Sector Initiative Global Health

Technical Brief

Why Gender Matters for Digital Health

Recommendations for gender-sensitive programming

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

As a public-benefit federal enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

Published by
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Sector Initiative Global Health
The Sector Initiative Global Health focuses on three main areas of activity: (1) advice on health funds, (2) universal health coverage and (3) health data and digital health. Activity area 3 operates at policy-making level.
(www.giz.de/en/worldwide/90098.html)

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Layout
FLMH Labor für Politik und Kommunikation GmbH

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Bonn and Eschborn, 15 March 2021

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Preface

This technical brief, commissioned by the GIZ-implemented Sector Initiative 'Global Health', explores how gender inequalities can affect the way digital health interventions are planned, designed and used. It also considers how such interventions can intentionally or unintentionally impact on existing inequalities or create new ones.

The brief was developed on the basis of a literature review and informed by interviews with experts working in GIZ-implemented (digital) health and gender projects between February and March 2021. It is aimed at actors, including development partners, who are involved in commissioning, designing, implementing and evaluating digital health programming.

Given their transformational potential, digital technologies are now widely used to support health service delivery and to underpin the day-to-day operations of health systems, often with the support of development partners. Frequently overlooked, however, is the fact that digital health interventions are not inherently 'neutral' and may not work equally well for everyone. In some cases, digital technologies may perpetuate existing gender inequalities or lead to the emergence of new inequalities. In others, they may introduce new privacy or security risks for users who face intersectional inequalities, such as members of sexual minorities. These examples and others show why it is so important that digital health interventions – if they are to realise their promise – be gender-sensitive by design.

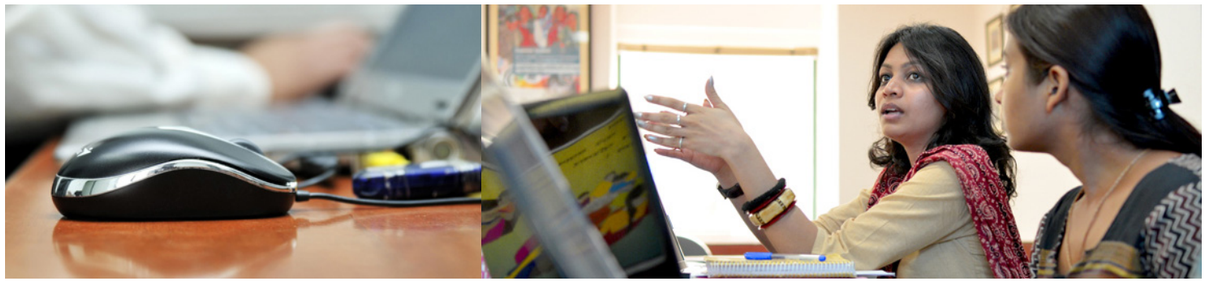
The paper discusses the gendered opportunities and risks which should be taken into account when designing digital health interventions and concludes with seven recommendations for making digital health programming more gender-sensitive. These recommendations are derived with reference to the *Principles for Digital Development*, which are widely endorsed by organisations, including GIZ, who are committed to effective and sustainable use of information technology in development cooperation. Rather than offering a roadmap to follow, the recommendations are an invitation to reflection and further discussion.

Do any of these ideas resonate with your experiences with digital health programming? If so, let us know by contacting us at digital-health@giz.de. We are always interested to collect examples and learnings relevant to this emerging field.

About us

The Sector Initiative 'Global Health' is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of Germany's Federal Ministry for Economic Cooperation and Development (BMZ). It advises the BMZ on health policy issues, focusing on health funds, universal health coverage, as well as health data and digital health.

For more information, visit the GIZ website or contact us at digital-health@giz.de.



1. Introduction

As countries work to strengthen their health systems in response to the COVID-19 pandemic and other urgent health needs, they are increasingly piloting and scaling up new digital technologies and artificial intelligence (AI). These new tools certainly have the power to be transformative, but to make them work for everyone, though, requires thinking through the specific ways in which existing social inequalities, including gender inequalities, may shape access and how the tools are used in practice. Furthermore, we need to consider how these social inequalities shape who designs the tools, the assumptions of the designers, and what data is used or produced by them.

Based on a literature review and interviews with GIZ experts between February and March 2021, this technical brief looks at some of the ways in which digital health can strengthen health systems and so reduce inequalities for women, girls and LGBTQIA+ people. It also outlines the risks that should be considered and mitigated when designing an intervention and it concludes with seven recommendations. Grounded in the Principles for Digital Development[1], this brief is intended to point the way forward in terms of the gender-sensitive design, implementation, and evaluation of digital health innovations. As the cross-sectoral area of gender and digital health is relatively new and rapidly changing, new evidence will continue to emerge as it becomes more established.

1 Digital Impact Alliance (n.g.): Principles for Digital Development.

2. What does gender have to do with digital health?

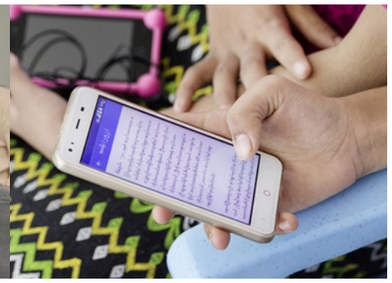
Digital health is an emerging concept that embraces a diverse range of information and communication technology (ICT) and its application in health systems. The interventions concerned include mobile applications, health management information systems, telemedicine for remote diagnosis, real-time epidemiology to spot new outbreaks, and much more besides.

Digital transformation is advancing rapidly, but research is only just beginning to provide a full picture of the kind of impacts it is having on women and girls, as well as on lesbian, gay, bisexual, transgender, questioning, intersex, asexual and other sexual minorities (LGBTQIA+ people).

These new digital tools are being deployed in a world characterised by widespread inequality, and gender inequalities especially:

- **Unequal incomes, restrictive gender norms** – The global wage gap between men and women is substantial, with disproportionately more women in low-wage jobs; in addition, 60% of women work in the informal economy, with unpredictable hours and income. Also, income inequality has worsened during COVID-19. Along with other forms of social inequality, women and girls now have less access to digital devices.[2] This means they often depend on others to buy digital devices or to add airtime. They may need to share devices with family members, or have their usage supervised by parents, partners, or other family members.

2 European Union (2018): The underlying causes of the digital gender gap and possible solutions for enhanced digital inclusion of women and girls. Women's right & gender equality. Brussels. Though this study refers specifically to countries in the European Union (EU), some of the points discussed may also apply in LMICs.



- **Inequality for sexual minorities** – Same-sex sexual acts are criminalised in over 67 countries, and most countries do not recognise a third gender or a legal change of gender identity.[3] LGBTQIA+ people face widespread discrimination if their sexual orientation or gender identity becomes known, and health care settings are no exception here.[4] They face added risks on online platforms of being targeted for arrest, prosecution, extortion, or violence. For instance, in 2017, researchers claimed to have developed facial recognition software that could identify homosexual people based on their facial features; while this was denounced as 'junk science', such tools could still be dangerous if used by governments or non-state actors to target individuals or groups.[5]

- **Less access to education** – Around 132 million girls are out of school worldwide, and many girls lack access to secondary education.[6] When it comes to the digital world, the resulting lack of literacy can affect everything from women and girls' ability to navigate and search online, to their ability to download information, communicate with others, or give informed consent to data-sharing. Within the health system, poor digital literacy can mean fewer women achieve the rank of manager, a position that would enable them to select, design, and evaluate digital health interventions, or analyse data to make decisions.

- **Violence against women and homophobic, transphobic violence** – Women, especially those in the 18-30 age group, report high rates of violence online.[7] Indeed, violence against lesbian, gay, bisexual, transgender and other gender-non-conforming people is widespread both online and in-person.[8]

- **Intersectional inequalities** – All these forms of inequality can intersect with other inequalities, including socio-economic status, age, race, and other social identities.

For these and the other reasons discussed below, interventions that include digital health can be empowering to women and marginalised groups. Nevertheless, specific risks persist. Digital health interventions should be designed using a 'gender-sensitive' approach, i.e. one that 'recognises and identifies existing gender-specific differences, problems and inequalities and integrates them into strategies and measures'.[9]

3 ILGA World (2020): State-Sponsored Homophobia 2020: Global Legislation Overview Update. Geneva.

4 UNDP (2018): Global Commission on HIV and the Law, Risks, Rights & Health, Supplement.

5 EDRi (2019): the digital rights of LGBTQ+ people: When technology reinforces societal oppressions. Europe.
This New York Times article summarizes criticism of the study that claimed to use facial recognition to identify gay people: New York Times (October 2017): Heather Murphy, Why Stanford Researchers tried to create a 'Gaydar' Machine.

6 UNICEF (2019): Girls' education. Gender equality in education benefits every child. https://www.unicef.org/education/girls-education

7 GenderIT (December 2011): Mapping the intersection of technology and gender-based violence, Mapping the intersection of technology and gender-based violence | GenderIT.org

8 UNFE (May 2017): Factsheet, Homophobic and Transphobic violence. https://www.unfe.org/wp-content/uploads/2017/05/Homophobic-and-Transphobic-Violence.pdf

9 GIZ (2019): GIZ Gender Strategy, Gender reloaded. Vision needs Attitude – Attitude meets Action.

3. Gender and digital health: What are the opportunities and risks?

A. Opportunities to improve development outcomes

Well-designed digital solutions based on user input have the potential to strengthen health systems by increasing the availability, accessibility, acceptability and quality of health services. Here are some specific opportunities:

Reaching the last mile – Multiple studies show that mobile health (or mHealth) can be empowering and extend health service coverage in rural and hard-to-reach areas, helping to cover 'the last mile' and thus get to those people who have difficulty accessing health services. This is especially important for reducing infant and maternal mortality and for preventing and treating HIV. Women and girls living in areas with few clinics and poor transportation have been shown to benefit from even relatively simple digital health tools that provide access to health information. The Philippines, for instance, responded to women's lack of access to sexual and reproductive health (SRH) services during the COVID-19 pandemic by setting up an official hotline to answer questions. Communication took place via SMS text messages and was supplemented by radio programmes and public video conferences on adolescent health.[10] In Peru meanwhile, pregnant women are now able to receive customised health information tailored to their needs through a project that links up electronic health records and SMS messages.[11] In Burkina Faso, an mHealth intervention with automated appointment reminders has resulted in better prenatal coverage and improved treatment retention for rural women living with HIV.[12] In Mongolia, rural women lacking the funds or childcare support they need in order to consult medical experts have used telemedicine solutions to access critical information on maternal, neonatal, and child health online.[13]

Reaching marginalised groups – Digital health interventions can be especially powerful in reaching marginalised populations who may otherwise be missed by, or even turned away from, the formal health sector. For example, in Vietnam, a mobile app has improved ethnic minority women's access to maternal health services, and reportedly even helped build trust, strengthening their relationships with health providers.[14] Similarly, a telehealth intervention in the Amazonian rainforest in Brazil established a valuable knowledge exchange between indigenous communities and health professionals.[15] In Thailand, a low-cost, community-led social network for men who have sex with men and transgender people has enabled community experts to share health information, social support and legal advice in order to document and address incidents of violence, discrimination and abuse.[16]

Strengthening health sector accountability – mHealth interventions also make for greater accountability by building relationships between communities and the health sector. An iteratively designed mHealth intervention in Ethiopia with community input not only strengthens health provider accountability vis-à-vis the community, but also incentivises and supports the health workers themselves.[17]

10 Philippines Humanitarian Country Team (HCT, 2020): Philippines COVID-19 Humanitarian Response Plan. March 2020 - March 2021. August 2020 Revision.

11 Journal of Public Health (2018): Information = equity?

12 Journal of Public Health (2018): Promoting access equity and improving health care for women, children and people living with HIV/AIDS in Burkina Faso through mHealth.

13 WHO Global Observatory for eHealth. (2010). Telemedicine: opportunities and developments in Member States

14 Journal of Public Health (2018): Improving health equity for ethnic minority women in Thai Nguyen, Vietnam.

15 JISfTeH (2020): Combating Malnutrition Among Pregnant Women, Mothers and Babies in the Rural Amazonian Forest: What can Telehealth Do?

16 Digital Culture & Education (2012): Sexperts! Disrupting injustice with digital community-led HIV prevention and legal rights education in Thailand

17 Journal of Public Health (2018): Can mHealth improve timeliness and quality of health data collected and used by health extension workers in rural Southern Ethiopia?

Empowering frontline healthcare personnel – Digital health can also be empowering for frontline healthcare personnel, many of whom are women. Numerous studies have found that healthcare and health extension workers report an enhanced status and better health outcomes when using mHealth. This is the case in Zambia, for example, where a text messaging app used by rural nurses and midwives as part of a leadership and capacity-building programme has enabled them to seek medical advice and find support in emergencies.[18] In Zanzibar, an intervention that uses clinical protocols to develop clinical decision support software has empowered health care workers to better assist women with the birth planning process.[19]

In all these cases, digital health interventions – many designed iteratively with community input – have helped to promote transparency, accountability, and access to essential health information, while strengthening ties between community members and the formal health system and community networks, too.

B. Challenges and risks

Digital health interventions are however not without risks, especially given the fact that gender inequalities abound, and private-sector oversight is weak. This section explores these challenges and risks, including lack of access due to the digital gender divide, the potential for violence resulting from a lack of privacy protection, algorithmic inequalities, and other risks linked to the growing privatisation of health services. All of these issues need to be addressed through concrete action to maximise the positive opportunities described above and thus ensure that digital health interventions do no harm.

Digital gender divide – Any health intervention that aims to reach women and girls directly through digital devices is forced to contend with the digital gender divide. Women are globally less likely than men to use the internet to download software, or to buy or sell goods online; the gender gap is widest in the South Asia region, followed by sub-Saharan Africa.[20]
This is due to a variety of factors, including poor access to technology and education, and widespread gender biases:

- According to the global association of mobile operators, over 300 million more men than women access the internet through a mobile phone.[21] Mobile health interventions therefore tend to have higher rates of success with men than women: in Uganda, for example, men participated twice as often as women in an SMS text message-based campaign on HIV prevention.[22]

18 IntraHealth (2017): WhatsApp Is a Lifeline for Nurses and Midwives in Remote Communities, A popular social media tool is changing the way health workers practice—and saving lives

19 ICTWorks (2019): 4 Case Studies Using Digital Financial Services to Improve Global Health

20 GSMA (2020): Olive Rowntree, Matthew Shanahan, Connected Women, The Mobile Gender Gap Report 2020, p. 31 f.

21 GSMA (2020): Olive Rowntree, Matthew Shanahan, Connected Women, The Mobile Gender Gap Report 2020, p. 2

22 J Health Commun (2012): You have an important message! Evaluating the effectiveness of a text message HIV/AIDS campaign in Northwest Uganda.

- Digital literacy is lower amongst women and girls than it is amongst their male counterparts. This is partly due to societal biases (the widespread idea that technology is for boys) and to the lack of access to technical education among other things.[23] As a result, girls are significantly less likely to consider a career in tech than boys: At 15 years of age, only 0.5% of girls aspire to become tech professionals compared to 5% of boys.[24] Only 26% of those working in data and artificial intelligence are women, and the figure drops to just 12% in cloud computing.[25] Only 21% of technology executives are women. This is due to a combination of factors which women say include a lack of female role models, the gender pay gap, and persistent gender bias.[26]

Addressing the digital gender divide is not only a matter of making the STEM[27] workplace fair. As one industry analyst puts it, 'We need more women in STEM roles to make scientific innovations useful, and more importantly, safe. After all, how relevant can innovations really be if they do not take into account the needs of half the population?'[28]

To combat the digital gender divide, UN member states have committed to increasing women and girls' access to enabling technologies as part of Sustainable Development Goal 5.

Privacy risks – For those who do gain access to the digital world, the online environment can be fraught with risks. In Europe, data gathering is regulated by the General Data Protection Regulation (GDPR) but in other countries data protection is often weak. UNCTAD has found that only 66% of countries have legislation to address data protection and privacy.[29]

Even where regulation exists, its actual enforcement may be weak. In the U.S., where health data is relatively well protected, Black transgender women reported that sensitive, gender-identifying information was often disclosed by health organisations, resulting in privacy violations and discrimination.[30] One study of digital health and digital data ethics in Kenya and Tanzania found 'inadequate capacity to effectively implement secure information systems; weak or non-existent legal frameworks for data protection; and the absence of a dedicated unit in health ministries as well as appropriately skilled staff to oversee data ethics.'[31]
The risks can extend to medical misinformation: Privacy International has documented anti-abortion organisations' use of personal data to target young women with anti-abortion messages and misinformation about sexual and reproductive health.[32]

23 OECD (2018): Bridging the Digital Gender Divide. Include, upskill, innovate.

24 OECD (2018): Bridging the Digital Gender Divide. Include, upskill, innovate.

25 World Economic Forum (2019): Global Gender Gap Report 2020.

26 ISACA (2017): ISACA Survey Identifies Five Biggest Barriers Faced by Women in Tech.

27 STEM stands for Science, technology, engineering, and mathematics

28 Forbes (2021): Texas Power Company Griddy Energy Files for Bankruptcy After Texas Storms

29 UNCTAD (2021): Data Protection and Privacy Legislation Worldwide

30 Transgender Health (2016): Patient Perspectives on Gender Identity Data Collection in Electronic Health Records.

31 ISACA (2017): ISACA Survey Identifies Five Biggest Barriers Faced by Women in Tech.

32 Privacy International (2019): How anti-abortion activism is exploiting data.

Risks of violence – According to UN Women, at least one in every three women has experienced physical and/or sexual violence. Meanwhile emerging data during the COVID-19 pandemic has shown increasing reports of domestic violence.[33]

UN Women also found that rates of reported violence against women and girls on the internet went up during COVID-19, especially women in politics, journalists, bloggers, women belonging to ethnic minorities, indigenous women, lesbian, bisexual and transgender women, and women with disabilities. [34]

Even encrypted text messages, such as WhatsApp, produce metadata that can be used by third parties to engage in surveillance and to target individuals or groups; the International Committee of the Red Cross (ICRC) has warned that metadata produced by humanitarian programmes may be used for the malicious targeting of asylum-seekers.[35]

In countries that criminalise same-sex sexual behaviour or sex work, the use of mobile apps brings risks. In India, gay men and sex workers report being stalked through online activities and threatened or blackmailed.[36] In Morocco, gay men reported that they were targeted through an online harassment campaign37 while in Egypt police have used dating apps to entrap LGBT people for arrest and abuse.[38]

33 UN Women: Facts and figures: Ending violence against women.

34 UN Women (2020): Online and ICT-facilitated violence against women and girls during COVID-19.

35 ICRC (2018): Philippe Stoll, Digital trails could endanger people receiving humanitarian aid, ICRC and Privacy International find.

36 Megha Malnad et al. (2020): Use of Mobile Phones by Vulnerable Communities.

37 Human Rights Watch (2020): Morocco: Online Attacks Over Same-Sex Relations.

38 Gay Times: LGBTQ+ people in Egypt are being targeted by authorities on dating apps.

Biometric data is physical data that can be used for identification purposes; this includes fingerprints, iris scans, facial recognition, and more. As these technologies become more affordable, they are increasingly being utilised in development, health, and humanitarian programming. However, the data is sensitive because it creates a permanent record that can be used to identify a given individual: GDPR restricts its use for precisely this reason. In Kenya, concerns about being arrested or about discrimination amongst men who have sex with men, people who use drugs and sex workers galvanised their national networks into action to stop the government from gathering biometric data (fingerprints, iris scans) as part of an HIV study.[39] Recognising the numerous risks, and the fact that some humanitarian aid recipients are unable to freely give consent to data gathering (for instance, if consent is linked to accessing food or medicines), ICRC has put in place a biometrics policy to limit its use.40

Algorithmic biases – The rapid increase in use of artificial intelligence to enhance or even replace analogue health interventions brings new risks, namely that tools of this kind will replicate or widen existing social inequalities, because these inequalities may be encoded in the design.

Artificial intelligence (AI) is the use by computers of a process or set of rules (known as an algorithm) to categorise and process data, identify patterns, and make predictions or decisions. However, the results are only as good as the assumptions used to design the algorithms and the datasets used to train them. Many who design and use artificial intelligence may assume it is neutral and objective – but in practice, gender, race, and other biases in the assumptions behind the algorithms, and gaps or biases in the datasets used to train them to recognise patterns, can actually skew the results.

39 KELIN (2018): "Everyone said no".

40 ICRC (2019): Facilitating innovation, ensuring protection.

Examples of this inequality are continuing to grow and include biases in facial recognition software, which have been shown to perform better on men's faces than on women's, and better on lighter than on darker skin.[41] A recent study of artificial intelligence used to tailor preventative and therapeutic treatments found that the most widely-used biomedical AI technologies ignore sex and gender, and the ways in which these may shape health and disease differences.[42] Similarly, another study of AI used for computer-based medical diagnosis performed worse on under-represented genders.[43] The risks are potentially significant for transgender people, as the majority of patient data used to develop AI for health is from cisgender individuals, and misses medical effects for people undergoing hormone therapy or surgery.

The stigma, discrimination, criminalisation and violence linked to minority sexual orientation and gender identity augments this problem. To preserve their privacy and avoid harm, LGBTQIA+ people are less likely to be counted in health data. HIV studies estimate the size of their populations to allocate health resources.[44] This can create a data paradox in which official denial of their very existence and needs reinforces their invisibility and in turn leads to a lack of services, thereby reinforcing the lack of data. When fed into algorithms, this gap-filled data can lower the performance of digital health interventions in the chronically underserved communities affected.

Moreover, well-intentioned efforts to improve algorithmic performance by estimating sexual orientation and gender identity could unintentionally result in outing individuals without their consent. To address these and other related data paradoxes of marginalised groups, some HIV agencies have begun to fund and utilise community-led monitoring, an approach in which peer-based community organisations that have the trust of marginalised groups gather their communities' data as part of routine service provision.[45]

Gendered effects of privatisation – The shift towards the digitalisation of health services is linked to increased privatisation in the name of cost-effectiveness. Privatisation of public services is often used as a means of reducing welfare budgets, cutting back on the number of public employees and services and increasing user fees. This can have a major negative impact on women and girls, given women's over-representation both among patients and healthcare personnel, and their lower incomes overall.[46] Thus, UN human rights experts have warned that poorly planned digitalisation could unintentionally undermine access to health and social services.[47]

Risks for women health care workers – Women make up 70% of the health and social sector workforce.[48] While digital technologies offer potential for empowerment, female healthcare workers also tend to have fewer financial means than their male peers. Thus, as shown in studies in Southern Ethiopia[49] and Mozambique,[50] they may fear significant financial repercussions if they damage or lose their digital devices or run out of airtime.

41 European AI Alliance (2019): Could AI help reduce gender bias in Europe?

42 npj Digital Medicine (2020): Sex and gender differences and biases in artificial intelligence for biomedicine and healthcare.

43 PNAS (2020): Gender imbalance in medical imaging datasets produces biased classifiers for computer-aided diagnosis.

44 Cambridge University Press (2020): The Uncounted: Politics of Data in Global Health

45 O'Neill Institute (2020): Community-Led Monitoring of Health Services.

46 WHO (2005): What evidence is there about the effects of health care reforms on gender equity, particularly in health?

47 UN OHCHR (2019): Press briefing note on Lebanon

48 UNFPA: COVID-19 (2020): A gender lens. Technical Brief.

49 Journal of Public Health (2018): 'The phone is my boss and my helper'.

50 JMIR Publications (2015): Potential Roles of mHealth for Community Health Workers.

4. Gender-sensitive digital health interventions: Recommendations

To maximise the potential of digital health while mitigating these risks, the Digital Impact Alliance has compiled the Principles for Digital Development, a set of nine living principles developed by international development organisations to help practitioners succeed in applying digital technologies to development programmes.[51]

The following section elaborates on five of these principles that link to gender:

A. Design with the user
B. Understand the existing ecosystem
C. Be data driven
D. Address privacy and security
E. Use open standards, open data, open source, open innovation

Two further principles are based on guidance from other aid agencies and from interviews with GIZ personnel:

F. Include gender objectives and budget
G. Plan for gender and diversity in human resources

A. Design with the (gendered) user
The *Principles for Digital Development* underscore the fact that successful digital initiatives are 'rooted in an understanding of user characteristics, needs and challenges.'[52] The principles recommend designing '*with* the users, not *for* them' to ensure that the digital health intervention really meets user needs, is culturally acceptable and builds the trust required to improve uptake. This can help ensure that tools are fine-tuned to suit local languages and cultures.

This approach includes developing tools in an incremental and iterative process, taking into account the manner in which digital technologies are actually used in local contexts, and by whom. Diverse tools may be needed to meet the needs of different users or will have to be designed using participatory research methods that take gender and social differentiation into account.

In India, auxiliary nurse midwives were provided with Personal Digital Assistants to collect health data, with the aim of reducing time spent on paperwork and increasing data accuracy. Yet, as none of the midwives or community members were involved in project planning and design, the data gathered failed to address local health concerns. [53] By contrast, in Uganda and Nigeria, the Global Network of People Living with HIV (GNP+) is leading the development of its own collaborative user-designed mobile app, VOICE+ to connect groups of people living with HIV. [54] In several countries in Africa, Asia and the Caribbean, FHI360 is piloting an 'enhanced peer outreach' approach that uses artificial intelligence to support key populations and people living with HIV. Its mission is to reach marginalised community members that slip through normal peer outreach methods and to help link those individuals to testing and treatment.[55]

UNICEF has developed a GenderTech Toolkit to support the co-creation of digital solutions with girls.[56]

51 Digital Impact Alliance (n.g.): Principles for Digital Development.
52 Digital Impact Alliance (n.g.): Principles for Digital Development.
53 The World Bank (n.g.): About infoDev: A World Bank Group Program to Promote Entrepreneurship and Innovation.
54 GNPPlus (n.g.): Project Voice+
55 FHI360 (2017): LINKAGES. Enhanced Peer Outreach Approach (EPOA).
56 UNICEF East Asia and Pacific (n.g.): Innovation and Technology for Gender Equality.

B. Understand the existing (gendered) ecosystem
The Principles for Digital Development also note the importance of designing digital initiatives based on a full understanding of the ecosystem or context, including the laws and policies, culture, gender norms, and other structural factors.

This could also be thought of as basic due diligence. Under the UN Guiding Principles on Business and Human Rights, states have the obligation to protect human rights. Private actors, such as ICT businesses, also have an obligation to respect these rights by assessing the actual and potential human rights impacts of their interventions and taking steps to mitigate any risks. [57]

UN member states have ratified human rights laws that uphold the right to privacy and to non-discrimination, as well as numerous other rights of women and girls. Programme officers can verify which standards each country has committed to in the UN Human Rights Treaty Bodies database, and reference these in their discussions with national partners.[58]

Many countries also have national strategies and action plans for gender equality,[59] as well as national strategies for digital health,[60] which should inform digital health planning. The World Health Organisation has issued several gender analysis tools for health plans to determine whether national policies and programmes take gender into account.[61] Several new indices now aim to track digital health and the digital gender divide, although data is not reported for all countries (see Box 1).

ILGA issues an annual report on sexual orientation laws by country, accompanied by maps and charts.[62] In addition, it may be helpful to review consumer protection acts, access to information regulations, as well as policies on ICT and on biometric data processing. The HIV Policy Lab systematically monitors laws and policies adopted by countries and can also be used to inform risk assessments and other digital health plans targeting women and girls living with HIV and other key populations.[63] A key question here is: Does the country have robust regulations in place for data protection and privacy? UNCTAD monitors data protection and privacy internationally.[64]

Qualitative research can also help to inform digital design. In Lebanon, Syrian refugee women were consulted in multiple qualitative evaluations about the design of a digital antenatal care intervention.[65]

57 European Union (2014): ICT sector guide on implementing the UN guiding principles on business and human rights.
58 UN OHCHR (n.g.): United Nations Human Rights Treaty Bodies. UN Treaty Body Database.
59 UN Women (n.g.): What we do. Governance and National Planning. Inclusive National Planning.
60 WHO & International Telecommunication Union (2012): IRIS. National eHealth strategy toolkit.
61 WHO (2003): Gender analysis in health: a review of selected tools.
62 ILGA World (2020): State-sponsored homophobia report.
63 HIV Policy Lab (assessed 7 November 2022): HIV Policy Lab
64 UNCTAD (2021): Data Protection and Privacy Legislation Worldwide.
65 ACM (2016): Syrian Refugees and Digital Health in Lebanon: Opportunities for Improving Antenatal Health.

Measuring the Gender Gap – A small but growing number of indices aim to provide a snapshot of digital health and gender. As these are new indices, some of them are in beta form and not all countries are covered.

Global Digital Health Index: An interactive digital resource that tracks, monitors, and evaluates use of digital technology for health in countries using seven indicators: leadership & governance; strategy & investment; legislation, policy, and compliance; workforce; standards and interoperability; infrastructure; services & applications. Available languages are English, Arabic, French, Portuguese, Spanish. (1)

World Wide Web Foundation: Women's Rights Online Digital Gender Gap Audit Scorecards (2020): Produces national report cards assessing each country's gender digital divide. Small number of countries available. In English, Bahasa, Portuguese, Spanish. (2)

World Bank: Enterprise Surveys, Gender: An index measuring women's participation in businesses around the world, with businesses in 144 countries reporting. It enables the user to explore gender participation differences across various subgroups. However, as data is self-reported, some biases might already be included. Available in English and Spanish. (3)

Digital Gender Gaps: Measures global gender gaps in internet and mobile access using real-time big data. In English. (4)

Digital Inclusion Map: An interactive tool that identifies existing initiatives in countries that are working on bridging the gender digital divide. Map is in beta version with some bugs, but database can be downloaded. In English. (5)

All links last accessed 7th November 2022:
(1) http://index.digitalhealthindex.org/indicators_info (2) https://webfoundation.org/research/digital-gender-gap-audit/ (3) https://www.enterprisesurveys.org/en/data/exploretopics/gender (4) https://www.digitalgendergaps.org (5) https://www.itu.int/en/action/gender-equality/Pages/equalsGDImap.aspx

C. Be (gender-disaggregated) data driven
A data-driven health intervention maximises the use of data, targeting interventions to reach those most in need. Digital health interventions should continue to collect and use available gender and age-disaggregated data, as well as data on other intersectional inequalities to target interventions, for instance, data on socioeconomic backgrounds and disability. After reviewing its digital health programming, the International Development Research Centre (IDRC) – a Canadian aid agency –recommended that all project data be analysed by connecting project findings with the larger context of gender and social relations.

Non-binary gender categories should be included wherever possible. This is the case in a GIZ-supported openIMIS programme implemented in Nepal. At the same time, programme officers should assess, based on national laws and consultation with transgender groups and experts in the country, whether to take protective measures to mitigate risks in countries where non-binary gender identities are not legally recognised.

Community-led monitoring can be promoted using both routine quantitative data collection and evidence-based advocacy to improve the governance and quality of health services. The US bilateral HIV funder PEPFAR, as well as the Global Fund to Fight AIDS, TB and Malaria, now support community-led monitoring of quantitative and qualitative indicators to promote health-sector accountability.[66]

66 Pepfar Solutions Platform (2020): Community-Led Monitoring Tools; The Global Fund (2020): Community-based monitoring: An overview.

D. Address (gendered) privacy and security needs
A fourth principle involves careful consideration of the kind of data being collected through digital health interventions and its protection criteria. Development partners and technical organisations should promote robust data protection in partner countries and minimise data collection in own interventions. Following the role model set by ICRC, organisations should consider developing an internal policy on the use of biometrics to mitigate the risks and sensitivities mentioned above.[67]

E. Use open standards, open source, open innovation
The Digital Principles rightly warn that scarce public resources are sometimes used to develop new tools that are later 'locked away behind licensing fees, with data only used by and available to specific initiatives'[68]. To address this matter, and to promote accountability for fairness in AI, the health sector should continue to promote digital health software as a global public good and use open-source technologies, while ensuring data is secured and locally governed. Open standards are also crucial for assessing the risk of algorithmic bias and ensuring accountability for any future harms, such as the risks surrounding digital health interventions outlined in this brief. Establishing inclusive two-way feedback and exchange mechanisms can maximise the empowerment potential of digital health and strengthen health sector accountability.

F. Include a gender objective
To ensure that digital health interventions address gender inequalities and are based on a review of actual digital health support requirements, IDRC recommends that each programme include at least one research question or research objective that focuses on understanding gender issues. For instance, an objective that creates opportunities and plans for women and girls to build their digital skills.[69]

The gender objective should be backed by funding for activities that will foster the achievement of this objective and ensure relevant gender inequalities are addressed. This should also include plans for monitoring and evaluating activities to make sure that data is being gathered routinely and that consideration is being to gender gaps/gender inequalities and to the way they are shaping results, including any potential biases that may appear as technologies.

G. Gender and diversity in human resources
Implementing all of the above actions requires highly skilled and knowledgeable personnel, consultants, and partners. Often, teams that develop and implement digital health interventions are predominantly male. To redress this situation, actors should develop plans that build the digital skills and knowledge of women and LGBTQIA+ staff, while ensuring that current digital teams have the training and support, they need to think through gender-sensitive approaches to digital health.

Secondly, actors should consider prioritising well-balanced teams when launching tenders for external digital health service providers. This also includes the number of women in technical and leadership positions. Furthermore, implementing or pushing for gender and diversity policies in companies is necessary to mitigate the gender bias.

Finally, cooperation with countries should include plans to identify potential partners that are actively addressing the gender gap in digital technologies – such as incubators, accelerators, university programmes, or civil society networks.

67 ICRC (2019): Facilitating innovation, ensuring protection: the ICRC Biometrics Policy.
68 Digital Impact Alliance (n.g.): Principles for Digital Development.
69 IDRC (2010): Gender Digital Equality In ICT Interventions In Health.

5. Conclusion

While digital health offers transformative potential for weak health systems, widespread gender and other intersectional inequalities may shape the results – and even the design of the tools themselves – by introducing risks and biases that undermine the goal of accessible health care for all.

To develop practical approaches for gender-sensitive design and implementation, organisations can draw on the Digital Principles and on the experience of other bilateral agencies, which are at an equally early stage of thinking through their own approach to gender and digital health. For instance, work by Swedish and Canadian bilateral aid agencies offers some useful insights.[70] Organisations can draw from experiences and existing policies in other institutions, and from the experiences and inputs of healthcare workers and other future users, to ensure digital health is gender sensitive by design. This includes assessing the broader ecosystem within which digital health interventions will be deployed and inviting user input to ensure that user needs and local culture are addressed. Furthermore, it requires clear objectives that tackle gender inequalities and strengthen digital trust in the long run.

70 IDRC reflections on gender digital equality: IDRC (2010): Gender Digital Equality In ICT Interventions In Health;
Sida's Gender Toolbox addresses ICTs: SIDA (n.g.): Gender Toolbox;
playbook on gender equality in the digital age from Canadian government, does not address heath specifically: Government of Canada (2018): Playbook for Gender Equality in the Digital Age;
USAID's digital strategy addresses the gender digital divide: USAID (2021): USAID Digital Strategy. 2020-2024.
UK DFID's review of digital in development programmes addresses marginalization, not gender specifically: UKAID, Department for International Development (2015): DFID Review of Digital in Development Programmes.

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