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Sexual and Reproductive Health Rights and Information and Communications Technologies: A Policy Review and Case Study from South Africa

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SEXUAL AND REPRODUCTIVE HEALTH RIGHTS AND INFORMATION AND COMMUNICATIONS TECHNOLOGIES: A POLICY REVIEW AND CASE STUDY FROM SOUTH AFRICA

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Abbreviations

ADHD	attention deficit disorder
AIDS	acquired immune deficiency syndrome
ARV	antiretroviral
CARMMA	Campaign for the Accelerated Reduction of Maternal, Neonatal and Child Mortality in Africa
CSTL	Care and Support for Teaching and Learning
DBE	Department of Basic Education
DMPA	Depot medroxyprogesterone acetate
DSD	Department of Social Development
GATS	General Agreement of Trade in Services
GMSA	GMS Association
GSM	Groupe Speciale Mobile
HIV	human immunodeficiency virus
HPV	human papilloma virus
HSPA	high speed packet access
ICASA	Independent Communications Authority of South Africa
ICPD	International Conference on Population and Development
ICT	information and communications technologies
IICD	International Institute for Communication and Development
ISHP	Integrated School Health Policy
IUD	intrauterine device
M&E	monitoring and evaluation
MA	medical abortion
MAMA	Mobile Alliance for Maternal Action
MCH	maternal and child health
MDGs	Millennium Development Goals
NCCG	National Clinical Contraception Guidelines
NCD	non-communicable disease
NCFPP & SDG	National Contraception and Fertility Planning Policy and Service Delivery Guidelines: A Companion to the Clinical Contraceptive Guidelines
NDOE	National Department of Education
NDOH	National Department of Health
NDP	National Development Plan
NDSD	National Department of Social Development
NGOs	non-governmental organisations
NPO	non-profit organisation
NSDA	National Service Delivery Agreements
NSP	National Strategic Plan on HIV, STIs and TB 2012-2016
PEPFAR	President's Emergency Plan for AIDS Relief
PHC	Primary Health Care
POPI	Protection of Personal Information Privacy Act
R&D	research and development
RSA	Republic of South Africa
SA	South Africa
SANAC	South African National AIDS Council
SGB	school governing body
SMS	short messaging system
SRH	sexual and reproductive health
SRHR	sexual and reproductive health rights
STI	sexually transmitted infections
TB	tuberculosis

TRIPS	Trade-Related aspects of Intellectual Property Rights
UNFPA	United Nations Fund for Population Activities
UNICEF	United Nations International Children's Emergency Fund
UK	United Kingdom
US	United States
USAASA	Universal Service and Access Agency of South Africa
WHO	World Health Organization
WIPO	World Intellectual Property Origination
YAL	Young Africa Live

Executive summary

This report explores the intersection between sexual and reproductive health (SRH) and technological means of enhancing health. South Africa has a high teenage pregnancy rate. Almost a third of its girl teenagers report having been pregnant. The drivers of teenage pregnancy include uneven gender relations, poor access to health services and a lack of knowledge about sexual reproduction, contraception and poverty. Poverty and place of residence also affect pregnancy and health outcomes. Women and girls living in low-income residential areas have little or no access to comprehensive sexual and reproductive health services, including sexual, reproductive and maternal health. Women and girls located in rural, peri-urban and informal settlement contexts also experience technology deficits, including low levels of mobile phone ownership, poor network coverage, weak satellite signals and insufficient bandwidth. At present, very little research explores health within peri-urban contexts and the interconnections between poverty, place and health. At the same time, e- and m-health, and the information and communications technologies (ICT) that they rely on are frequently seen as a panacea to struggling health systems and as a means of meeting the health needs of women and girls in hard-to-reach places. Yet many complex factors are required for a successful m-health intervention. These include appropriate policy recognition from both the Department of Health and the Department of Communications; cooperation between the government and the private sector to bring together professional expertise (in health and technology); financial resources; awareness of women's and girls' sexual and reproductive health needs and rights; planning and provision of health information; consideration of ethical information and privacy; and awareness of the potential for such systems to generate savings and/or additional revenue. Using ICT (particularly mobile phones) to address the sexual and reproductive health needs of women and girls in hard-to-reach places is in its infancy. However, ICT and health offer enormous business potential and many mobile phone companies are exploring possible business models. This creates potential for the government and commercial companies to cooperate and develop new initiatives. This report is an exploration of this complex and emerging landscape which looks at relevant policies and current practice, asking: how are poor women's and girls' needs in rural and peri-urban conditions catered for through technological innovation in health?

This report examines the linkages between policies on, and implementation of, sexual and reproductive health rights (SRHR) and ICT in rural and peri-urban spaces in South Africa. South Africa is renowned for its legal provisions addressing SRHR yet also experiences barriers to adolescent sexual health. SRHR programming is politically complex and often ambivalent; as a result less contentious aspects which emphasise maternal health get prioritised. The legacy of population control, during which actions were taken to reduce birth rates amongst black persons, has resulted in a focus on long-acting contraception as opposed to the development of SRHR. Nonetheless, adolescent pregnancy rates remain stubbornly high. At the same time South Africa has high mobile phone density with many adolescents owning phones. ICT therefore provide innovative opportunities to address the challenges facing health systems and SRHR.

This evidence report is based on the analysis of relevant SRHR policies and ICT policies, key informant interviews with stakeholders in the health and ICT domain and available literature. It argues that many stakeholders have a limited conceptualisation of the implementation of SRHR and see this primarily as:

- effected through HIV-prevention activities with little focus and leadership on the broader aspects of SRHR such as contraception;
- an emphasis on particular aspects of SRHR, such as maternal health or contraception, with little understanding of the potential for sex positive work;

- an emphasis on 'most at risk populations' with little recognition of adolescent vulnerabilities.

The intersectional area of reproductive justice offers scope to frame these challenges, but has not been widely adopted.

Recent innovations in technology have meant that phones and other ICT devices now perform many diverse functions. This technological convergence requires a corresponding shift in policy formulation, as policies for separate communication and separate health processes are no longer valid. The ICT policies reviewed raise health-related and inequity issues and are highly aware of the challenges faced by rural constituencies. Yet SRHR are not promoted in these policies despite recognition of these rights in the South African Constitution. Similarly, communication technologies are not seen as a mechanism to enhance women's and girls' empowerment, despite recognition by the African Union of their power to do so (African Union 2003).

There are no policies that address both SRH and ICT, yet there is plenty happening in the world of ICT innovation, m-health and pilots in both the private and the public sector. There is also little synergy and partnering, despite increasing technological convergence,[1] between the government departments of health and communication.

Four case studies provide evidence of recent innovation in ICT and SRH in South Africa. The MomConnect case study is a ground-breaking, national mobile phone-based health service. Targeted at all South African pregnant women and mothers of children not yet a year old, MomConnect focuses on maternal health, providing stage-based advice and information on pregnancy. The second case study is Young Africa Live, or YAL, an m-health platform run by a not-for-profit foundation. Aimed at addressing SRHR, YAL offers a broader awareness of sexual health and related rights-based issues. The third case study, Cell-Life, addresses the full range of SRHR. This NGO-initiated randomised controlled trial shows that SMS messaging can make a valuable contribution to medical abortion (MA), reducing women's anxiety and improving their understanding of how abortion affects their bodies. The fourth case study, Soul City, examines a television series that includes maternal health alongside contraception, abortion, domestic violence, adolescent sexual health and other intersectional themes. These initiatives have led to new relationships between government departments, private sector initiatives, foundations and NGOs, raising questions about ethics, privacy and regulation in relation to ICT and SRHR. The discussions then explore the impact of these ICT initiatives in terms of health systems, maternal and child health (MCH) and SRHR, rural and peri-urban place and ethics, privacy and policy.

ICT offer new opportunities to improve public health and health systems and to address social norms. However, the extent to which ICT are used to address the full range of reproductive justice and SRHR, rather than focusing on maternal health, appears limited. The South African health system still experiences extreme inequalities in health provision, with poor services in townships, peri-urban locations and rural areas. These challenges are echoed in ICT access, with these same areas experiencing poor network coverage, weak satellite signals, insufficient bandwidth and voice capacity due to congestion and demand. Place, in relation to SRHR and ICT, is a significant factor in shaping women's and adolescent girls' experiences, but few people – be they policymakers, health experts or ICT implementers – are focusing on this dimension.

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[1] Convergence refers to the ability of technological devices to perform multiple functions. This requires a shift in policy formulation, as separate policies for communication processes and for health are no longer valid.

Recommendations

- Pay careful attention, coupled with impartial research, to the role of the private sector when partnering with government; with particular consideration of regulation, vested interests, technical expertise, framing content and political influence;
- The legal parameters of privacy, ethics and safety of personal information need ongoing consideration as ICT innovate and new health system initiatives emerge;
- Given the inequity of access in relation to cost, place and uneven data services borne by poor women and adolescent girls, develop incentives that encourage donors, NGOs, the private sector and civil society to address government development objectives;
- Government health messaging needs to be developed by health and South African content experts with appropriate timeframes to allow for testing and with attention to the unintended effects of messaging;
- Donors can enhance their impact by investing in projects that reinforce progressive legal provisions within the country – for example, underscoring the recognition that maternal health will be better improved if not isolated from SRHR and reproductive justice;
- Methodologies of testing and refining messaging need to be funded, developed, and adopted as best practices for ICT content;
- Encourage ICT for health integration into existing health systems and programmes, rather than stand-alone projects and innovations;
- ICT innovators need to work with the principle of medicine to do no harm and be accountable to all partners as well as the poor communities they serve;
- Online safety is paramount and more needs to be done by governments, donors, NGOs and researchers to explore possible protections (moderated online spaces, legal provisions, protection of personal data etc.) so that women and adolescent girls, whether seeking or providing information online, can be secure and safe.

Introduction

South Africa is seen as an emerging global health leader by the World Health Organization (WHO) because, despite a high disease burden and high levels of poverty, it has significant academic and research resources supported by local and international government funding, private sector investment, and an active civil society (WHO 2013). This combination has stimulated innovation, leadership and enthusiasm to apply new tools, policies and approaches. Yet, despite impressive legal provisions addressing sexual and reproductive health and rights, the country experiences very high levels of adolescent pregnancy and women and girls are often negatively affected by uneven gender relations, poor access to health services and a lack of knowledge about SRHR. Teenage sexual health is not uniform throughout South Africa, with poverty and place of residence strongly affecting outcomes. In particular, women and adolescents in rural and peri-urban (informal settlement or township) contexts experience neglect and exclusion from health-care services. In addition, poor South African women have inadequate knowledge about SRHR and thus struggle to make informed decisions. At the same time, there is considerable excitement about the potential for ICT[2] to provide solutions to health system challenges, with a receptive policy environment embracing e-health[3] and m-health,[4] and innovative examples of ICT-based health delivery. This policy research examines three inter-related aspects of SRH for women and girls in South Africa, namely:

1. To what extent are policymakers and other stakeholders aware of the peri-urban as a particular place which shapes the SRH of women and girls?
2. Who are the core actors advocating for ICT inclusion, and what are the key framings around SRH, ICT and the peri-urban?
3. What factors are enabling or challenging the incorporation of ICT as a driver of policy change for SRH? To what extent are policymakers using ICT as a mechanism for addressing the challenges of women's and girls' SRHR?

This research thus explores policy and case studies which link the SRH of women and young girls to ICT and to peri-urban contexts. South Africa suffers from very high rates of teenage pregnancy with almost a third of all girl teenagers reporting pregnancies. High teenage pregnancy rates are informed by gender relations, poor access to health services and a lack of knowledge about sexual reproduction, contraception and poverty (Willan 2013). Sexual health is not uniform throughout South Africa, with women and girls living in low-income residential areas having little or no access to sexual, reproductive and maternal health services (Hawkins, MacGregor and Oranje 2013; Panday *et al.* 2009). These women and girls also experience technology deficits which include low levels of mobile phone ownership, poor network coverage, weak satellite signals and insufficient bandwidth. There is, at present, very little available information on health within the peri-urban and on the interconnections between poverty, place and health (Willan 2013).

E-health and m-health are widely seen to provide solutions for health challenges, for failing health systems around the world (IICD 2014; Heeks 2006) as well as for maternal and sexual

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[2] ICT is a collective term for a heterogeneous range of technologies, applications and services 'used to produce, process, distribute and transform information'. This includes telephones, mobile phones, radios, televisions and computers (UN 2005: 2) as well as access to the internet, social media and communication platforms.

[3] E-health is broadly defined as the use of ICT for health purposes. This includes treating patients, undertaking research, educating students and professionals, tracking diseases, electronic database systems, other forms of health management and tracking public health (NDOH 2012c) through computer or phone technology.

[4] M-health, a component of e-health, refers to the use of mobile phones and other technological, mobile devices in health. This includes SMS messaging, using mobile phones to communicate with health providers, or health providers' use of mobiles to enhance their work, and the use of portable devices for monitoring and improving health.

health (Cargo 2013; Constant *et al.* 2014). Yet, while a huge diversity of pilots, new initiatives, market innovations, and NGO projects are undertaken, little attention has been paid to the policy domain which manages health systems and the processes by which ICT are integrated into health systems. Many complex factors are required for an m-health intervention, including appropriate policy recognition from the departments of health and communications; negotiation between the government and the private sector over respective roles (in health and in mobile technology) and resources; planning and provision of financial resources; recognition of women's and girls' SRHR; the planning and provision of health information; consideration of ethical information and privacy; and awareness of the potential for e-health to generate savings and/or additional revenue.

1   Background

1.1   Sexual and reproductive health rights

SRHR are critical dimensions of the international development agenda and of the health and wellbeing of individuals (Temmerman, Khosla and Say 2014). The 1994 International Conference on Population and Development (ICPD) in Cairo expanded the understanding of reproductive health from family planning and maternal health to include SRH, including the human rights associated with sexuality and reproduction such as rights to information, education, dignity, and respect for bodily integrity. The Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa, also known as the Maputo Protocol, adopted by the African Union in Maputo, Mozambique, in 2003, seeks specifically to protect the rights of women, including gender equality and justice, while taking the specificity of Africa into consideration (Musyini-Ogana 2013). South Africa ratified the Maputo Protocol in 2004, pointing out that its own legislative and policy framework meets, and at times exceeds, these provisions (Sibanda 2013). These initiatives call attention to reproductive rights and reproductive justice. Reproductive rights emphasise the 'basic right of all couples and individuals to decide freely and responsibly the number, spacing and timing of their children and to have the information and means to do so', as well as their right to 'attain the highest standard of sexual and reproductive health free of discrimination, coercion and violence' (UNFPA 1994: para 7.3). Reproductive justice is the ability of all people to draw on their socioeconomic and political power and resources for healthy decision-making about their bodies, sexuality and families. It aims to transform power inequalities and bring an end to reproductive oppression through collective mobilisation of individuals, families, communities and international processes (Chrisler 2012).

The WHO sees SRH as comprising several, interrelated core dimensions, namely: enhancing antenatal, perinatal, postpartum, and new-born health care; delivering high-quality services for sexual health such as infertility services; safe abortion; tackling sexually transmitted infections, including HIV, reproductive tract infections, cervical cancer and other gynaecological morbidities; and endorsing sexual health (WHO 2004). It argues that improvements in one of these areas has positive impacts in other areas. SRHR thus includes maternal health, safe pregnancy and childbirth (Eyakuze *et al.* 2008). While maternal and child health (MCH) and SRHR are often viewed as separate domains, programming is limited when women are viewed only as mothers or potential mothers without any discussion of their sexual health or rights. The full range of SRHR is critical: addressing gender inequalities, place and access to services, information on contraception options, domestic violence, informed consent, access to legal and safe abortion as well as ensuring safe motherhood and child health (Wellings *et al.* 2006). Focusing on reproductive rights and justice emphasises the 'unmet need' for SRHR (Berer 2014: 8). Many people resident in poor or developing countries have no opportunities to achieve their reproductive aims. Women and adolescents living in poverty experience a wide range of sexual and reproductive ill health, which a focus on MCH cannot adequately address. These include unwanted pregnancies, maternal and neonatal mortality, illegal and unsanitary abortion, miscarriage, infertility, too many pregnancies or too few pregnancies.

SRHR are complex and marred by ambivalence. This stems from massively unpopular 'population control' programmes which sought to minimise birth rates among select categories of people (Newman *et al.* 2014: 54). Aligned with global trends in the 1990s, apartheid South Africa provided MCH services focused on reducing black population growth. Combined with overcrowded facilities, insufficient staff and no privacy, contraceptive services had clear racial and oppressive associations (Cooper *et al.* 2004). As apartheid came to an end, South African and global civil society mobilised successfully for appropriate SRH services which emphasised human rights, justice and gender equality.

Despite this mobilisation and the inclusion of SRHR in South African legal provisions, abortion continues to be controversial. Religion is a powerful and conservative influence which opposes sexual rights and abortion, particularly for young people. Even though abortion has been legal in South Africa since the passing of the Choice on Termination of Pregnancy Act in 1996, many people – including health service providers – have strong religious convictions and prefer not to offer this service (Fonn *et al.* 1998; Cooper *et al.* 2004). This has consequences for both women and adolescent girls and their access to SRH services.

1.2   Adolescence and SRHR

Teenage motherhood is very high in South Africa, with 55 per 1,000 black and 88 per 1,000 coloured South African girls aged between 15 and 19 becoming mothers in 2001 (Gustafsson and Worku 2007).[5] Most fall pregnant aged between 17 and 19. Pregnancy rates are significantly higher for black and coloured (71 and 60 live births per 1,000 respectively) than for white and Indian (14 and 22 per 1,000 respectively) adolescents. These black and coloured teenagers are more likely to live in rural or peri-urban contexts and to experience poverty and unemployment (Panday *et al.* 2009). The National Department of Health (NDOH), in reviewing adolescent SRHR, notes that teenage mothers are less likely than other mothers to complete high school. This has a negative impact on their personal development and employment opportunities (NDOH 2011). Adolescents, especially young girls, are also at increased risk of acquiring STIs (including HIV infection), having unintended pregnancies, and other SRHR challenges, due to an early age of sexual debut, multiple and concurrent partners, intergenerational sexual relationships with older men, and inequitable gender dynamics that limit their capacity to negotiate safer sexual practices.

Despite schools being an ideal venue for discussion of SRHR, young girls can also experience sexual harassment at school (Prinsloo 2006; Wood, Lambert and Jewkes 2008). School girls across South Africa report being threatened with failing the school year if they do not agree to sex with their teachers (Wood and Jewkes 2006). In addition, young girls are particularly vulnerable to sexual initiation, harassment, coercion,[6] rape, and rape homicide (Jewkes and Abrahams 2002).[7] It follows that adolescents and adults in their early to mid-twenties experience more unwanted sexual attention, pregnancies, sexual diseases and HIV than others. Yet, adolescent health is generally neglected (Temmerman *et al.* 2014; Berer 2014). This is, in part, because the causes of adolescent ill health often lie beyond health systems and are influenced by 'education systems, labour markets and economic policy, health-related legislation', such as tobacco and alcohol taxation, as well as by access to safe food and water, sociocultural values, and political participation (Patton *et al.* 2014: 385). In addition, adolescents are frequently not separately categorised and therefore not visible in health system statistics (see below for evidence of their exclusion from health and ICT policy).

South African SRHR policies and laws 'are among the most progressive and comprehensive in the world in terms of the recognition they give to human rights' (Cooper *et al.* 2004: 70). The 1996 Constitution guarantees all citizens the right to reproductive health. Other policies address teenagers' access to contraceptives, abortion, SRH services and ongoing access to education when pregnant. South Africa is also a signatory to many international commitments which enhance women's and girls' SRH (Muller and MacGregor 2013).

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[5] Teenage pregnancy in the UK in 2012 was 20 live births per 1,000, and in the EU it was 13 per 1,000 (Office for National Statistics 2014).
[6] Persuasion through begging or pleading and accompanied by underlying threats of violence.
[7] Police statistics, which represent only a small fraction of women's actual experience of rape, show more than 44,000 rapes reported in 1996 in South Africa (Jewkes and Abrahams 2002: 1231); 40 per cent of these were among adolescents.

Redressing past discriminations and addressing the health needs of poor black women has been a primary aim of policies introduced since the end of apartheid (Cooper *et al.* 2004; McIntyre and Gilson 2002).[8]

However, progressive policy has not halted teenage pregnancy. There are massive implementation gaps: girls and boys are not able to freely access health facilities for sexual health; and women and girls experience significant knowledge gaps with uneven awareness of comprehensive SRHR. In the absence of knowledge and services, many South African women rely on hormonal contraception, administered through injections (DMPA or Depo Provera). Yet, the use of hormonal contraception has been correlated with HIV infection, with research showing an increased risk for women who use DMPA or Depo Provera (Polis and Curtis 2013). The NDOH has revised its contraception and fertility planning policy, phasing out Depo Provera in favour of other contraceptive methods. The contraception and fertility policy follows changes in the WHO's criteria and emphasises alternative long-acting reversible contraceptives (copper IUDs, intrauterine systems, subdermal implants); and stresses that women who use injectable progestogens must be made aware of the importance of condom use (NDOH 2012b). Because of South Africa's history of population control, the failure to limit the use of DMPA or Depo Provera suggests that the NDOH has prioritised the provision of contraception over other sexual health issues, including increased risk of HIV for women on long-term contraception.

Young South African women need enhanced access to information about SRHR. Bearinger *et al.* (2007: 1225) argue that adolescents worldwide need 'accurate and complete information about their body functions, sex, safer sex, reproduction, and sexual negotiation and refusal skills'. In South Africa, adolescents also require access to safe services and a means of challenging their experiences of sexual violence and exploitation. Women and girls in peri-urban, rural and informal settlement areas lack both the access to SRH knowledge and access to services.

1.3 The significance of place

Although not usually correlated with SRHR, for poor people living in peri-urban (informal settlement or township) areas, life is often characterised by exclusion. This includes a lack of access to basic health care and SRHR services (Marshall *et al.* 2009). Maternal mortality indicators for peri-urban residents reflect figures commonly recorded amongst the rural poor (UNFPA 2013). In South Africa, rural and peri-urban health provision suffer similar patterns of neglect. These areas still experience the legacy of apartheid planning, which minimised the provision of health services and health infrastructure in former townships and rural areas. The former homelands[9] still have very poor quality health care and extreme discrepancies exist between rural and urban health statistics (Fonn *et al.* 1998). Since the 1990s, the need to address South Africa's peri-urban and rural SRH services has been recognised, yet massive challenges in implementation remain (*ibid.*; McIntyre and Gilson 2002).

Rural and peri-urban areas also have particular technology deficits including poor mobile phone network coverage, weak satellite signals, insufficient bandwidth and voice capacity due to congestion and demand. Inner city and poor areas have a concentration of immigrant women with higher rates of mobile phone sharing. In addition, with high unemployment,

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[8] In 1994, free health care for pregnant women and mothers of children younger than six became available. This was followed by building clinics, participatory policy engagement, addressing infrastructural challenges, and wide-scale education about health rights (McIntyre and Gilson 2002).
[9] During apartheid, black South Africans were confined to geographical areas ostensibly correlating with their tribal affiliation. These homelands covered only 14 per cent of South Africa yet accommodated 80 per cent of the population. All black persons who were unemployed, old, sick, disabled, etc. had to live in the homelands, with minimal health care and other support.

security is a problem and women do not carry mobile phones for fear of being robbed.[10] Rural areas are plagued by the ills of former apartheid geographies and uneven conditions of access: many households had poor access to mobile phones, poor satellite reception, no broadband, and high data costs. Women and adolescent girls have less time to access ICT due to the gendered division of labour and their domestic burdens. They also find it difficult, and often unsafe, to access internet cafes and other public places where ICT might be freely available. There is, thus, as one respondent indicated, 'vast inequality in reliable access'. One of the massive potentials of mobile phones is to penetrate rural and peri-urban areas. Yet, there are constraints in terms of electricity, language, cost and design (see below for more on addressing the health needs of these 'hard-to-reach' populations through ICT).

1.4 Sexual and reproductive health rights and information and communications technologies

ICT and mobile phones (known as cellular phones or cell phones in South Africa, and used interchangeably hereafter) offer potential ways to address challenges associated with SRH for women and young girls in rural, peri-urban and poor contexts, as 90 per cent of South Africans and 75 per cent of the poor own cell phones (Day and Gray 2012; Calandro *et al.* 2012). In addition, young mothers have expressed interest in, and used cell phones to search for, health-related information. There are many innovative means of using phones to address SRHR in South Africa, including HI4LIFE,[11] Cell-Life Communicate Services,[12] Wisepill,[13] Babyinfo,[14] and Young Africa Live.[15]

While these ICT-based inventions are addressing SRH in South Africa, policymakers seeking to ensure universal service provision to mobile telecommunications do not have a strong awareness of the challenges posed by peri-urban and urban poverty for the SRH of women and girls. As the use of ICT is in its infancy in South Africa, policymakers, health authorities and providers are not fully appraised of ICT for addressing health challenges (Asamoah-Odei *et al.* 2011), despite the government's stated intention to do so (Calandro *et al.* 2012).

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[10] The Department for Social Development has a call centre and toll-free line to address violence against women. Landlines offer an expensive, yet safe option for women living in dangerous areas, as they allow women to be called or to call out, and to contact social services if needed.

[11] A mobile phone service providing information on HIV, pregnancy and child health: www.hivsa.com/projects/entry/hi4life (accessed 3 January 2015).

[12] This deals with HIV-related challenges (access to retrovirals, patient monitoring, etc.) and communicates HIV-related information: www.cell-life.org/about-us/ (accessed 3 January 2015).

[13] A portable medication dispenser http://reports.mediscern.com/wisepill (accessed 3 January 2015).

[14] A service providing pregnancy-related health information http://mxitapp.com/babyinfo/signup (accessed 3 January 2015).

[15] A mobile platform for discussing sexual health and other issues www.yal.mobi/ (accessed 12 January 2015).

2   Methodology

A textual review of four SRHR and four ICT-related policy documents was undertaken, focusing on the content. These policies were chosen as the most appropriate emerging policies and were identified by stakeholders. Key terms used to aid the review included: family planning, population control, fertility, contraception, sexual disease, maternal health, postnatal health, SRH, rights, gender, peri-urban, youth, adolescents or adolescence, teenagers, women, communication, participation and representation.

Interviews were held with 20 key stakeholders, in government and not-for-profit organisations involved in either SRH or ICT. Stakeholders were selected through a stakeholder mapping exercise and then snowballing. Interviews focused on interviewees' area of work, engagement with policies, and to what extent their work had addressed issues of women's or adolescents' SRHR, or place. Interviews were undertaken by one or both researchers, either in meetings in convenient public settings, or by telephone or Skype. Although respondents are not identified in this review, where interview text is used verbatim, it is presented in inverted commas and italics. Ethical permission was sought through the African Gender Institute, University of Cape Town. Study limitations include not being able to interview mobile phone providers, not exploring women's and girls' participation or political engagement and not looking in depth at policy implementation. Instead, given the context of increasing technological convergence, the following policy review examines the intersections between SRHR, as articulated in specific polices.

3   Policy review

3.1   Sexual and reproductive health rights policies in South Africa

Since democracy, South Africa has undertaken significant policy reform in relation to SRHR and is rightfully hailed for its progressive policies. The four policies deemed instrumental for promoting SRHR and analysed in this review are: the National Strategic Plan on HIV, Sexually Transmitted Infections (STIs) and Tuberculosis (TB) 2012–2016 (hereafter referred to as the NSP); the Integrated School Health Policy (ISHP); the National Contraceptive and Fertility Planning Policy and Service Delivery Guidelines: a Companion to the National Clinical Guidelines (NCFPP & SDG), and the National Contraception Clinical Guidelines (NCCG).

Policy developments with respect to SRHR programming occur in an environment whereby various sectors within government acknowledge the following problems:

- unacceptably high rates of HIV with about 33 per cent of young women being HIV-positive
- teenage pregnancy
- unintended pregnancies
- high infant mortality rates
- high maternal mortality
- mother-to-child HIV transmission
- ranking third in the world with respect to TB
- approximately 70 per cent of TB patients live with HIV (RSA 2011).

As a consequence of this acknowledgement, policy responses recognise the critical contribution of contraception as a public health tool, and promote reframing South Africa's contraception and fertility planning. For example, the NCFPP & SDG state that policy responses need to emphasise dual protection. The NCCG emphasise: 'Providing women with access to safe and effective contraception' as critical to women's health, as empowering, and as promoting socioeconomic improvements; as well as the need to engage men in SRH' (NDOH 2012a: 2). This reframing of contraception and fertility planning has seen national policies shift to the interconnectedness between contraception, HIV and STI prevention and emphasising a comprehensive health package which includes training, counselling and support.

The policy environment is further strengthened by the alignment of national policies and guidelines to international policies and obligations. For example, the NCFPP & SDG recognise contraception as one of the WHO's 'four strategic prongs' for the prevention of mother-to-child HIV transmission (NDOH 2012b: 2). Also, contraception contributes to South Africa's achievement of Millennium Development Goals 4 and 5, and to the African Union's Campaign for the Accelerated Reduction of Maternal, Neonatal and Child Mortality in Africa (CARMMA), to which South Africa is a signatory. The NSP reflects international commitments to upholding and promoting equality and human dignity. Additional contributions to international obligations are evident in government documents, such as the Confidential Enquiries into Maternal Death reports which measure maternal mortality and relate it to SRHR, and through recent work by the Department of Social Development (DSD) which examines the intersectional challenges of SRHR in relation to reproductive justice. Minister Bathebile Dlamini addressed the intersectionality of reproductive justice within South Africa and at the UN General Assembly in September 2014, using social media to disseminate her messages.

The NCCG recognise that poor health systems lead to inadequate service provision. This includes providers' negative attitudes; lack of knowledge among providers of the full range of contraceptive options (thus dual protection methods not being promoted); uneven distribution of contraception supplies; stakeholders' lack of awareness of the need for integrating SRH and HIV services; as well as the absence of training and support. Further factors that hamper access to health services pertain to institutional factors (e.g. poor salaries) and political processes (i.e. disconnect between policymakers and implementers resulting in a lack of buy-in). As a result, the NCCG have recommended communication aimed at raising awareness and for promotional purposes; training of service providers; and counselling and support to facilitate the use of and adherence to dual protection methods. The NSP also recommends regular consultative processes (preferably bottom-up) and specifically acknowledges the need for planned interventions to be cognisant of South Africa's diversity.

The content of the reviewed policies reflects the prioritisation of SRHR programming, with some recognition of the vulnerabilities facing marginalised women. The NCFPP & SDG clearly address SRHR, supporting a method mix of contraception options[16] within a human rights framework. It furthermore elaborates upon health workers' roles and equips them to understand and impart knowledge. For example, the Minister of Health, in the forward, calls upon health workers to prioritise:

- the provision of quality contraceptive health services;
- stimulating community awareness and demand;
- putting integration into practice;
- strategic multi-sectoral collaboration; and
- evidence-guided planning and provision (NDOH 2012b).

However, no mention is made with regard to the use of ICT. Work on the provision of information, and on implementing programmes for behaviour change is neither programmed nor budgeted for in the NCFPP & SDG. As this is not a government priority, it tends to be left to NGOs to undertake.

The departments of health and basic education's Integrated School Health Programme (ISHP) guides the provision of a comprehensive, integrated school health programme as part of the Primary Health Care (PHC) package within the Care and Support for Teaching and Learning (CSTL) framework. The objectives include:

- providing preventive and promotive services addressing the health needs of school-going children and youth;
- supporting and facilitating learning through identifying and addressing health barriers to learning;
- facilitating access to health and other services where required; and
- supporting the school community in creating a safe and secure environment for teaching and learning.

The ISHP strategies include 'a package of on-site service' provided at schools which offer SRH services, dual protection (thus preventing pregnancy, STIs and HIV infection) and HIV counselling and testing (NDOH/NDOE 2012).

A significant proportion of South Africa's health response addresses HIV/AIDS. The National Strategic Plan (NSP) is a national policy framework which covers the intersections related to

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[16] 'Method mix' refers to the range of contraception options available. 'Options' refers to what is provided as women do not always have a choice given constraint settings. As such, individual choice is not often an option.

this enormous challenge. It guides all sectors and provinces in the development and costing of implementation plans and is therefore aligned with National Service Delivery Agreements (NSDAs). In providing guidelines for interventions, the NSP outlines four objectives:

- addressing social and structural barriers that increase vulnerability to HIV, STIs and TB;
- preventing new HIV, STI and TB infections;
- sustaining health and wellness; and
- increasing the protection of human rights and improving access to justice.

Interventions are aligned to the 'behavioural and social', 'biological', and 'structural' determinants of HIV. Within strategic objective 2, prevention interventions emphasise access to a package of SRH services.

The NSP also gives significant attention to communication as a powerful tool to raise awareness, facilitate political buy-in, mobilise social actions and enable effective coordination between national and provincial efforts and between sectors, yet no mention is made of ICT.

In response to the institutional challenges that emerged in relation to the 2008–2012 NSP, the current NSP focuses on governance and institutional arrangements. The principles informing these arrangements are: access to relevant information, a bottom-up approach, accountability and responsibility, reporting, transparency, and the meaningful involvement of people living with HIV and affected by TB. Overall, the NSP conceptualises responses to HIV and AIDS within a maternal health or MDG framework with little explicit mention of SRHR. As in the NCFPP & SDG, the NSP makes little attempt to engage with the actual details required to deliver SRHR, suggesting that the commitment to delivering on these rights is lacking.

3.1.1 Summary
As shown above, the reorientation of HIV, STIs and fertility planning is characterised by:

- a conceptualisation of SRHR programming through HIV prevention activities;
- little concern, focus and leadership regarding SRHR, including contraception;
- an emphasis on particular aspects of SRHR, such as maternal health or contraception, with little understanding of sex positive work; and
- key programming within the most at-risk populations' framework but little recognition of the vulnerabilities of adolescents.

The fact that these policies expressly mention South Africa's complex problems, identify vulnerable or marginalised categories of people, state the need for reorientation within the policy response, and identify implementation challenges and interventions, presents a promising picture. However, none of these policies have any direct reference to m-health or the use of ICT.

3.2   ICT Policies in South Africa
Prior to 1994, computers were used by the apartheid government to reinforce white superiority. 'Technopolitical' means – fingerprint databases and race-based identity registration on computers – enabled the apartheid state to expand its power and bolster control over black people (Edwards and Hecht 2010; Breckenridge 2005). This resulted in a highly unequal distribution of technology and skill with urban, white elites having telephones, computers and state-of the-art health technology while poor and rural areas were neglected and denied access to all forms of technology (DOC 2013). In the post-apartheid era, policies were revised to provide greater equity, redistribution and development in relation to telecommunications, communication and health. However, the past 20 years have seen massive technological change, including transitions from voice communication with fixed-line

phones to mobile and SMS communication, the introduction of fibre-optic and wireless technologies; transitions from vertical to horizontal systems (or ecosystem);[17] processes of technological convergence and shifts from digital to analogue systems (DOC 2014a).

Addressing these technological inequalities has been challenging and progress has been varied. For example, it was reported in 2012 that the health system still used five different data systems with very little integration across them. In addition, computers and internet access were not available in many state hospitals. Both state and private health providers struggled with 'fragmented systems', a lack of inter-operability[18] between systems and no access to appropriate technology, with only 13 per cent of health facilities connected to broadband in 2013 (DOC 2013: 220). Change in relation to telecommunications has been more rapid, because of the mobile phone, and South Africa currently has the largest telecommunications market in Africa, despite high bandwidth prices and weak broadband penetration (NDOH 2012c).

South Africa's technological vision is to implement a 'seamless information infrastructure by 2030 that will underpin a dynamic and connected vibrant information society and a knowledge economy that is more inclusive, equitable and prosperous' (DOC 2013: 5). At present, however, access to broadband and the internet remains elusive for most South Africans. To address this, the National Development Plan (NDP) envisages an 'ecosystem of digital networks, services, applications, content and devices' integrated into South African social and economic life which provides economic growth, innovation and participatory citizenship (DOC 2013: 5). The NDP thus prioritises health facilities for broadband connectivity and envisages that by 2020 all South Africans will have access to low-cost broadband.

The following four policies, all critical to understanding ICT promotion and implementation, are reviewed: the National E-health Strategy 2012–2017 (hereafter the e-health strategy); the South African Connect Broadband Strategy (or broadband strategy); the National Integrated ICT Policy Green Paper 2014 (hereafter the green paper); and the M-health Strategy and Implementation Plan (or m-health strategy), which is still in draft form. These policies all address an uneven and previously racist technology landscape.

The e-health strategy, published in 2012, is concerned with South Africa's fragmented and un-coordinated health information system (NDOH 2012c). The strategy aims to create a well-functioning national system of patient records which is interoperable and which improves clinical care, provides patient data for analysis and management and tracks patients' mobility. This strategy also seeks to ensure equity and equality of care for all South Africans arguing that gender, ethnic identity, geographic location and class should not affect quality of health care.

Linked to the e-health strategy is the draft m-health strategy, which addresses the use of mobile technologies for health. The m-health strategy, which should cover 2012–2017 but which has not yet been published, addresses challenges associated with inequities of access to health through ICT as well as dealing with South Africa's outdated, fragmented data systems. It shares the same vision as the e-health strategy, namely 'enabling a long and healthy life for all South Africans' (NDOH 2012c: 8). It, too, aims to ensure that all persons receive the same standard of care regardless of socioeconomic factors.

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[17] As a centrally controlled, unitary approach to communications is no longer feasible, the ecosystem reflects the use of a wide range of technologies, from mobile phones to technical computing appliances, and combining established health system practices and procedures with new technological approaches (Labrique *et al.* 2013).
[18] 'Interoperability' refers to the exchange of information between systems or to the flow of patient information between technological devices and across networks.

The broadband policy also addresses inequalities of access, articulating South Africa's vision for a connected and lively information society and knowledge economy. This is South Africa's national broadband policy and plan. It recognises a key role for government in 'ensuring e-education and e-health content and applications to support the promotion of safety and security, social development schemes, and home affairs' (DOC 2013: 22) and the importance of communication. The policy acknowledges that historical injustice has shaped ICT access, skill and maturity and recognises that the poor, women, rural residents, the elderly and persons with disabilities have been particularly marginalised in relation to ICT.

The green paper, published in January 2014, also responds to development and equality issues. It argues that the 'greatest challenge faced by South Africa is that of poverty reduction, creating jobs and reducing inequality' (DOC 2014a: 16). The policy asks how to improve South Africa's positioning as a 'knowledge economy and information society' (DOC 2014a: 7), while emphasising the lack of technology in rural areas and calling for careful management to avoid increasing inequality.

None of these ICT policies have corresponding budgets. The e-health strategy expects activities to be funded from already-allocated provincial and municipal budgets. The strategy recognises that many of South Africa's 'smaller m-health projects are mainly donor funded' (NDOH 2012c: 13), and identifies the development of a long-term budget and the securing of funding for implementation as a key activity to be undertaken. The broadband policy is to be funded through 're-prioritisation and rationalisation of existing budget allocations', as well as through synergies with construction or development budgets (DOC 2013: 7) with only the identification and monitoring of supply and demand-side data specifically budgeted for. There is thus a tension in the development of ICT policies for the benefit of all South Africans, perhaps most readily evident in the green paper, namely the need for not-for-profit innovation which will help facilitate equity and access and the need to work with private providers to ensure such innovation. Correspondingly, there is pressure on the government to decrease regulation and to facilitate competition and access to information (discussed in more detail below).

These ICT policies are aligned with international standards and with South Africa's international commitments. For instance, the green paper confirms that South African provisions for e-signatures and e-transactions are based on the United Nations Commission on International Trade Law model law; that procedures associated with copyright recognise South Africa as a signatory to the 'Berne Convention (1978), the Trade-Related aspects of Intellectual Property Rights (TRIPS) of the General Agreement of Trade in Services (GATS) (1995), the World Intellectual Property Origination Treaty (WIPO Treaty), and a number of other treaties' (DOC 2014a: 28). It also supports international cooperation in cyber security. The e-health strategy meets national and international mandates, such as the World Health Assembly's 2005 resolution that member states develop long-term strategic plans for e-health services. The strategy adopts internationally recognised health informatics standards and closely follows the WHO's approach to e-health, namely using ICT for patient treatment, health research, education, tracking of diseases and monitoring of public health.

All four policy documents make reference to health. The green paper aspires to enable 'all sectors of society [to] reap the benefits of the digital age' (DOC 2014a: 11) and highlights the significance of ICT for health. It refers to the broadband strategy which seeks to ensure that schools, hospitals, health facilities and government offices will be connected and to the e-health strategy. Pilot projects, such as nurses' use of 3G-enabled smartphones to help diagnosis and prescription, are seen as having a positive impact within the health system. There is, however, no discussion of gender as a social determinant of health, of women's

and girl's differential access to health services, or of SRHR. Similarly, the e-health strategy recognises the importance of ICT in relation to health, pointing to South Africa's high maternal and child mortality and the quadruple burden of disease.[19] Reducing maternal and child mortality is thus a key output in the NDOH's five-year macro plan, as detailed in the Negotiated Service Delivery Agreement for 2010–2014. A focus on SRHR is absent in these policy documents, with a preference for the less politicised maternal health focus.

The e-health strategy sees ICT as a means to enhance the referral system, to target at-risk patients; and inform decisions about moving patients between facilities. In relation to MCH, ICT can identify at-risk infants; link pregnancy and neonatal records; coordinate patients' transportation; enhance treatment and promote information services. This emphasis on technology to improve MCH is echoed in the m-health strategy, and in South Africa Connect which sees ICT as minimising hospital visits and decreasing the time spent in hospitals through better communication and health information. It encourages the development of locally relevant content; digitalisation of public sector information; promoting local demand; skills development; user-generated content on social media; and R&D (DOC 2013).

All four ICT policy documents acknowledge rural/urban disparities. The green paper recognises the lack of ICT infrastructure in rural areas as well as inequitable access to ICT benefits and services, arguing for remedial action and cross-subsidisation. It sees ICT as an enabler, in terms of tackling 'poverty reduction, creating jobs and reducing inequality' and creating a knowledge economy (DOC 2014a: 16). The e-health strategy identifies ICT as a means to overcome the challenges of rural health system delivery, arguing that technology '…could bridge the gap between rural healthcare and specialist facilities' (NDOH 2012c: 15). In particular, telemedicine can 'enable expert support to remote sites' (NDOH 2012c: 24), a position echoed in the m-health strategy which emphasises training community care workers. The broadband strategy proposes to address rural ICT deficits through community network interventions, drawing on synergies between relevant government departments, and financing additional investment in broadband infrastructure in under-serviced and prioritised areas (DOC 2013). The recognition of rural deficits is thus not in question. However, with no ring-fenced budget, linked programming between line departments and little control over private sector initiatives, these concerns are unlikely to be addressed in the near future.

Conceptualisation of the peri-urban as a particular place requiring policy attention is largely absent from these policy documents, none of which makes any reference to the particular health needs of peri-urban residents. Only the broadband strategy references the lack of broadband services in dense urban settlements.

Women and adolescent girls receive scant atttention in all four documents, yet because of technological convergence and the scope for mobile phones to offer far more than telecommunications, this is a missed opportunity to address women's SRH needs. In the green paper, e-health strategy and broadband strategy, women appear primarily as a historically disadvantaged group. The e-health strategy identifies gender as a potential axis of inequality, yet offers no discussion on how new communication technologies might encourage greater health equality. The m-health strategy recognises m-health as an appropriate technology for an improved referral system for pregnant mothers and infants. Youth and adolescents are not mentioned in either the e-health strategy or the m-health strategy. In the green paper and the broadband strategy, youth are characterised only as having experienced historical marginalisation and requiring additional entrepreneurship. None of these policies make reference to women's reproductive rights, or their right to protection, contraception planning, or sexual health. There is also no discussion of women's

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[19] The other three burdens are HIV/AIDS and TB, non-communicable diseases (NCDs) and violence and injuries.

or adolescents' right to control their own fertility or their participation in policy processes associated with MCH. The broadband strategy is concerned with protecting individuals' and consumers' rights and privacy, yet not in relation to SRHR.

3.2.1 Summary

The ICT policy arena has lots of new policy initiatives and ambitious national development targets with no corresponding budget allocations. The policies reviewed here raise health-related and inequity issues and are aware of the challenges faced by rural and peri-urban constituencies. While there is concerned effort to address maternal health, none of the policies address the full spectrum of SRHR and none of these polices have any specific orientations towards adolescents and their sexual health. There is a severe dearth of recognition of women's and girls' rights in relation to dignity, health, and SRHR. Instead women, more than adolescent girls, are identified primarily as a category of exclusion with no corresponding actions for redress. Women's and girls' SRHR are neither respected nor promoted in these policies. Communication technologies are not seen as a mechanism to enhance women's and girls' empowerment. Yet, there is enormous potential both for addressing SRH needs and for economic growth in the telecommunications industry. Most poor South Africans (75 per cent) own mobile phones (Calandro *et al.* 2012) and young mothers have expressed their interest in, and use of, cell phones for SRH information. For example, BabyInfo uses 'Mxit', a social networking platform,[20] to send SMS messages on SRH to young girls and women. Mxit has over 10 million registered users and is, among the poor of South Africa, more popular than Facebook (discussed further below). More than half of Mxit's users are aged 15 to 25 (Calandro *et al.* 2012). BabyInfo has more than 200,000 subscribers, many of whom are young women, following sexual health issues. While currently much of this information is provided by foundations, NGOs and other not-for-profit organisations, activities are keenly watched by telecommunications companies seeking to develop successful e-health business models (discussed below). The ways in which policies intersect and dynamics play out in practice is explored in the following section.

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[20] Mxit enables text-based chat rooms on mobile phones, from very basic to smartphones, deriving revenue through advertising and applications which subscribers purchase with Mxit currency.

4   ICT and health in practice in South Africa

There are no specific initiatives addressing the intersection between SRH and ICT. Nonetheless, ICT are a 'hot new area' which holds great promise as, in 2006, South Africa's telecommunications market totalled US$25 billion (Mars and Seebregts 2008). Mobile phones offer massive growth potential across sub-Saharan Africa where, at present, average subscriber mobile penetration is 31 per cent across 40 countries (GSMA 2013a: 4). This is expected to expand by 43 per cent over the next three years. GSMA[21] forecasts that mobile-related businesses will contribute 8 per cent to GDP by 2020 and sees health as dominating the 'mobile for development' market. Thus, for most companies involved in this sector, 'creating sustainable revenue streams is one of the top priorities' (Cargo 2013: 25). There are many examples of ICT promoting health, including Cell-Life, LoveLife, Hiv911, The Right to Know, Soul City, MAMA, mHelp, I choose when, network of six BSMART, Talk and Tango, SMARTSEX, HIV360, and LOVESITES. This multiplicity of projects and their lack of connection with the above-reviewed policies, raises questions about the extent to which ICT innovation and practice is aligned to policy.

As is clear in the preceding discussion, both sets of policies (health and ICT) have addressed MCH, a policy issue which has wide-ranging stakeholder support and which is relatively uncontroversial. Both sets of policies recognise a key role for ICT-bolstered delivery of health care and MCH. These are, as one respondent explained, 'safe' topics, topics about mothers and feel-good sensations or, as they joked, about mothers and apple-I (apple pie or Apple iPhones).

However, when it comes to addressing adolescent sexuality and SRHR, a wide gap exists with most health policies making little explicit mention of ICT and most ICT policies neglecting adolescent SRHR. The issues associated with SRHR – sexuality, abortion, gender-based violence, sex-positive messaging and teenage sexual pleasure – are politicised, involving religious and, moral values, and receiving more polarised opposition.

This disconnect is also reflected in government departments. Representatives from the DSD explained that their focus has been on government commitments to SRHR, in particular to the ready availability of contraception, violence against women and children and substance abuse. In contrast, the Minister of Health prioritises health information systems over SRHR issues. As a consequence, there is 'very little interface' between SRHR and ICT and between the NDOH and DSD: 'the Department of Health doesn't talk to us'. Similarly, among researchers and implementers: some SRHR experts have limited understanding of the current use, and extent of, ICT in the health domain and some implementers have only partial perspectives on SRHR and are unaware of their contested nature.

In the world of m-health pilots, policy does not play a strong role. The GSMA (2013b) identifies the lack of clarity on privacy, data ownership and consent and the lack of a 'nationally mandated framework for standards and interoperability' as the main policy challenges for mobile-related businesses. Only one NDOH respondent referenced the NCCG policy, but not in relation to m-health. As the following quotes indicate, most respondents did not identify any influential policies which they respected.

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21 GMSA was initially formed in 1982 as Groupe Speciale Mobile (GSM), the Confederation of European Posts and Telecommunications, in order to develop pan-European mobile technology. In 2003, it was renamed the GMS Association or GMSA. In 2011, GMSA reported over 6 billion customers or global mobile connections and more than 500 million HSPA (high speed packet access) connections worldwide. The GMSA represents the private sector and its interests in ICTs in relation to MomConnect. It coordinates MomConnect and devotes considerable time to advocacy, ministerial engagement and policy development. It is on the Board of the African Union, with which it works on regional e- and m-health strategies (www.gsma.com/aboutus/history – accessed 12 January 2015).

There are no helpful policies.

I have not come across any useful policy.

The scary thing is how possible it is to do this without ever coming up against these policies. Anyone can put a sexual health and advice site up with no restrictions, no regulations.

That's the reality of this field. We are out there running a service, but with no knowledge and no regulation to make sure that we do it appropriately.

I worked on the e-health and m-health strategy. Let's say they are works in process and not particularly useful or strong strategy. They [government policymakers] need help.

As several respondents pointed out, even in areas where there is good policy, implementation is challenging (see also McIntyre and Gilson 2002). Furthermore, as other respondents suggested, policy is frequently not sufficiently correlated with need. South Africa's ICT policy focuses on expanding broadband access, and on 'developed country' standards. It tends to see cell phones as automatically overcoming gender exclusions, yet researchers pointed out that adding more phones does not equal access. Rather, they argued, there are significant structural factors which limit women's use and access to ICT. For example, 15 to 20 per cent of all South Africans over the age of 15 are illiterate with up to 30 per cent being 'functionally illiterate'[22] and with lower rates of computer literacy. Mars and Seebregts (2008) estimate that 50 per cent of the rural population is able to understand health information messaging. In addition, about 46 per cent of all South Africans live in rural areas where they may not have good mobile phone signals. Unemployment ranging between 25 and 40 per cent limits people's ability to pay for mobile phone and other services. In addition, South African patriarchy is keenly felt in the rural areas, where women are seen as minors who rely on men for access to land and survival (Dlodlo 2009). Women are also not encouraged to understand or manage technology. Thus, as one respondent explained: 'Access mirrors inequality offline'. Addressing inequality in women's health is therefore not just about providing more women with phones. Rather, a transformative approach is needed, which has dedicated programmes, regulates prices and works with civil society for reform and for SRHR, (also see Jennings and Gagliardi 2013; Hafkin and Taggart 2001; Bo Nielsen and Valdrop 2014).

The need to understand how to do things in a policy vacuum and where policy struggles to keep up with on-the-ground progress means that – as several respondents indicated – policy is frequently made 'on the hoof'. In planning MomConnect, decisions that had to be made included whether to use national identification systems or local identifiers; and how to store data. Rather than being informed by policy, actual practice and clinics' current recording systems shaped the decision-making process. As one respondent indicated: 'At the formal level there is the draft m-health strategy, but it is not yet public. It is an interesting space with policy being developed as you go along'. Thus decisions made by technical experts, rather than through formal policy processes, will critically shape the future of m-health in South Africa. This, for many respondents, was problematic not least because of tensions between the health experts and technical ICT experts. NDOH health experts were highly aware of the potential offered by m-health, but were unable to make decisions: 'We don't know how to do it; and the only people we can speak to look like salesmen'.

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[22] Literate in one or more of South Africa's 11 official languages, but not in English and unable to access health information available on mobile phones or online (Mars and Seebregts 2008).

Mxit has emerged out of this context in which ICT projects and pilots can experiment and where policy has lagged behind. Enabling text-based chat rooms on mobile phones, Mxit was seen by one respondent as having 'exploded telecommunications between teenagers' in South Africa. Mxit is the 'coolest place to connect for free' where adolescents hear about parties, interact with others and source information. Yet for many, Mxit has been seen as the 'work of the devil', echoing public concerns about adolescents' online safety. There was an apocryphal story of a young girl who was approached, on Mxit, by an older man, who disclosed personal information and ended up being raped. True or not, this story, and the idea of Mxit as an area of unrestrained sexual predation, continues to carry weight for some. There is substantial critique and angst in relation to ICT's promotion of transactional sex with 'sugar daddies', who use cell phones as a means to identify targets and, to control young women (also see Posel 2011). Questions about women's online safety are expanded when they step outside conventional gendered roles. For women who support feminist or lesbian rights or who advocate broader SRHR, attacks online through swamping, spamming, threats of personal violence, hate speech and images of extreme sexualised violence are common.[23] As one respondent researching issues of sexuality and the internet indicated: safety is an issue as for women who participate in contentious human rights issues as ICT-users can experience blurring between on- and off-line realities. As Mohammed *et al.* (2014: 17) suggest, 'what begins as online harassment turns into real-life violence'.

Women and adolescents are not, however, always victims of ICT and online platforms. Experience within South Africa's leading sex work advocacy group, SWEAT, and their membership association, Sisonke, reveals that sex workers use ICT to engage with clients and to keep safe among themselves. Sex workers have Facebook sites and are active on Twitter, enabling them to address some SRHR issues overlooked by the health system.[24] Similarly, members of the Right to Know campaign commented that the instant messaging service Whatsapp has been a really good tool for organising. In 2014, abortion rights activists used Whatsapp to plan a protest on the International Day of Action demanding access to safe, legal abortion. They have also formed Whatsapp groups for advancing debate on legal, health worker, advocacy and m-health issues.

Given the above-mentioned policy challenges, the following case studies examine ICT projects in South Africa. They show how – in the absence of any policy articulation about the intersections between ICT and health and of government funding for policy implementation – policy is being made through on-the-ground practice, with the emphasis narrowly focused on MCH and a lack of commitment to addressing rural and peri-urban technological deficits.

4.1   Case study 1: MomConnect

In August 2014, the Minister of Health launched MomConnect, a free cell phone-based health service. Targeted at all South African pregnant women and mothers of children not yet a year old, this provides stage-based advice and information on pregnancy. There are three components to MomConnect:

- to build South Africa's first pregnancy register;
- to send stage-based messaging that promoting behavioural change, improves clinical outcomes, and identifies high-risk behaviour; and
- to enable women to rate the health service they receive.

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[23] See www.genderit.org/about (accessed 3 January 2015).
[24] See www.sweat.org.za/ (accessed 3 January 2015).

The NDOH, concerned with how to support pregnant women; to develop a reliable database and to improve MCH, started talking about m-health in 2009. It undertook a few small projects and set up a task team to review m-health and develop a national strategy. The result, MomConnect, is South Africa's first national level m-health project. It reflects the Minister's desire that 'one million women get messaging services'.

MomConnect is modelled on MAMA South Africa, an m-health programme introduced in 2013 which has had a very positive reception. MAMA focused on sending women text messages linked to their stage of pregnancy, about HIV and antiretroviral drugs (ARV), psycho-social support messages, and appointment reminders.

MomConnect provides data collection tools, supports clinical care, and builds the national pregnancy registry, both at individual level and at aggregate district level, to feed into the District Health Information System. It is implemented through a collaborative partnership between the NDOH, non-profit organisations such as the Praekelt Foundation,[25] Clinton Health Access Initiative, Jembi Health Systems and Soul City; research organisations (the Council for Scientific and Industrial Research (CSIR), and the mHealth Alliance); and private sector representatives (GSMA and mobile network operators). As a large collaborative project comprising various government departments, private sector representatives, NGOs and foundations, MomConnect has not been without challenges. Critical issues include: the funding partnerships with phone operators; dynamics and priorities between and within government departments; and the content of the SMS messages. In terms of government dynamics, respondents mentioned the NDOH 'barriers and personalities' as a challenge. They noted that NDOH members focused on their perspectives and needs, demonstrating 'a very siloed approach'. This is a common criticism of health systems and although it was suggested that m-health can be a mechanism for cross-cutting work and helping individuals understand broader structures, this was not the way negotiations developed.

The SMS messages sent to pregnant women and mothers of young children were based on MAMA messaging, and developed by a multi-expert team: the NDOH with health and health system expertise, the Praekelt Foundation as leaders in mobile communications and the UK-based organisation BabyCentre as leaders in MCH communication. Considerable effort went into tailoring these messages, which comprised 160 characters. The NDOH sought not to lose any content and to 'find an appropriate balance' between technical, medical jargon and colloquial language. MAMA messages were 'soft, developmental messages' which described the particular stages of fetal development. The NDOH wanted 'hard core', 'instructional' messages directed at behavioural change: 'you need an HIV test'. It also wanted to send only essential messages to reduce costs. 'We had to cut some, merged some and decide which to have,' said one representative.

The MomConnect SMS messages were tested by the Soul City Institute (2014)[26] which reported that some of the messages were clear, educational and well received by women and adolescents. Others, however, needed further consideration. The institute identified difficulties in explaining, translating and quantifying scientific terms, such as 'fortified foods' and 'too much bleeding'. It also highlighted a lack of clarity in combined messages. For example, one message informed women that 'your baby is growing fingers' and told them to visit the clinic if they felt unwell; women wondered if the baby's fingers induced their ill health. The messages also assumed that women were not poor, that they could access health clinics, had clean water, could save, keep credit on their phones, and buy healthy food.

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[25] Praekelt Foundation, founded by Gustav Praekelt, is connected to the commercial companies, Praekelt Consulting and Praekelt Africa, which develop 'platforms that allow clients to distribute content or marketing messages to mobile users'; www.endeavor.org/entrepreneurs/gustav-praekelt/242 (accessed 3 January 2015).
[26] An edutainment group for health and development communication, Soul City is a not-for-profit NGO.

Soul City also pointed out that MomConnect messaging about violence and abuse did 'not come out clearly' (2014: 30). Most MomConnect messages do not touch on the reproductive justices that women face in terms of inequalities and SRHR. There is little mention of abortion, HIV prevention, adolescent sexuality or contraception. There are a few precautionary messages on smoking, illegal drugs and alcohol, 'primarily saying this bad for you, give it up if you can'. Thus, although MomConnect provides information which augments women's knowledge of pregnancy and childbirth, it also affirms women's dependent, domestic and child-rearing role. It offers MCH enhancement without addressing critical political issues around rights, about control of fertility and around women's role or position in society. The result is that MomConnect's messages are about 'safe topics', about mothers and Apple-I: 'There are no political waves, it's non-controversial' said one respondent. MomConnect goes some way towards addressing MCH in South Africa, but it does not address adolescent SRHR as these are not its primary focus and it does not address the SRHR of women living in rural or peri-urban contexts (discussed further below). The NDOH has not taken the opportunity of developing MomConnect within a comprehensive SRHR framework. This limits the NDOH's potential to address unwanted, unplanned pregnancy or other sexual health matters.

The design team met in November 2014 to discuss and address these concerns. In addition, the government DSD, which has a commitment to SRHR and reproductive justice, has recently met with the technical team of MomConnect to provide input into the messaging and content. The DSD is also interested in linking MomConnect to its internal '1,000 days' programme, which recognises that the first 1,000 days of life are critical and lay the foundation for future health, personal wellbeing, individual capacity and social welfare, and therefore provides social grants and addresses women's resilience in caring for themselves and their young children.

4.2   Case study 2: Young Africa Live (YAL)

As is evident in its slogan, 'sex, love and relationships in the time of HIV', YAL is a social network that enables young people to anonymously use a mobile platform, to talk about sexuality, relationships, HIV, STDs, and how these issues are affected by culture, socioeconomic status and context. YAL came about as a result of the dearth of appropriate information on health and HIV/AIDS available on mobile platforms (also see Pfeiffer *et al.* 2014). Aware that tens of thousands of young people were active on network operator-based mobile platforms such as Vodacom's Vodafone Live Platform, the Praekelt Foundation resolved to harness this existing audience on a mobile platform where they were already active. The aim was to 'do something positive', 'to provide HIV-information… so that people find it interesting and engaging' and 'to talk about the things that fuel aids, such as intergenerational sex'. Praekelt Foundation funded YAL for the first 18 months, and then, in 2009, persuaded Vodacom and USAID South Africa to include this platform in a public–private partnership programme aimed at using mobile technologies to address AIDs in South Africa. Today, YAL exists as a free-to-browse-and-engage-on platform for Vodacom's customers. Non-Vodacom customers can access the platform via www.yal.mobi where normal data charges apply. YAL is also available to the Mxit audience through the YAL app.

YAL is highly popular with young people and currently has nearly 2 million registered users. YAL does refer to SRHR and tackles politicised topics such as abortion, informs people that 'it is your choice' and 'if you do choose this then don't have a backstreet abortion and please understand the consequences'. YAL does not provide professional medical advice. Instead, key terms such as 'abortion' or 'suicide' trigger automated responses that provide users with appropriate national helpline services and users are encouraged to access professional care.

YAL, in its recognition of young people's sexuality, its acknowledgement of SRHR, its willingness to address topics such as abortion and to focus on individuals' choice, is politically progressive. It seeks to discuss and challenge social norms. ICT and mobile

phones are seen by YAL's implementers as facilitating social change, because information can be personalised to users. As one respondent, familiar with YAL, commented, 'it's not a billboard on the side of the road and a one-size fits all approach'. Yet, at the same time, YAL reaches millions of young people. For example, YAL's live chats with medical doctors speaking on HIV or infectious disease or sexual health allow users to pose questions. This popularity is reflected, the respondent continued: in the fact that 'usually the expert gets flooded with questions, about 400 or 500 during a two-hour live chat session'.

As suggested above, YAL is not the only mobile platform that offers sexual information to users. Nor is it alone in reporting incredibly high usage figures among young people. BSMART reported the 'insane number of 700,000 users when it launched'. There is, it appears, a huge unmet demand among young people for sexual information. It is, as one implementer put it, 'the number one topic that teenagers ask for'.

Mobile spaces such as YAL and BSMART are, however, not only spaces for sex and health knowledge which support healthy SRH choices. They are also platforms for sexual abuse. YAL has very strict rules on what is acceptable and full-time moderators delete swearing, racial slurs and blasphemy. As one member of the Praekelt Foundation commented: 'We moderate and delete quickly when people share sex tips or when it gets too raunchy'. It is also necessary to switch off users' ability to comment online after 10pm. Other implementers running South African social networking platforms on SRH report similar experiences: 'You have to be really careful otherwise it does become "smutty". Threads must be moderated, otherwise you just get comments about people looking for sex. You have to keep a tight rein on this'. As these examples show, technology cannot replace human expertise and time investments. Sustaining m-health initiatives, particularly those that create online social networks, is a lot of work.

4.3   Case study 3: Cell-Life

Cell-Life, an NGO working on ICT, health and development, has completed a randomised controlled trial which shows that mobile phones make a valuable contribution to medical abortion (MA). The study argued that the combination of information, self-assessment and support provided via mobile phones reduced the need for follow-up visits by clients; enhanced the experience of MA; reduced demands on MA providers; and increased post-abortion knowledge and uptake of contraception. Mobiles were used to provide SMS coaching to women as they undertook MA; to allow women to do a self-assessment of abortion completion; and for family planning information.

Cell-Life found that the SMSs were highly appreciated by most women and were effective in reducing their anxiety around abortion. The messages also improved women's understanding about what was happening to their bodies during the abortion process. The information provided on contraception is still available on Mxit, and thousands of pages are viewed every month. Ipas, an international abortion service, technical provider and not-for-profit organisation, has built on the work of Cell-Life and included SMS in their roll-out of medical abortion in four provinces within South Africa (also see Constant *et al.* 2014).

4.4   Case study 4: Soul City

The Soul City Institute represents the largest social change communication project in Africa. Using a combination of mass media, social mobilisation and advocacy, Soul City hosts a television series which aims to improve people's quality of life and health; strengthening individuals, communities and society through active citizenship, human rights and social justice. The current series focuses on SRHR issues: weekly episodes are followed up on radio and social media. Content is well researched to address health systems and process issues. The current series includes maternal health alongside contraception, abortion, domestic violence, adolescent sexual health and other intersectional themes. Soul City's

work is exceptional as evidenced by the local and international awards it has won.[27] Soul City has invested in and refined its methodologies for developing content. Nevertheless, working in partnership with the NDOH in MomConnect and in developing their series, they note that they battle with government conservatism and bureaucratic frameworks.

When Soul City provided input to MomConnect messaging, they noted the challenge of developing appropriate and nuanced health SMS texts in 160 characters. The difficulty was balancing informed evidence and research with the political imperative of implementing the service. Their work indicates the contested nature of the development and content of health messaging. This is an area which is evolving and which requires diverse skills: sociocultural and contextual expertise, health system expertise, MCH and SRHR expertise, and mobile media expertise alongside increased understanding of the nuances of media and messaging.

These four case studies show a range of intersections between SRHR and ICT through implementation, from focusing primarily on MCH with limited reference to abortion, safe access, sex positive work and sexual empowerment to providing politically sensitive yet wide-ranging messaging on SRHR and providing content on abortion, adolescent sexuality, and sexual empowerment in a complex and contested environment. The following discussions review the impact of these ICT initiatives in terms of health systems, MCH and SRHR, rural and peri-urban place and ethics, privacy and policy.

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[27] www.soulcity.org.za/news/soul-city-a-finalist-in-the-11th-annual-standard-bank-top-women-awards (accessed 3 January 2015).

5   Health systems

M-health is seen by many respondents as potentially improving public health systems. However, leadership and focus is needed as issues of sustainability, turf and project management arise. Health systems also mirror inequities as the social determinants of health – in the form of water, housing, and sanitation – can inform access to health. Some respondents suggested that, without a specific policy to address this, the technology will reinforce existing power relations and inequalities, and instead buttress an inequitable health system.

Many respondents noted that the health system itself needs to be developed and that one cannot rely on ICT to fix contextual issues. The South African health system has many systemic problems and ICT will not be a 'standalone magic bullet'. For example, in Free State Province a human resource crisis has meant that community health workers have no support. The launch of MomConnect will not solve this problem. As one respondent pointed out, the NDOH 'had to steal money from other pots to launch MomConnect'. She referred to this as 'ADHD within the NDOH – they jump from one thing to another'. Rather than requiring a new form of technology and messaging, she suggested that, 'the needs are for health services and for these services to address marginalised women'. Thus, she questioned, if indeed the new SMS messages do encourage mothers to visit clinics, will there be services available that target their needs as poor women?

Health system reform requires a coherent response from within the system. Yet, as suggested above, respondents pointed to a pattern of 'siloed' behaviour and leadership within the NDOH. For example, the national health worker hotline was discontinued at the same time as the department started nurse-initiated ARV implementation. One respondent argued that these nurses needed a mechanism for answering their questions as they undertook this new form of service provision. Another example of the lack of coherence was the human papilloma virus (HPV) vaccination. This could have provided an opportunity to test the MomConnect data collection system. Instead, a decision was made to use a paper-based system, which did not work. The result is a combination of failed paper-based HPV data recording and the MomConnect mobile-based population registry.

6   Maternal and child health and sexual and reproductive health rights

The terrain of reproductive justice and SRHR is contested and controversial, not least for some stewards and leaders in government and when international donors have specific funding constraints. Indeed, the current Minister of Health has been criticised for being conservative and anti-choice. For example, when launching the contraception and fertility planning policy (NCFPP & SDG referred to above), he made no reference to abortion. While the policy explicitly recommends a mixed methods approach to facilitate contraception within a human rights framework, he emphasised only the long-lasting implant method, Implanon. In so doing, the minister conveyed his personal values, omitting rights from women's health. This is despite the political, legal and historical commitment to sexual rights made by the current government. As suggested above, and evident in the minister's launch, the path of least resistance has been to focus on maternal health. Emphasising women's roles in motherhood is, as already explained, widely acceptable, normative and easy; it is about 'motherhood and apple pie'. Linking this with cell phones, or adopting the 'motherhood and Apple-I' approach, is similarly unproblematic.

The programmes MAMA and Momconnect address maternal health and have been constrained by different funders' interests and commitments. US funders' commitment is to the President's Emergency Plan for AIDS Relief (PEPFAR) and as a consequence implementers commented that they could not address abortion and have to be careful with the language used. A government official explained how the presence of USAID influences South Africa's focus on maternal health and limits South Africa's ability to work on SRHR. As the US has difficulties with SRHR and is not comfortable with abortion and contraception, USAID's focus is on MCH and long-term contraception, such as the injection or implant, despite – as discussed above – the knowledge that this does not fit within South African legal provisions and has severe health repercussions for women. And a donor partner observed that they work in a technocratic framework, rather than having a rights-based approach, despite recognising that this was very problematic. This pattern of influence is of concern as international funders dictate directions for South African programming which are not aligned with the current political and rights-based approach of government. While PEPFAR funding has been seen as beneficial in terms of HIV/AIDS service delivery, encouraging select stakeholder participation (see Overs 2013) and funding NGO services; it has also 'distorted recipient countries' national policies, notably through distracting governments from coordinated efforts to strengthen health systems and re-verticalisation of planning, management and monitoring and evaluation systems' (Biesma *et al.* 2009: 239). PEPFAR has been critiqued and is being monitored for failing to include SRHR in its HIV work.[28]

There are ICT projects which explicitly address SRHR and reproductive justice issues. Yet, on the whole, respondents pointed out that sexual health means different things to different people and that the NDOH has made no attempt to impose a rights-based focus on its work in m-health. The framing of this content is a failure on the part of the NDOH which has the mandate to uphold the government's political and legal framework. This failure reflects, as one respondent put it, 'very poor commitment and understanding of real issues'. It also reflects a path of least resistance given the highly politicised and polarised views on adolescent sexuality, abortion, sexual pleasure and other dimensions of SRHR and justice held by South Africans.

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[28] www.pepfarwatch.org/the_issues/sexual_reproductive_health_and_hiv_integration (accessed 3 January 2015)

7 Rural and peri-urban place

Many respondents identified special health and ICT needs for women and girls in rural, peri-urban and informal settlement contexts. As discussed above, these areas lacked technological infrastructure and extreme inequalities in access exist between these and urban areas. One of the massive potentials of mobile phones is to penetrate rural and peri-urban areas. Yet, there are constraints in terms of electricity, language, cost and design. As one implementer said, 'Space is not an issue, rather it is cost'. Patterns of inequality cannot be addressed simply through access. Implementers recognised that special policy measures are needed to support infrastructural and other developments in rural and peri-urban areas and that, if left to market forces, they would remain under-resourced. Yet, as no such policy prescriptions existed, most technical interventions made no special attempt to deal with challenges of place. For example, although the NDOH is very aware of the challenges of rural and peri-urban health for women and adolescent girls, MomConnect does not deal with high-risk HIV-pregnancies in peri-urban areas or with ensuring transport and finding a safe delivery place in rural areas. It was, as one member of the task force said, 'too complicated to add any nuance at this stage'. Thus MomConnect deals with questions of place in terms of connectivity. Implementers argue that 'technically on paper, there is no area [in South Africa] without connectivity'. They recognise that this may sometimes mean that pregnant women will have to climb hills to receive their SMS messages: 'MomConnect will deal with it by hoping that there is a facility to receive a signal and that women may have to try different SIM cards and perhaps change their service providers'.

The problem is political – rural, peri-urban, inner city and township areas are underserviced because of past injustice, because the poor live here, because there are no policy prescriptions forcing cell phone operators to provide technological infrastructure in these areas, and because the poor have no purchasing power. Poor women's and adolescents' health as experienced in these areas is not eye-catching – gender-based violence, abortion, adolescent rape – and their rights to challenge these experiences are difficult, politically sensitive topics which do not buy votes. Nor are they easily addressed through the sale of products. The problem of adolescents' and women's SRHR in these areas is political. Yet, for many, the solution is technical.

8　Ethics, privacy and policy

Ethical issues surrounding ICT and SRHR are deeply complicated. As suggested above, topics such as abortion, contraception and adolescent sex are highly stigmatised and are topics often kept secret. To date, however, little emphasis is placed on ethics and privacy in relation to ICT and SRHR. As one respondent indicated:

> When I first came to South Africa to look at m-health, no one talked about privacy at all. In the US and Europe people always asked about it. I still see that [lack of discussion] working here. Privacy issues are not the first question, if asked at all.

Yet, in interviews, respondents indicated concern about ethics and privacy in relation to m-health and recognised that this should be addressed. Ethical issues were variously interpreted. For some it was about the subscribers' privacy, for others about interpreting the legal constraints, and for others, about the use of personal information by third parties. Each of these is discussed in turn below.

The subscribers or people receiving SMS messages are usually first to be identified when ethical issues are raised. SMS messages have some advantages over conventional health communication – for instance, women can read the messages at their leisure and at a time of their choosing, which may enhance their privacy. As one respondent explained:

> A phone is different to a computer, it is a personal device. It is also a tool that they can use and each person can determine for his or her self how to use it. So this introduces an element of trust, in the sense that women chose to receive the messages.

In addition, the messages remain accessible so women can go back and read them again and again. However, SMS messages raise other privacy-related challenges. For instance, in cases where phones are shared, privacy is difficult and health messaging may not be confidential. In some instances, women have also complained that they have inadvertently opened highly personal messages in 'public' contexts and worried that others may have read the SMS.

ICT and SRHR also raise questions of privacy in terms of the interpretation of the law. The Protection of Personal Information Privacy Act (POPI), published in 2013, emphasises the protection of personal information. POPI places the onus on companies to ensure that they comply and has powers to impose sanctions. POPI emphasises the need to process personal information in accordance with the law; to only store the information for as long as is reasonably necessary and for legitimate purposes; to use information only in ways compatible with its original reason for collection; and to make all personal data available upon individual's requests (RSA 2013). As respondents pointed out, the Act uses very technical language, comprising of 76 pages of dense legal text. It is also 'open to interpretation and vague in terms of how it applies to m-health'. The Act makes no mention of m-health, but does specify that prohibitions on processing personal information do 'not apply to the processing by a) medical professionals, health care institutions or facilities or social services, if such processing is necessary for the proper treatment and care of the data subject' (RSA 2013: 42).

This exemption on personal data for medical purposes links to the third concern, namely the scope for MomConnect and other m-health data to be used as it passes from the NDOH to the intended recipient and vice versa. Health information is rarely neutral and therefore Bloom, Standing and Lloyd suggest that health systems, and associated information, should be seen as a 'knowledge economy' (Bloom *et al.* 2008). While the ICT policies reviewed above emphasise turning South Africa into a knowledge economy, there is no conception of

the health system as a knowledge economy interwoven in economic and market forces and relations. Understanding a health system as a knowledge economy draws attention to different actors' abilities to access and use health knowledge; to the power relations associated with health information and to the ways in which knowledge can be used to generate wealth (Tripathi 2006). It also draws attention to 'information asymmetries' in which, despite intimate knowledge of their symptoms, patients are unable to determine the best treatment and in which others might inform patients of the 'best' course of action while generating personal gain (Bloom *et al.* 2008: 2077).

The role of the private sector in m-health is particularly complex in relation to ethics, information and the health knowledge economy. As m-health has become more advanced, private companies have become more interested in its business potential. As one implementer put it: 'Two years ago, the suits turned up. The business community started to smell something'.

Understanding the costs associated with, and benefits derived from, m-health is a prime concern for many, with companies and donors investing funds specifically to work out what the business case might be. 'Creating sustainable revenue streams are one of the top priorities of most organisations', said GSMA, which is funded by the UK's Department for International Development (DFID) to develop the business case for m-health in South Africa (Cargo 2013: 25). For network operators, investment in m-health offers several potential returns: money for a service; user fees; customer loyalty; access to data; developing software and advertising. Our respondents thus identified m-health as 'the sweet spot of the biggest industry, telecommunications'.

Yet, this is not the only way of generating an income through targeting the bottom of the pyramid. GSMA is the key representative of the private sector and telecommunications, and mediated between the NDOH and the cell phone operators in relation to MomConnect. GSMA has thus had a 'terribly influential role'. GSMA is, however, awkwardly positioned to mediate between the private sector and government. It is a global association of network operators and associated companies whose interests it represents. It is a not-for-profit organisation yet has a corporate component, namely GSMA Ltd, and may as such experience a conflict of interests. GSMA negotiated the cost of MomConnect's SMS messaging over several months. The NDOH wanted a reduced rate and cell phone operators were reluctant to concede. Shortly before the launch, the private sector agreed to discounted rates on MomConnect messaging. They were, however, 'not ecstatic' about the NDOH's insistence that MomConnect be a stand-alone initiative which could not be fitted into a value chain with additional value-added services for generating revenue.

At present, the private sector is seizing opportunities, initiating online social networking and engaging in government health initiatives. The big, as yet unanswered question in relation to its involvement is: 'Is this corporate social responsibility or are these long-term revenue-generating initiatives?' The commercial case for m-health remains, as GSMA reported (2013b), 'sporadic' with not all companies revealing their business models. Network operators cannot charge money or benefit from user fees relating to MomConnect, although discussions are underway about selling value-added services linked to MomConnect. The personal data derived through MomConnect is owned by the NDOH, and questions around access and data security are not yet resolved. This information will, however, be passed through the network providers. Operators know that they have to comply with POPI, yet quite

how they might use this data while remaining within the confines of the law is yet to be seen.[29]

Even though the NDOH has steered MomConnect in a direction not favoured by the private sector, broader government initiatives, such as the Inter-ministerial Committee to Combat Alcohol and Substance Abuse chaired by the DSD, have not endorsed private sector engagement. This is because private companies have been using mobile phones – through which many poor people receive social grants – to 'ambush' recipients with aggressive marketing. As this shows, access to information can facilitate the use of personal data and information asymmetry to generate commercial profit. Within health systems, such actions are minimised through professional standards, ethics and regulatory oversight (Bloom *et al*. 2008). In the case of m-health, however, the regulatory and policy context remains unclear and open to interpretation. Entrepreneurs will, no doubt, enter this space, offering health goods and services to the poor and, where possible, drawing on available personal data to enhance sales. As one respondent commented in relation to m-health, 'If technology is the solution, then implicitly we are saying that the current market system is the solution because technology always does what the market wants.'

ICT, mobile phones and technology are highly fashionable items and excel in persuasive communication techniques. As suggested above, m-health is a good news story. Yet, significant issues concerning ethics, the security of personal data and the way in which the health knowledge economy underlie m-health initiatives remain underdeveloped.

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[29] MomConnect also offers non-financial returns, as private investors such as Johnson & Johnson and the not-for-profit organisation, the Praekelt Foundation, claim credit for the initiative, and create opportunities for companies to engage directly with prominent government representatives.

9   Conclusion

The field of ICT and health is moving at a fast pace. MomConnect illustrates the strong desire and political pressure to take advantage of ICT, and to benefit from improved health messaging. Although the bulk of South Africa's focus is on MCH, some decision-makers are using social media and engaging with the content of SRHR at a policy and implementation level. SRHR and ICT are an area with enormous potential for addressing and changing social norms. Yet caution is needed: although m-health is an emerging field, its real worth is yet to be proven. It is still a buzz term and the worlds of policy framework, legal and regulatory expertise and implementation are not yet coherent.

This research asked, in relation to SRHR and ICT, does it make a difference whether women and girls live in urban, peri-urban or rural contexts? It learned that place is indeed a factor in shaping women's and adolescent girls' experiences, but that few people – be they policymakers, health experts or ICT implementers – are focusing on this. The research also examined the policies and debates around ICT and SRHR. We found that, despite progressive policy supporting a wide-ranging set of SRHR issues, the focus has been on MCH while avoiding the more politicised aspects such as reproductive justice, health rights and adolescent sexual pleasure. Finally, we asked what policy change is occurring and whether policy works as enabler or constraining factor in relation to ICT and SRHR. The research has shown a policy vacuum and lack of intersection between ICT and SRHR. Instead, policy is being shaped through implementation. The subsequent impacts on what is acceptable, possible, realisable, or appropriate; and on what regulatory and governance requirements need to be put in place, remain to be seen as projects develop, their implications are realised and the effects of practice – in the absence of apposite policy – are felt.

10 Recommendations

- Pay careful attention, coupled with impartial research, to the role of the private sector when partnering with government; with particular consideration of regulation, vested interests, technical expertise, framing content and political influence;
- The legal parameters of privacy, ethics and safety of personal information need ongoing consideration as ICT innovate and new health system initiatives emerge;
- Given the inequity of access in relation to cost, place and uneven data services experienced by poor women and adolescent girls, develop incentives that encourage donors, NGOs, the private sector and civil society to address government development objectives;
- Government health messaging needs to be developed by health and South African content experts with appropriate time frames to allow for testing and with attention to the unintended effects of messaging;
- Donors can enhance their impact by investing in projects that reinforce progressive legal provisions within the country – for example, underscoring the recognition that maternal health will be better improved if not isolated from SRHR and reproductive justice;
- Methodologies of testing and refining messaging need to be funded, developed and adopted as best practices for ICT content;
- Encourage ICT for health integration into existing health systems and programmes, rather than stand-alone projects and innovations;
- ICT innovators need to work with the principle of medicine to do no harm and be accountable to all partners as well as the poor communities they serve;
- Online safety is paramount and more needs to be done by governments, donors, NGOs and researchers to explore possible protections (moderated online spaces, legal provisions, protection of personal data, etc.) so that women and adolescent girls, whether seeking or providing information online, can be secure and safe.

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