand for family planning satisfied with modern methods; the adolescent fertility rate; the proportion of deliveries attended by specialized health personnel;

ⁱ South America: Argentina, Bolivia, Colombia, Ecuador, Guyana, Paraguay, Peru, Uruguay; Mesoamerica: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Panama; Caribbean: Barbados, Cuba, Haiti, Jamaica, Dominican Republic, Saint Lucia, and Trinidad and Tobago.

neonatal mortality; and mortality of children under five years of age. In addition, the analysis of the birth registry (SDG 16) was included, which is important to guarantee fundamental rights and access to health services.

According to data availability, six dimensions of socioeconomic stratification were used to analyze social inequalities: 1) wealth; 2) place of residence; 3) subnational region; 4) sex of the baby; 5) educational level of women; 6) age of women.

Illustration 3. SDGs and social inequalities



Source: self-made.

The results of this report show the impact of socioeconomic differences on people's health outcomes: **wealthier households tend to have better results in terms of access to family planning, specialized care during childbirth, and birth rates—lower neonatal and under-5 mortality.**

In addition, **the results showed disparities between urban and rural areas and differences related to women's educational level.** For example, in some countries, women without a secondary education had between 12.3 and 22.9 more neonatal deaths per 1,000 live births than women with a secondary education. Likewise, in countries such as Paraguay, Colombia, and Haiti, women without secondary education had around 42 to 72 more deaths per 1,000 live births than women with secondary education.

Racial and ethnic minorities, migrants, and the LGBTQI+ population, among others, are also vulnerable groups that face increased exposure to various health risks and limited access to services.



UNFPA and the Economic Commission for Latin America (CEPAL) studied the situation of Afro-descendant youth in the region, analyzing aspects related to social development and access to their rights. For this, the matrix of social equality in Latin America was taken as a reference, which recognizes the existence of multiple axes that structure and reproduce social inequality in the region.¹⁹

In the section on sexual health and reproductive health in adolescence and youth, they worked on the use of contraceptives and unintentional pregnancy.

The problems of unintentional pregnancy in adolescence are aggravated for the Afro-descendant population due to their overrepresentation among groups in poverty, contributing to increasing ethnic-racial gaps among young women who are not included in the educational and labor system. **In 10 of the 13 countries analyzedⁱⁱ, the percentage of adolescents between the ages of 15 and 19 who are mothers is higher among Afro-descendants.** Specifically in seven countries in the region (Brazil, Bolivia, Costa Rica, Ecuador, Uruguay, Venezuela and Peru), there are around 50% more Afro-descendant girls who are mothers compared to non Afro-descendant in the age group from 15 to 19 years old.

Considering the territorial dimension of the phenomenon, in countries like Ecuador and Uruguay, **young Afro-descendant women who live in rural areas and are mothers are around 60% more than their peers in urban areas.**

The incidence of unintended pregnancy is also related to the level of education. In general, the higher the level of education, the lower the percentage of young mothers. The data show that, in most of the countries analyzed in this study, the percentages of adolescents with less than 5 years of schooling who are already mothers are much higher, while, among adolescents with more than 13 years of schooling, the percentages are significantly lower.

These findings highlight the importance of addressing this problem, and of paying special attention to the needs of the young Afro-descendant adolescent population, with the aim of reducing the existing gaps and providing better access to health.

As mentioned above, a detailed analysis of access to health, with the breakdown of the necessary information, includes addressing aspects related to financial affordability. This aspect is crucial to understanding how people obtain and use health services effectively.

4.3. Governance and mobilization of resources in favor of UHC. Equity in access and coverage

How health care is financed is a crucial aspect of the health system. **One of the most common payment modalities in the region, but also the most inequitable in terms of access, is the direct**

ⁱⁱ Argentina, Bolivia, Brazil, Costa Rica, Ecuador, Honduras, Panama, Uruguay, Venezuela, Colombia, Guatemala, Mexico, and Peru.



payment of medicines and health services by users. This scenario occurs especially in the poorest countries.

Out-of-pocket payments significantly burden families and individuals, who, in many cases, are forced to make difficult decisions between meeting other basic needs or devoting their resources to health care. These payments refer to those made directly by people when receiving health services, excluding any advance payments for health services, such as taxes, premiums, or specific insurance contributions, and also excluding reimbursements to the people who made the payments.²⁰

According to a report on health spending and gender analysis by PAHO²⁰, due to the economic impact on access to medical care and to reduce gaps in access to health, many Latin American countries have implemented various policy initiatives to include a greater proportion of the population in social security programs, such as Seguro Popular in Mexico, Seguro Integral de Salud (SIS) in Peru, and Plan AUGE in Chile. These programs seek economic protection for households against a specific list of diseases involving high costs. In addition, in 2015 Chile approved Law 20.850, which expands economic protection in the health field for a series of high-cost medicines.

In Argentina, Plan Nacer began in 2005 in the Northeast (NEA) and Northwest (NOA) provinces of the country -because they presented unfavorable social and health indicators- and, in 2007, it was extended nationwide with the objective of to provide health coverage to the maternal and child population without social work.

Despite these significant advances towards UHC in the region, health inequities are often determined by factors of social class, ethnicity, and gender, and these aspects are not contemplated in these public policies, so the gaps persist.

According to a WHO study on financing SRMH services as part of UHC, **fully meeting all the needs of women in low- and middle-income countries regarding access to contraception and maternal and neonatal health would cost only USD 9 per capita per year.** However, the persistent lack of funding for services means that more than 4 billion people worldwide will face a lack of access to at least one key service in this area throughout their lives, such as counseling and provision, contraception, fertility care, prenatal, intrapartum and postnatal care, safe abortion, prevention and care for gender violence, prevention and control of HIV and other sexually transmitted infections (STIs), among others.^{8,21}

According to data from UNFPA¹ most of these interventions are inexpensive and cost-effective. The reduction of unintended pregnancies and unsafe abortions, the prevention of HIV infection and other STIs, and the provision of affordable modern contraceptive methods and sexual health counseling, are low-cost, sustainable interventions. Therefore, investing in SRMH as one of the axes to achieve UHC is a cost-effective and necessary investment in both high-resource and low-resource settings.



In this scenario, it is important to point out that the gaps and difficulties at the regional level regarding the design and effective implementation of public policies of SRMH is deeply related to the heterogeneity that the regulatory frameworks present around this issue in the countries.

Various general health laws incorporate attention to the SRMH, as is the case of Bolivia, Cuba, Ecuador, Mexico, Peru and the Dominican Republic. In the case of Panama, Honduras, Peru, Nicaragua and El Salvador, this aspect is incorporated into regulations that guarantee equality between men and women. For their part, Argentina and Guatemala have specific laws that create Sexual and Reproductive Health Programs, and Uruguay and Chile have also developed regulations to guarantee these rights.²²

In addition, the constitutions of Bolivia, Cuba, Ecuador, Mexico, Paraguay, and Venezuela guarantee access to contraception, and this right is also included in the general health laws of Bolivia, Cuba, Ecuador, Mexico, Peru, and the Dominican Republic. In addition, Argentina, Uruguay, Chile, Costa Rica and Colombia have some type of regulation regarding assisted fertilization treatment; and although all countries have some kind of regulatory framework for perinatal care, Guatemala, Ecuador, and Argentina have specific laws to guarantee the rights of pregnant women to receive universal, timely, free, and quality care, and to reduce morbidity and maternal and neonatal mortality.²²

It should be noted that the largest regulatory gaps that exist in the region are related to the regulation of access to legal abortion. Except in Argentina, Colombia, Cuba, Guyana, Uruguay, and Mexico, in most countries, abortion is criminalized, with authorization for reasons such as risk to the life of the pregnant person, rape, or unviability of the fetus. In other countries such as Nicaragua, Honduras, the Dominican Republic and El Salvador, this practice is prohibited in any case.²²

In this context, the countries have developed different strategies and public policies to reduce the existing gaps, with a greater or lesser degree of success and prioritization.

5. AI and Sexual, Reproductive and Maternal Health

There is **great potential to develop solutions in Artificial Intelligence (AI) that focus on addressing the general challenges and problems related to health and SRMH.** As noted in [CLIAS Technical Document 1](#), these challenges range from addressing rising healthcare costs, demographic and epidemiological changes, and infectious and non-communicable diseases to strengthening effective control strategies, health promotion, and disease prevention among others. In addition, in the field of SRMH and as previously mentioned, in practice, there are numerous gaps and disparities in access



to services to prevent unintended pregnancy and contraception; ensure health during pregnancy, childbirth, and the puerperium, as well as newborns; in access to reliable and accurate information and comprehensive sexual education; in the prevention and control of HIV and other STIs, among others.

The uses of AI to contribute to the search for solutions that promote equity and timely access to health are wide and varied. It can be used for machine learning, processing, comprehension, generation of natural language, speech analysis, chatbots (conversational virtual agents), robotics, and other examples. In recent years, the exponential growth of digital data, the implementation of information systems in the health field, the increase in computing capacity, and advances in the programming and coding of AI algorithms have driven digital transformation initiatives. The adoption of these Artificial Intelligence tools in the field of health in the region and the world has been developed at the **three levels of health management**: the **macro**, which covers health policy and regulation; the **meso**, which focuses on the management of health organizations; and the **micro**, which refers to the internal management of care services.

At these three levels, AI solutions linked to SRMH find great potential for development since they can contribute to reducing the gaps with chatbots and applications for mobile devices to provide information and counseling for sexual education, facilitate access to contraceptives, contribute to the prevention of unintended pregnancies, HIV and other STIs, as well as gender violence. These tools can also be developed to assist pregnant people with follow-up during pregnancy, delivery, and postpartum.

In this sense, different studies have shown the potential of AI chatbots to improve access to information and SRMH services²³⁻²⁶. These tools can provide anonymous SRMH education, reliable and accurate information, and timely and ongoing support to individuals. According to this research, AI-enabled chatbots, video consultations, and live chats are generally acceptable as online platforms for sexual health advice, indicating that users are willing to interact with AI for information about SRMS. In India, for example, the case of SnehAI stands out, a chatbot designed to provide a safe space for young Indians to have conversations about sexual and reproductive health, debunk myths and taboos related to sex, offer advice, and advocate for health rights of women and girls. Users were found to appreciate the anonymity and non-judgmental nature of the chatbot, allowing them to ask questions and seek advice without fear of stigma. On the other hand, some studies have identified barriers and facilitators for interaction with chatbots in these areas. These include concerns about the ability of chatbots to understand gender and healthcare professionals' attitudes towards these tools.

In addition to facilitating access to information, AI can also favor coverage and access to health services through devices and technological developments that reach more people, bypassing existing organizational, geographical, or economic barriers and streamlining processes. Furthermore, for health professionals, AI can facilitate the diagnosis of diseases such as cervical or breast cancers, and endometriosis through diagnostic imaging, non-invasive devices, and the use of



algorithms; as well as providing them with tools to manage their patients' data for timelier follow-up ²⁷.

However, in most countries of the world **there is still a lack of regulations and regulatory frameworks that delimit the scenario and coordinate the development of AI solutions to sexual and reproductive health problems in a strategic way.** In this sense, **the development of AI strategies in health poses great technical, ethical, political, regulatory and human resources challenges, especially in the region.**

To mitigate ethical risk in public health, the WHO proposes a series of technical considerations when applying AI solutions to preserve the ethical principles of beneficence, non-maleficence, autonomy and justice, together with human rights such as dignity, respect for life, liberty, health, self-determination, equity, justice and privacy. ²⁸ These are reflected in table 5.

Table 5. Guiding principles for the use of AI interventions in public health

People-centered
Grounded in ethics
Transparent
Data protection
Scientific integrity
Open and shareable
Non discriminatory
Technology controlled by humans

Source: PAHO, 2021

Likewise, to capture this potential, while safeguarding patients, there are key opportunities and responsibilities for national and regional governments and organizations that develop these tools. According to an IDB report ²⁹, a digital data infrastructure is essential, and countries should support research to understand possible biases in health data. This will allow stakeholders to consider this information when designing, testing, and evaluating AI products. In addition, it is crucial to establish clear frameworks for manufacturers to classify the risk of their products and clearly define which legal and regulatory authorities are responsible. It should also be noted that general AI education as well as specific training on AI healthcare software evaluation and recommendations will be critical to safely deploying AI and using it to enhance human intelligence.

In addition, it is essential that these tools contribute to reducing the gaps and disparities mentioned above, especially in systematically marginalized groups such as indigenous populations; Afro-descendants; LGBTQI+, people with disabilities, older adults, migrants, girls, adolescents, among others, who frequently suffer discrimination and stigmatization that profoundly affects their rights to health and access to services .

In February 2023, the third workshop of the Gender Action Learning (GAL) ³⁰ process, a peer-to-peer learning methodology with the purpose of developing gender-sensitive capacities for carry out actions in the Global South. The main ideas about what is needed to carry out health research with a gender perspective, inclusive, safe, culturally appropriate, and linked to needs can be seen in Table 6.

Table 6. Main needs to carry out research in AI and health with a gender perspective.

Qualified researchers with sufficient knowledge on gender perspective and intersectionality	Transparency models for gender and intersectionality in data, both in the analysis and in the recognition of gender gaps.	Diverse teams with adequate local knowledge of culture, background and gender
Algorithm-based and validated data, openly and publicly available for scrutiny	Safe spaces for women and minority groups to train and advance AI-powered research.	Digital divide bridging tools available to everyone, including those in limited access settings.

Source: Ladysmith, 2023

These ideas allow us to observe two fundamental aspects of the use of AI to think about tools in SRMH and other health areas: first, these tools should not be used without considering the context and sociocultural environment in which they are applied, and second, that the representation of people also matters when it comes to generating knowledge.

Regarding the first point, implementing these technologies poses special challenges for low- and middle-income countries. For example, access to the internet is essential to implement AI applications since they require a stable connection to function properly, and although the costs of broadband and connectivity have decreased considerably, they are still prohibitively high in some of the region's countries, especially in the less developed. This creates a barrier to accessing digital health services and artificial intelligence³¹. As previously mentioned, people who live in rural environments find it very difficult to satisfy their demand for the different SRMH services. This is also the case for people with low socioeconomic and educational levels or belonging to vulnerable populations.

On the other hand, to the participation of women and minority groups in the field of research, development, implementation, and use of technologies and AI, it is important that the development of AI tools also favor and promote the inclusion of various social groups with a gender perspective and intersectionality.



A recent publication by the AI Policy Observatory of the Organization for Economic Cooperation and Development (OECD)³² points out that decision-makers must be vigilant so that the promotion of AI policy development not only contributes to reducing the gap of gender but also to avoid the perpetuation of previous biases that shape the place that women occupy in different spheres. In this sense, they highlight that in **many countries, women still have less access to education, tools, and infrastructure for digital technologies and are underrepresented in research and development (R&D) on AI; at the same time, they are victims of the perpetuation of stereotypes and biases embedded in algorithms that promote discrimination.** This is the case, for example, of personal virtual assistants (PVAs), since, in many cases, they can reproduce and reinforce biases about the place women should occupy in the world of work, as they are female representations, such as Siri or Alexa, PVAs are the most popular. Furthermore, in most countries, the percentage of female professionals with AI-related skills is less than 2% and, in most cases, 50% or less than the proportion of men. In low- and middle-income countries, these inequalities are deepening.

Along these same lines, in the book *“The effects of AI on the working life of women”*³³, prepared by UNESCO, the Inter-American Development Bank (IDB) and the OECD, published in 2022, it is pointed out that **women have fewer senior positions, are less involved in science, technology, engineering, and math (STEM) fields, and tend to have more precarious jobs, along with more hours spent caring.** To reverse this situation, governments must develop training programs and encourage the participation of women in STEM fields. These programs must be carried out considering the contextual complexity of each country when it comes to implementing programs and policies, including multiple stakeholders (such as governments, companies, the private sector, and academia) and contemplating the potential impact of information systems—AI on vulnerable groups. In addition, they must promote applied research in AI with a gender perspective to contribute to the eradication of gender stereotypes.

In this way, technological advances represent an opportunity to generate valuable tools that make it possible to close existing gaps, improve access and quality of care, and promote equity and efficiency in health systems in the region, specifically in people's SRMH. AI can contribute to developing solutions that empower women and other populations in managing their health and in accessing SRMH in areas such as education for prevention and for health professionals both for the generation and processing of information as well as for diagnosis and care.

In this scenario, it is of vital importance that **the process of research, development, and subsequent use of AI tools for SRMH not only promote the training and participation of female researchers and people belonging to populations or groups of people who are in a greater situation of vulnerability but also that their subjective perspective is incorporated into this process so that the implementation of these solutions and tools is appropriate to the context and to the populations that it seeks to reach.** Incorporating the voices and experiences of women and vulnerable groups also implies a democratization of knowledge, and understanding the context in which they want



to be implemented is essential so that these tools can provide effective solutions that promote equity and respect for the rights of people.

6. Conclusions

Throughout this document, the SRMH situation was analyzed according to the main axes of Universal Health Coverage in the countries of the region: equity in access, quality of care, and accountability.

There are significant gaps in the coverage and access to health services in terms of SRMH between and within LAC countries, as well as deficiencies in the quality of care and challenges in the sustainable financing of related programs and services. These gaps and challenges hinder the full enjoyment of sexual and reproductive rights and the improvement of health indicators in the region, especially the SRMH. This is aggravated in populations that are vulnerable and more exposed to difficulties in accessing timely and quality services, as is the case of indigenous, rural populations with low educational and socioeconomic levels, among others.

LAC countries can take concrete steps towards UHC and equitable access with quality SRMH interventions. These include mobilizing stakeholders within and outside the health sector; the development or adaptation of standards; analysis of SRMH needs throughout the life course; evaluation of available resources and system limitations to ensure cost-effectiveness; the prioritization of interventions to be applied at the different levels of the health system; strengthening intelligence capacities related to the analysis of the health situation of this population and its determinants, and research in the field of health.

This framework has great potential for developing Artificial Intelligence (AI) solutions to these and other health problems and challenges. The implementation of solutions based on Artificial Intelligence (AI) can significantly contribute to moving towards Universal Health Coverage in SRMH in LAC, but this possibility is not without challenges for the countries of the region since they can also exacerbate pre-existing inequalities and generate new ones.

For this reason, it is essential to consider both the social, economic, geographical, and cultural context in which these tools are to be implemented and to encourage the participation of women minority groups and vulnerable populations in developing tools that want to solve SRMH problems in the region. Only in this way can effective and equitable solutions be achieved that allow more people to access SRMH services in the region.



7. References

1. United Nations Population Fund (UNFPA). Sexual and Reproductive Health and Rights: An essential part of Universal Health Coverage. Published online November 2019. https://www.unfpa.org/sites/default/files/pub-pdf/SRHR_an_essential_element_of_UHC_2020_online.pdf
2. World Health Organization. Arguing about Universal Health Coverage. Published online 2013.
3. Economic Commission for Latin America and the Caribbean (ECLAC). Montevideo consensus on population and development. Published online 2013. http://repositorio.cepal.org/bitstream/handle/11362/21835/S20131037_es.pdf?sequence=4&isAllowed=y
4. United Nations. ICPD+25 Nairobi Summit. United Nations. Accessed June 12, 2023. <https://www.un.org/es/conferences/population/nairobi2019>
5. International Planned Parenthood Federation (IPPF). The Nairobi Summit on ICPD+25. Published August 2020. Accessed May 30, 2023. https://www.ippf.org/file/12439/download?token=fe_Bqv_l
6. Moran M. Objective 3: Health and Well-being. Sustainable development. Published January 7, 2015. Accessed May 30, 2023. <https://www.un.org/sustainabledevelopment/es/health/>
7. Moran M. Objective 5: Gender equality and women's empowerment. Sustainable development. Published January 7, 2015. Accessed May 30, 2023. <https://www.un.org/sustainabledevelopment/es/gender-equality/>
8. Ann M Starrs, MIA Alex C Ezeh, PhD Gary Barker, PhD Prof Alaka Basu, MSc Prof Jane T Bertrand, PhD Prof Robert Blum, PhD et al. Accelerate progress—sexual and reproductive health and rights for all: report of the Guttmacher. Lancet Commission. doi:10.1016/S0140-6736(18)30293-9
9. Not Up for Debate: LGBTQ People Need and Deserve Tailored Sexual and Reproductive Health Care. Guttmacher Institute. Published November 2, 2020. Accessed June 29, 2023. <https://www.guttmacher.org/article/2020/11/not-debate-lgbtq-people-need-and-deserve-tailored-sexual-and-reproductive-health>
10. Doing the Math: Investing in sexual and reproductive health in Latin America and the Caribbean. Guttmacher Institute. Published February 11, 2021. Accessed June 26, 2023. <https://www.guttmacher.org/es/fact-sheet/investing-sexual-and-reproductive-health-latin-america-and-caribbean>
11. UNFPA. Impact of COVID-19 on access to contraceptives in the LAC region. Technical report. Published online 2020. <https://lac.unfpa.org/sites/default/files/pub->



pdf/technical_report_impact_of_covid_19_in_the_access_to_contraceptives_in_lac_1_2.pdf

12. UNFPA (United Nations Population Fund Latin America and Caribbean Regional Office), LACRO (Latin America and Caribbean Regional Office) and CEPAL (Economic Commission for Latin America and the Caribbean). The risks of the COVID-19 pandemic for the exercise of women's sexual and reproductive rights. Published online 2020.
https://lac.unfpa.org/sites/default/files/pub-pdf/20-00906_folleto_riesgos_de_la_pandemia_genero-.pdf
13. Joint United Nations Program on HIV/AIDS (UNAIDS). The path that ends AIDS: UNAIDS Global AIDS Update 2023. Published online 2023.
https://www.unaids.org/sites/default/files/media_asset/2023-unaids-global-aids-update_en.pdf
14. Health and Well-being. Agenda 2030 in Latin America and the Caribbean. Accessed June 1, 2023. <https://agenda2030lac.org/es/ods/3-salud-y-bienestar/metas/38>
15. World Health Organization. CUS service coverage index (SDG 3.8.1). World Health Observatory. Accessed June 12, 2023.
<https://www.who.int/data/gho/data/indicators/indicator-details/GHO/uhc-index-of-service-coverage>
16. World Health Organization. Subindex of coverage of CUS services on reproductive, maternal, neonatal and child health. World Health Observatory. Accessed June 12, 2023.
<https://www.who.int/data/gho/data/indicators/indicator-details/GHO/uhc-sci-components-reproductive-maternal-newborn-and-child-health>
17. OPS . Universal Health. Pan American Health Organization. Accessed June 1, 2023.
<https://www.paho.org/es/temas/salud-universal>
18. Pan American Health Organization and United Nations Children's Fund. Health inequalities in Latin America and the Caribbean: A baseline of the Sustainable Development Goals for women, children and adolescents. Published online 2022. doi:10.37774/9789275325742
19. United Nations Population Fund (UNFPA) and Economic Commission for Latin America and the Caribbean (ECLAC). Afro-descendant youth in Latin America and the matrix of social inequality: Rights, inequalities and policies. Published online 2021.
https://lac.unfpa.org/sites/default/files/pub-pdf/las_juventudes_afrodescendientes_en_america_latina_y_la_matriz_de_la_desigualda_social.pdf
20. Pan American Health Organization. Out-of-pocket health expenses. The need for a gender analysis. Published online 2001. doi:10.37774/9789275323540
21. World Health Organization. Universal health coverage for sexual and reproductive health: Evidence brief. Published February 20, 2020. Accessed June 1, 2023.
<https://www.who.int/publications/i/item/WHO-SRH-20.1>



22. Institute of Clinical and Health Effectiveness (IECS). Scoping study on sexual, reproductive and maternal health (SRMH) in Latin America and the Caribbean: Component 1 - literature and policy review - executive summary. Published online October 2022. Accessed July 11, 2023. <https://idl-bnc-idrc.dspacedirect.org/handle/10625/61592>
23. Nadarzynski T, Lunt A, Knights N, Bayley J, Llewellyn C. “But can chatbots understand sex?” Attitudes towards artificial intelligence chatbots among sexual and reproductive health professionals: An exploratory mixed-methods study. *Int J STD AIDS* . Published online June 3, 2023;9564624231180776.
24. Mills R, Mangone ER, Lesh N, Mohan D, Baraitser P. Chatbots to Improve Sexual and Reproductive Health: Realist Synthesis. *J Med Internet Res* . 2023;25:e46761.
25. Mills R., Mangone E., Lesh N., Mohan D., Baraitser P. How might chatbots support reproductive health? Findings from three new studies. *IRIS learning brief 1* . Published online 2023. <https://www.opml.co.uk/files/Publications/a511-implementation-research-innovation-support-iris/iris-learning-brief3-v2.pdf?noredirect=1>
26. Nadarzynski T, Puentes V, Pawlak I, et al. Barriers and facilitators to engagement with artificial intelligence (AI)-based chatbots for sexual and reproductive health advice: a qualitative analysis. *SexHealth* . 2021;18(5):385-393.
27. Bendifallah Sofiane, Dabi Yohann, Suisse Stéphane, et al. Validation of a Salivary miRNA Signature of Endometriosis—Interim Data. *NEJM Evidence* . 2023;2(7):EVIDoA2200282.
28. Pan American Health Organization. Artificial intelligence in public health | Toolbox: digital transformation. Published online 2021. https://iris.paho.org/bitstream/handle/10665.2/53887/OPSEIHIS21011_spa.pdf?sequence=5
29. Silcox, Christina. *Artificial Intelligence in the Health Sector: Promises and Challenges* . Inter-American Development Bank; 2020. Accessed July 11, 2023. <https://publications.iadb.org/publications/spanish/viewer/La-inteligencia-artificial-en-el-sector-salud-Promesas-y-desafios.pdf>
30. Velez LM. What does it take to have gender-responsive AI-driven health research? - Takeaways from the Gender Action Learning Workshop in Nairobi. Published online May 2023. https://media.tghn.org/medialibrary/2023/06/Workshop_learning_Tip_Sheet_Final.pdf
31. Center for Implementation and Innovation in Health Policies (CIIPS), Institute for Clinical and Health Effectiveness (IECS). The impact of artificial intelligence in health care. Perspectives and approaches for Latin America and the Caribbean. Published online June 2023. https://clias.iecs.org.ar/wp-content/uploads/2023/07/DT1_CLIAS.fix_.pdf
32. Celine Caira, Lucia Russo, Luis Aranda. Artificially Inequitable? AI and closing the gender gap. Organization for Economic Cooperation and Development (OECD). Published March 2023. <https://oecd.ai/en/wonk/closing-the-gender-gap>



33. Collett C, Neff G, Gouvea L. *The effects of AI on women's working lives* . Inter-American Development Bank; 2022. doi:10.18235/0004055