Future Health Index **2019**

South Africa

Country report

The Future Health Index is commissioned by Philips

Future Health Index 2019: **An introduction**

The Future Health Index is a platform that helps to determine the readiness of countries to address **global health challenges** and **build sustainable, fit for purpose, national health** systems.

Healthcare systems vary from country to country, but they share a **common goal**:

Providing quality care with **improved experiences** for both patients and healthcare professionals

The challenge, of course, is to provide that care in ways that are as efficient and economical as they are effective.

Central to ensuring improved healthcare experiences will be the deployment of digital technologies to support cost-effective, value-based, data-driven care. And yet, despite increasing adoption rates in some instances, use of these digital tools remains all too intermittent around the world. The impediments include inadequate access to technology, difficulty with integrating into healthcare professionals' ways of working and concerns about data privacy and security. These barriers are falling, though not as quickly as many of us would like.

Philips' fourth annual Future Health Index is based on a survey of over **15,000 individuals*** that represent the adult general population and **over 3,100 healthcare professionals** across **15 countries.** It explores digital health technology's impact on the patient and healthcare professional experience – two elements of the quadruple aim.

By exploring experiences and attitudes, the Future Health Index suggests paths toward even broader acceptance and adoption of data-driven healthcare, while offering insights into factors that may be impeding more widespread use of new ways of working.

After analyzing the data, **three clear themes** have emerged:

Engaged and digitally enhanced healthcare professionals
The increasing number of healthcare professionals who use technologies like digital health records (DHRs) and telehealth see better results and higher job satisfaction.

Empowered patients – access to data, more control
Individuals with access to their own health data are far more likely to engage with that information in ways that improve the quality of care and their overall experience.

Learning from forerunners
The experiences of digital health technology forerunners like China, Saudi Arabia, India and Russia provide lessons that all countries can apply.

Conclusions: how can health systems best prepare themselves for continuous transformation?
Incorporating new technologies into healthcare is a journey, not a one-time event, enabling healthcare professionals and patients to adapt as needs evolve and new challenges arise.

*Individuals: the general population of the 15 countries studied. They represent the population which healthcare systems ultimately serve, including current patients, previous patients, those with chronic conditions and those with limited prior interactions with the healthcare system.

Engaged and **digitally enhanced** healthcare professionals

Some healthcare professionals in South Africa are adapting to **new ways of working** and beginning to recognize the **benefits of digital healthcare** for both themselves and their patients. However, more must be done to reach the point where healthcare professionals are able to harness the full potential and support of digital technology in all aspects of their work, and can act as true advocates of these methods to both their patients and their peers.

Removing the remaining barriers to digital health technology use could help enhance the work lives of more healthcare professionals.

The **state of play**

More momentum is needed to increase the adoption and usage of digital health technology in South Africa

In 2019, we see that while some South African healthcare professionals are starting to use various forms of healthcare technologies in their day-to-day work, **more momentum is needed to fully recognize the potential**.

There is a significant opportunity to leverage digital health technology to address national challenges and improve the experiences of both patients and healthcare professionals in South Africa.

2019

While there are examples of South African healthcare professionals using technology, **further implementation is needed to facilitate empowerment and improve the quality of healthcare throughout the country**

40% of healthcare professionals are **using digital health records** (DHRs) in their hospital/ practice

76% 15-country average

Base: Total healthcare professionals

35% use **AI technologies** within their healthcare practice

46% 15-country average

Base: Total healthcare professionals

38% Yes

46% No

17% Don't know

Only 38% of South African healthcare professionals believe they are empowered to deliver the best care to their patients

Base: Total healthcare professionals

However **nearly a third** (29%) believe state-of-the-art technology would ***best*** enable an environment where healthcare professionals can optimally provide care to the whole population

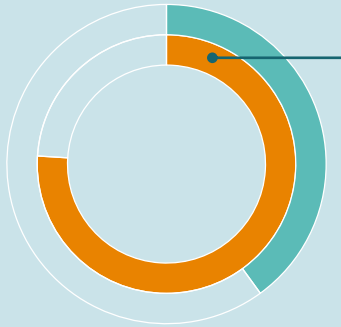
Base: Total healthcare professionals

Improved experiences through **digital technology support**

When South African healthcare professionals are supported by **digital technology,** their experience improves

Healthcare professionals in South Africa are not currently experiencing the full benefits of digital health records (DHRs) within their healthcare system, with South Africa lagging significantly behind the 15-country average when it comes to DHR adoption.

However, despite the various infrastructure challenges (i.e. infrastructure as barrier to NHI), healthcare professionals' preference for traditional formats faced with the implementation of digital health records (DHRs), and a common assumption that healthcare professionals feel these records can simply add administrative tasks to their workload; Future Health Index research indicates that South African healthcare professionals recognize how DHRs deliver on three of the four pillars of the Quadruple Aim.



40%

South African healthcare professionals are currently utilizing digital health records (DHRs) within their hospital or practice

76% 15-country average

Base: Total healthcare professionals

However **three in four (75%)**

South African healthcare professionals report that, in the past five years, their experience has been positively impacted by **having access to patients' full medical history**

Base: Total healthcare professionals

Quadruple Aim:

Improved patient experience
Improving the patient experience of care (including quality and satisfaction)

Better health outcomes
Improving the health of individuals and populations

Improved staff experience
Improving the work life of health professionals

Lower cost of care
Reducing the per capita cost of healthcare

Telehealth: an untapped tool for healthcare professionals

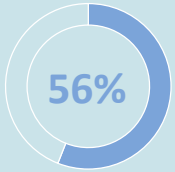
Encouraging broader use of telehealth is needed to **unlock its benefits**

About four in ten South Africans believe the healthcare system in their country does not provide them access to medical care and availability of doctors, and many have experienced not visiting healthcare professionals even when they had a medical reason to go.

of individuals says healthcare in South Africa provides them with access to medical care when needed

61% 15-country average

Base: Total individuals



say they are provided with availability to doctors when they need care

55% 15-country average

Base: Total individuals

*Telehealth: either healthcare professional-to-patient or between healthcare professionals

^Open: those who prefer remote consultations via digital channels or have no preference

Telehealth* can help address some of the reasons individuals give for why they have been discouraged from visiting healthcare professionals when they need to. This demonstrates the potential for telehealth to positively impact the patient experience by making accessing healthcare professionals more convenient.

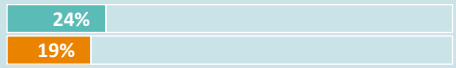
Telehealth can be leveraged to address the issues that have discouraged South Africans from visiting healthcare professionals

74% of South Africans did not visit a healthcare professional when they had a medical reason to go

71% 15-country average

Base: Total individuals

Other than limitations of insurance, **lack of time was cited as the top issue** impacting visiting healthcare professionals



Base: Total individuals

Additionally, over eight in ten South Africans have waited more than an hour to see a healthcare professional

88% have waited more than an hour to see a general practitioner

92% have waited more than an hour to see a specialist

Base: Total individuals with public health coverage (n=644)

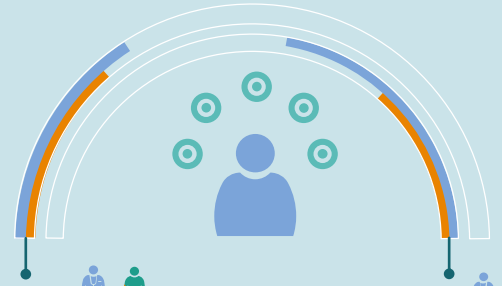
A third of South African healthcare professionals say that their patients' experience has been positively impacted by telehealth in recent years, however individuals in South Africa are less likely to be open to using this technology to bridge gaps in healthcare access, even for non-urgent care.

About a third of South African healthcare professionals see telehealth positive impacting patients' experience in the past five years

38% are open to remote consultations^ for non-urgent care.

44% 15-country average

Base: Total individuals



36% Healthcare professional-to-patient

30% 15-country average

32% Healthcare professional-to-healthcare professional

47% 15-country average

Base: Total healthcare professionals

Despite low levels of adoption, **South African healthcare professionals are comfortable using AI** for a variety of activities

Healthcare professionals in South Africa are not yet leveraging AI technologies to their full potential, as nearly two thirds (65%) do not use AI tech within their hospitals or healthcare practices.

Despite this, the majority of healthcare professionals in South Africa would be comfortable* using AI for multiple activities, primarily for patient monitoring as well as flagging anomalies. This level of comfort provides a large opportunity for South Africa to further leverage AI technology to drive efficiencies and improve experiences throughout the healthcare system.

*Comfortable: extremely/somewhat comfortable

Healthcare professionals in South Africa are lagging behind when it comes to the usage of AI within their healthcare practices

35%
of South African Healthcare professionals use AI within their healthcare practice
46% 15-country average
Base: Total healthcare professionals

However the majority are or would be comfortable using AI for a variety of activities, including:

79%
Patient monitoring
63% 15-country average

76%
Flagging anomalies
59% 15-country average

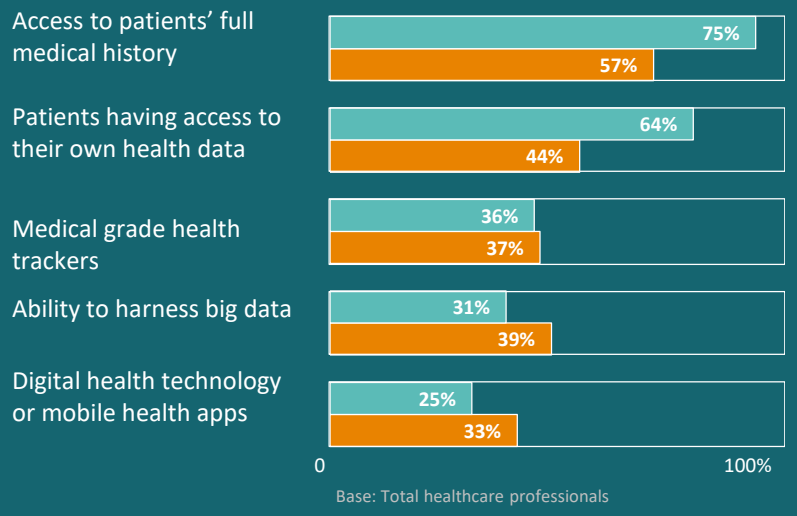
66%
Staffing and patient scheduling
64% 15-country average

Base: Total healthcare professionals

Digital health technologies **benefit healthcare professionals and individuals' experiences**

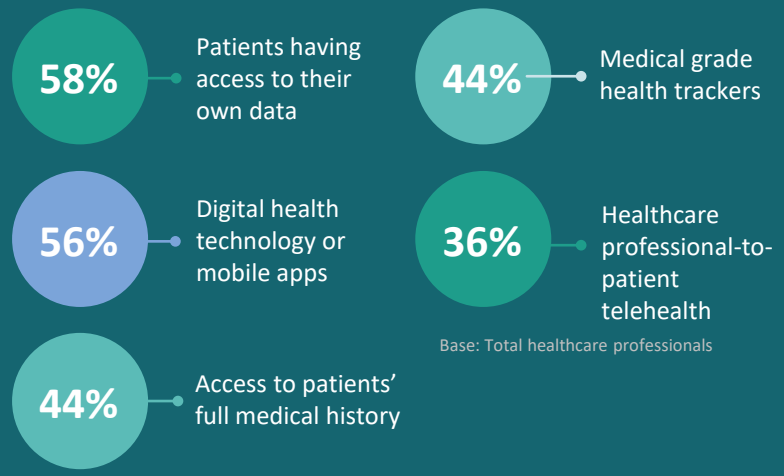
Healthcare professionals in South Africa say digital health technology and the use of health data positively impact both their experience as well as the experience of their patients. However, few individuals in South Africa are currently using digital health technology or mobile applications to track their health indicators.

South African healthcare professionals report that **their own experience has been positively impacted** over the past five years from data-related updates, such as:



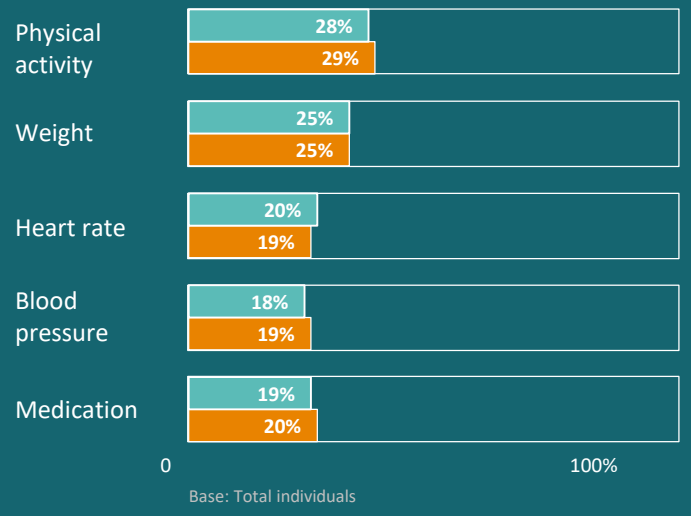
Base: Total healthcare professionals

Healthcare professionals also acknowledge the importance of patient data as **positively impacting patients' experience**



Base: Total healthcare professionals

Yet **less than a third** of South Africans are often or always using digital health technology or mobile apps to track key health indicators

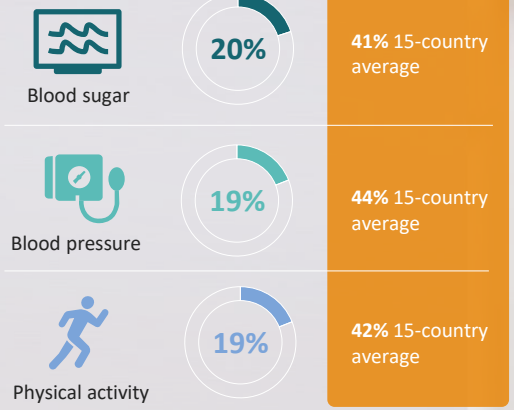


Base: Total individuals

Reciprocal data sharing is **not yet the norm** in South Africa

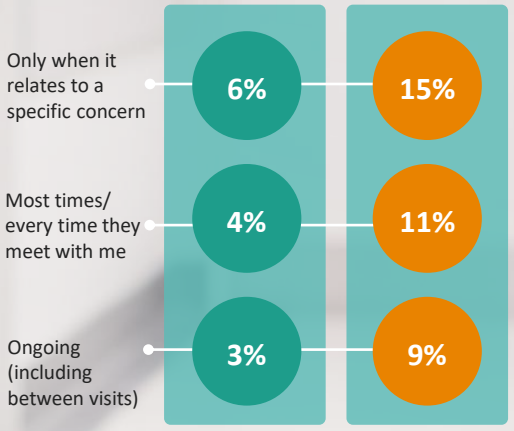
Our research shows that only a fifth of South African healthcare professionals are recommending patients use digital health technology to track their data, and that data is **very rarely shared back digitally** to the healthcare professional.

One fifth of healthcare professionals often/always advise their patients to track key indicators of health such as…



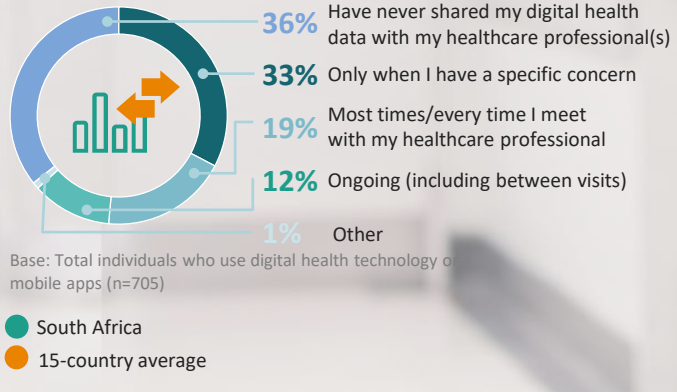
Base: Total healthcare professionals

Less than 5% of healthcare professionals say most or all of their patients share health data from digital health technology or mobile health apps with them on a consistent basis



Base: Total healthcare professionals

Additionally, **over a third** of South Africans who use digital health technology or mobile apps to track indicators have never shared data with their healthcare professionals



Base: Total individuals who use digital health technology o… mobile apps (n=705)

South Africa
15-country average

South African health professionals are sharing patient data outside their facilities, but a **lack of access to data sharing systems** is hindering further collaboration

While healthcare professionals in South Africa are ahead of the 15-country average when it comes to sharing patient data electronically outside their health facility, they are the least likely of the 15 countries studied to share patient data inside their health facility.

Concerns around a lack of access to data sharing systems, combined with a preference for traditional formats such as paper or telephone, are discouraging South Africans healthcare professionals from universally sharing health data.

Less than half of South African healthcare professionals share patient information electronically with other healthcare professionals, **either inside or outside their health facility**

48%
Shared inside their health facility
80% 15-country average

41%
Shared outside their health facility
32% 15-country average

Base: Total healthcare professionals

Healthcare professionals in South Africa are not sharing data **inside** their health facilities due to:

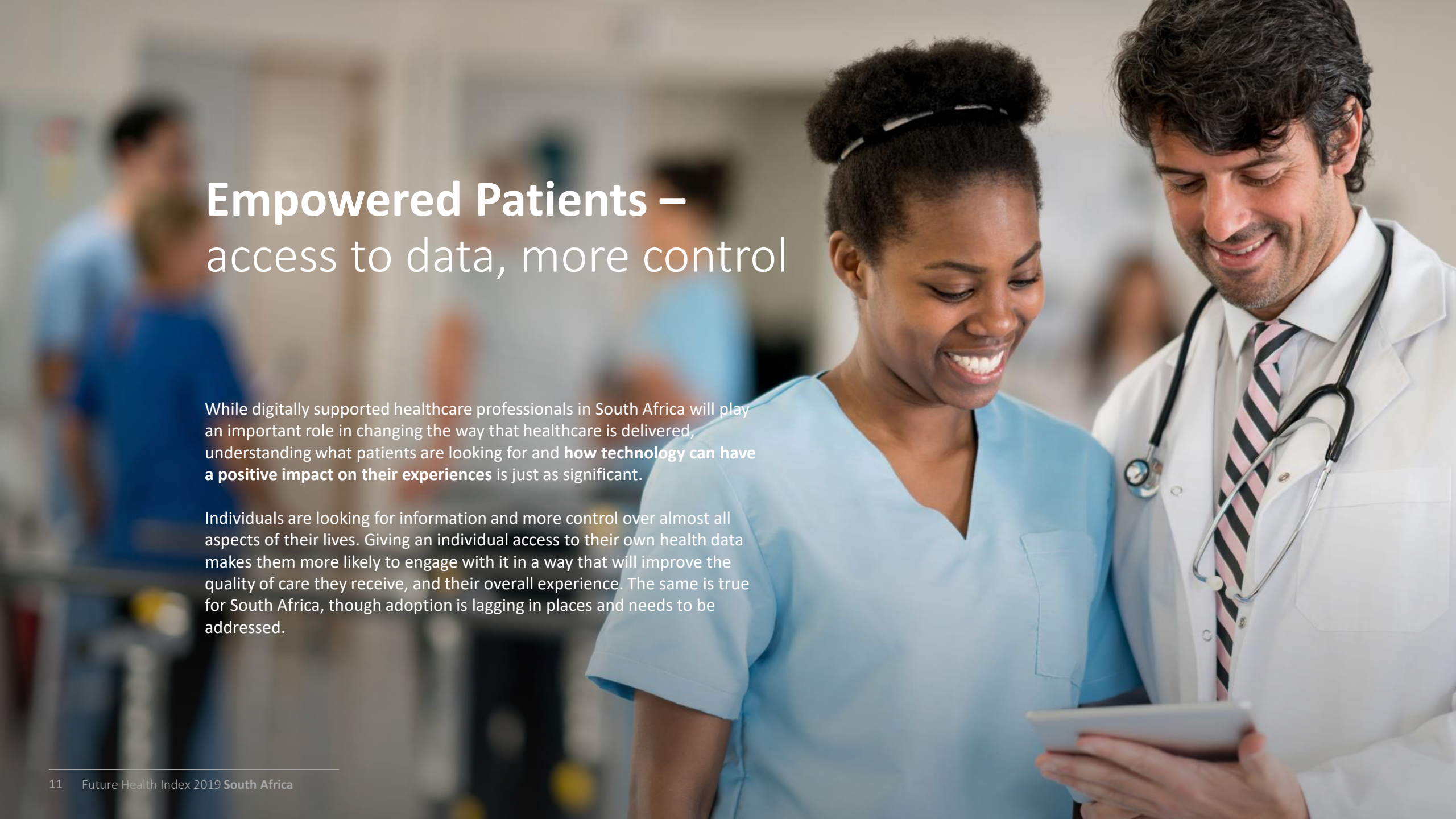
- **75%** Lack of access to data sharing system(s)
- **28%** 'Traditional' formats (e.g., paper / telephone) preferred
- **23%** Lack of interoperability of records systems
- **13%** Concerns related to data privacy

Base: Total healthcare professionals who do not share data inside their health facility (n=102)

Healthcare professionals in South Africa are not sharing data **outside** their health facilities due to:

- **74%** Lack of access to data sharing system(s)
- **31%** Lack of interoperability of records systems
- **24%** 'Traditional' formats (e.g., paper / telephone) preferred
- **19%** Concerns related to data privacy

Base: Total healthcare professionals who do not share data outside their health facility (n=114)



Empowered Patients – access to data, more control

While digitally supported healthcare professionals in South Africa will play an important role in changing the way that healthcare is delivered, understanding what patients are looking for and **how technology can have a positive impact on their experiences** is just as significant.

Individuals are looking for information and more control over almost all aspects of their lives. Giving an individual access to their own health data makes them more likely to engage with it in a way that will improve the quality of care they receive, and their overall experience. The same is true for South Africa, though adoption is lagging in places and needs to be addressed.

South Africans are aware they **need to be proactive to maintain their own health**

South Africans understand the role they must play **in** managing their own health. Eight in ten individuals believe they have the most impact on their health, rather than the healthcare available to them (6%) or their healthcare professional(s) (5%).

South Africans also understand that the way to maintain personal good health for the future requires actions on their part, including eating healthily and exercising.

86% of South Africans believe they have a role to play in their health

Base: Total individuals

1% Don't Know

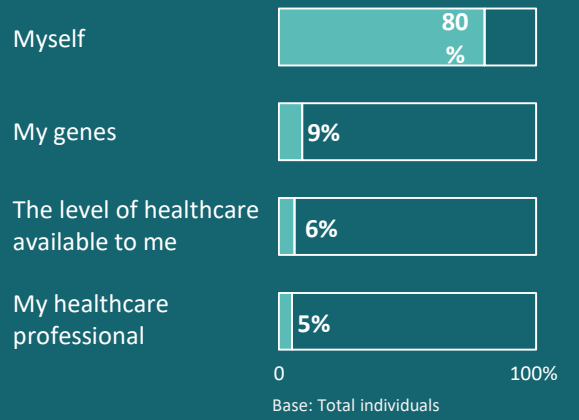
3% No

10% Maybe

86% Yes

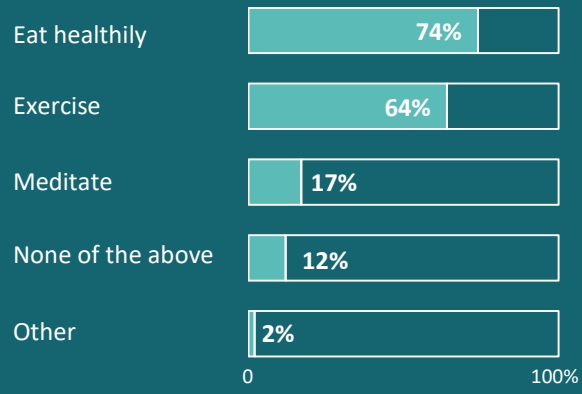
Base: Total individuals

What or who do you believe has the most impact on your health?



Base: Total individuals

Actions taken by South Africans to maintain future health



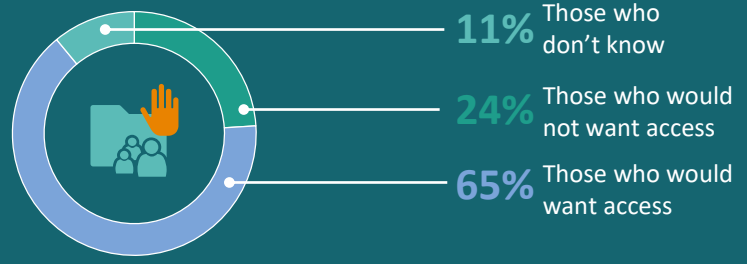
Base: Total individuals who believe they have a role to play in their health (n=972)

The demand for **data ownership**

South African patients want **ownership** of their health data

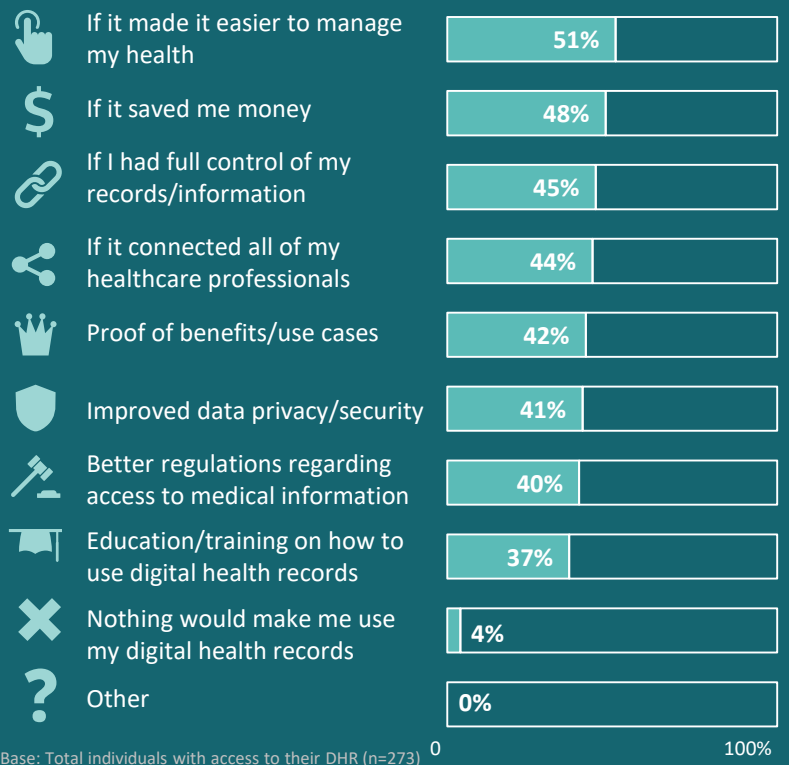
In South Africa, while some individuals are hesitant, the majority want to be empowered and have access to their digital health records. Those with access to their digital health record report better personal experiences in healthcare and better quality of care available to them than those who do not have access or aren't sure.

Nearly two thirds (65%) of South Africans who do not currently have access to their digital health record or don't know if they have access **say they want it**



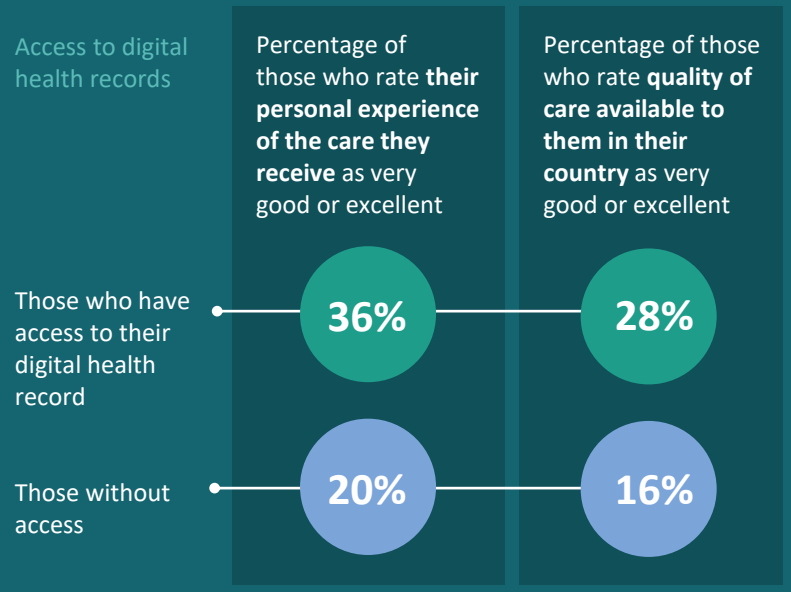
Base: Total individuals who do not or do not know if they have access to their DHR (n=734)

Of people who have access to their digital health record, **51% would be more likely to use it** if they were clear about how it could make managing their health easier



Base: Total individuals with access to their DHR (n=273)

To truly leverage the benefits of digital health records, we need to tackle access and encourage usage. Focusing on providing clarity about how they can make health management easier is key here.



Base: Total individuals with access to their DHR (n=273)
Base: Total individuals without access to their DHR (n=599)

Empowered patients are more proactive patients

The Future Health Index in 2019 indicates that empowering patients through technology by enabling them to better manage their own health – ultimately improves the experience for both patients and healthcare professionals. Pulling back the curtain and giving South Africans access to their healthcare data is the place to start, as people are more likely to be proactive when it comes to their health if they have access to their digital health records (DHRs).

Of South Africans that have access to their DHR, **over half rate themselves as proactive** when it comes to their health. Those who don't have access to are less likely to rate themselves as such.

Have access to their DHR

58% Proactive

15% Reactive

Base: Total individuals with access to their DHR (n=273)

Don't have access to their DHR

49% Proactive

19% Reactive

Base: Total individuals without access to their DHR (n=599)

With access comes openness to **data sharing**

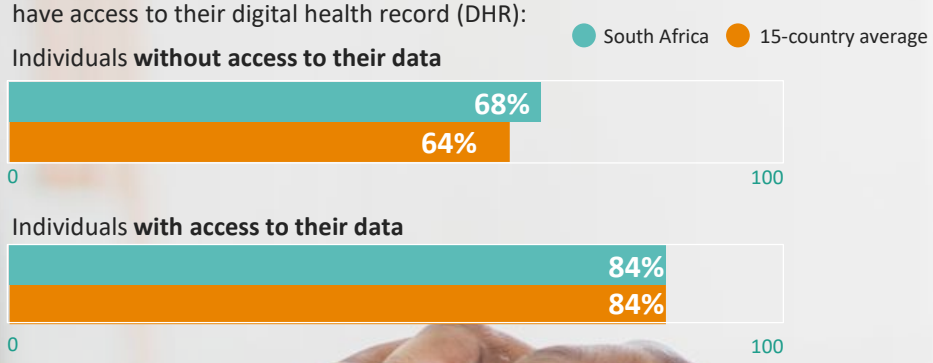
Patients are more collaborative with healthcare professionals when they have **ownership of their health data**

The research shows that South Africans are more open to sharing their data with healthcare professionals when they have access to that data themselves. Healthcare professionals agree that patients having access to their health data improves their patients' experience.

84% of South Africans with access to their data say they want their healthcare professionals to have access as well

Base: Total individuals with access to their DHR (n=273)

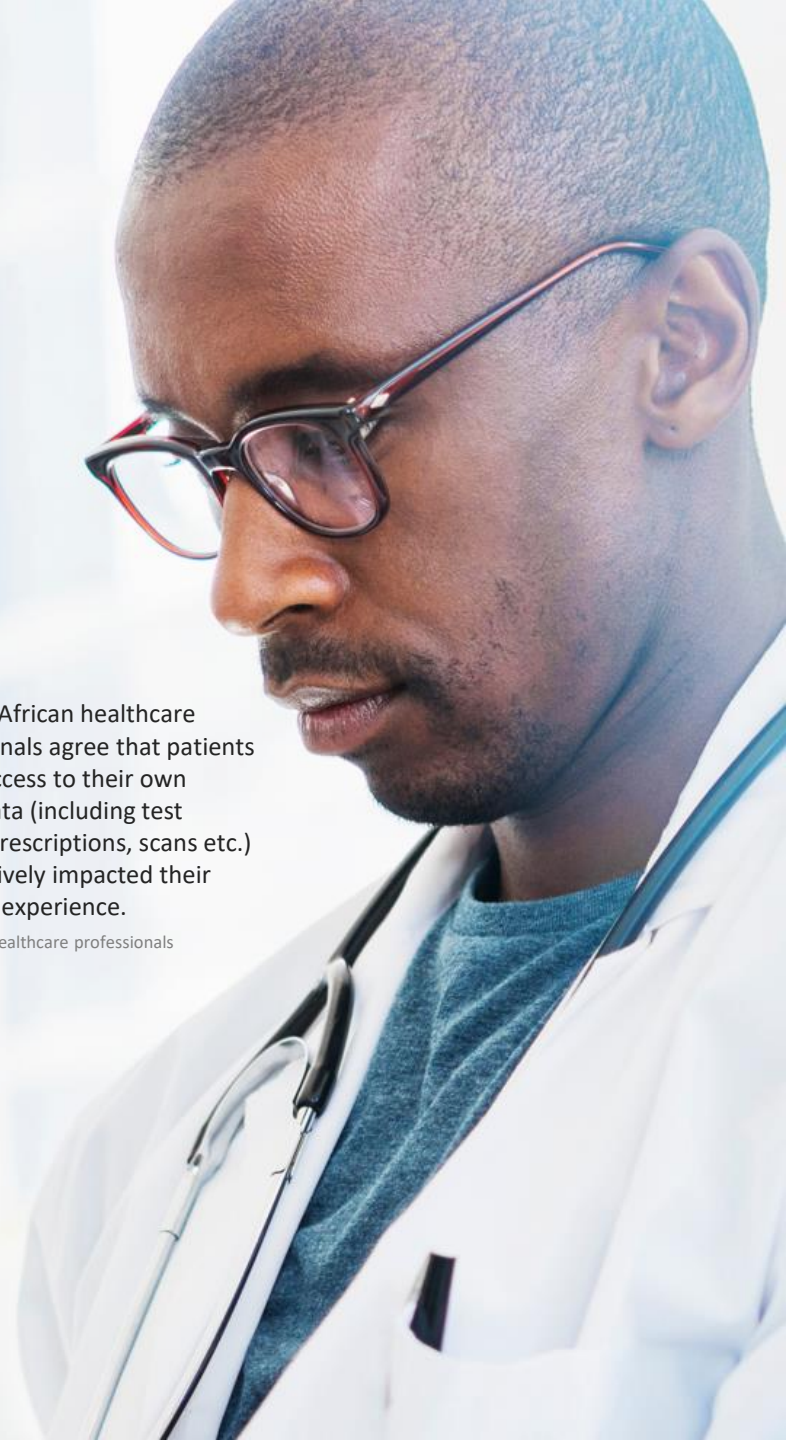
Those who want their healthcare professional involved in their care to have access to their digital health record (DHR):



Base: Total individuals with access to their DHR (n=273)
Base: Total individuals who do not or do not know if they have access to their DHR (n=838)

58% of South African healthcare professionals agree that patients having access to their own health data (including test results, prescriptions, scans etc.) has positively impacted their patients' experience.

Base: Total healthcare professionals



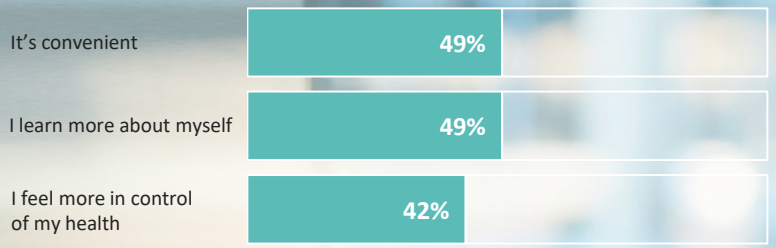
Convenience and self-awareness drive use among South Africans, but **costs and data security hinder further adoption**

Healthcare professionals can have a role to play in increasing the adoption and use of digital health technology among South Africans, as they would be more likely to track health indicators if they were trained on how to use them.

However, concerns around costs and the security of healthcare data are also impacting the rate of adoption of new healthcare technologies.

South Africans are using digital health technologies primarily because they are convenient and allow individuals to learn more about themselves. However despite these advantages South Africans are still discouraged from using them for a variety of reasons:

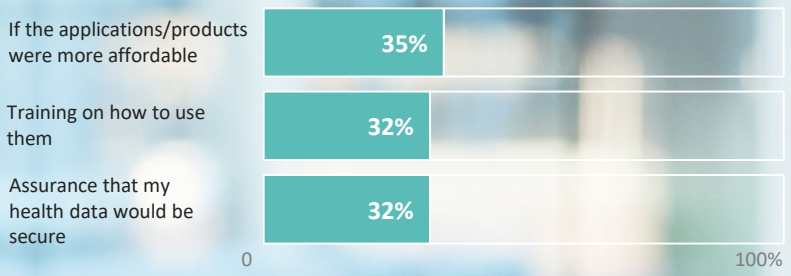
Why do you use digital health technology or mobile health apps



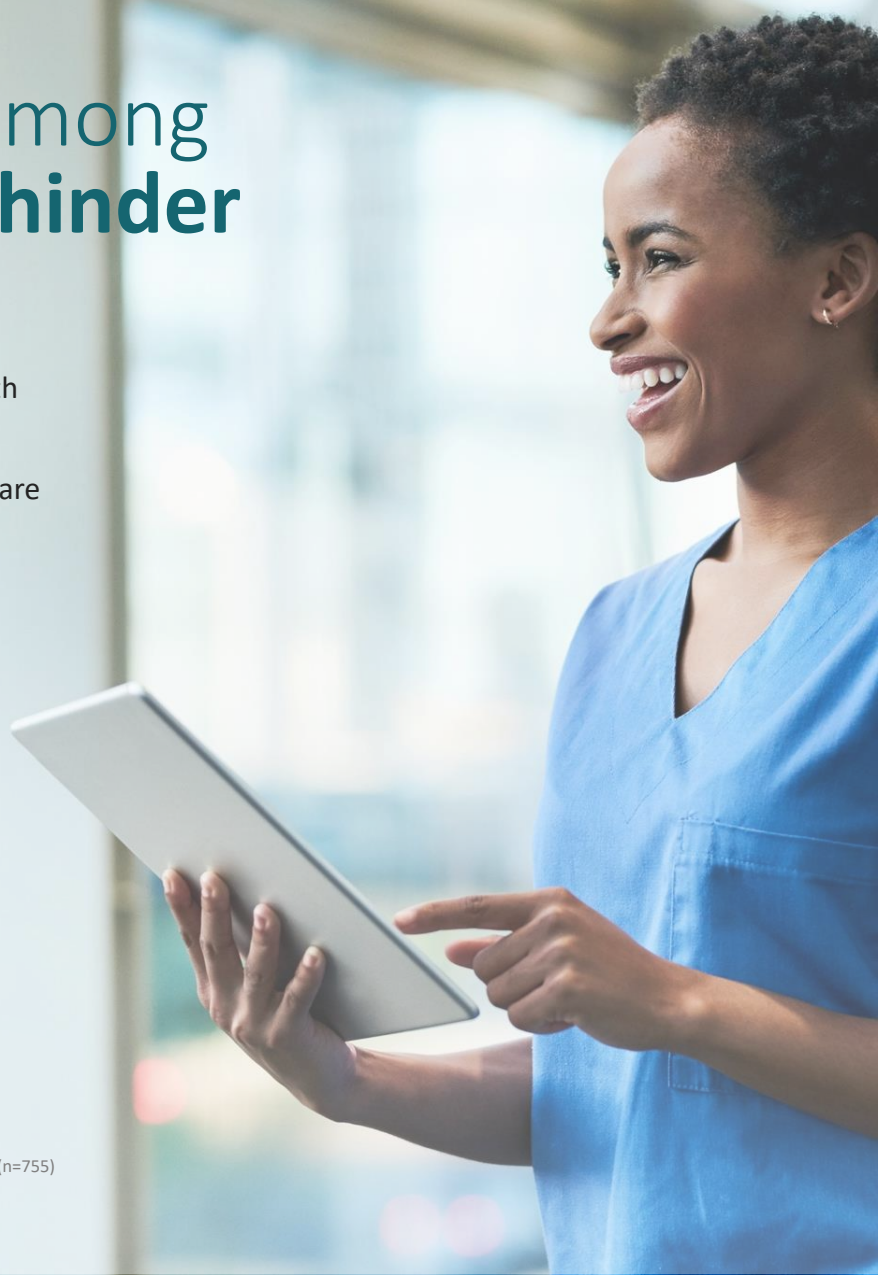
Base: Total individuals who use digital health technology (n=705)

Almost a third of those who do not use digital health technology or mobile health apps, say they would start using them **if they were trained on how to use them or if they were assured that their health data would be secure**

What would encourage you to start using digital health technology or mobile health apps



Base: Total individuals who do not always use digital health technology (n=755)



Learning from **forerunners**

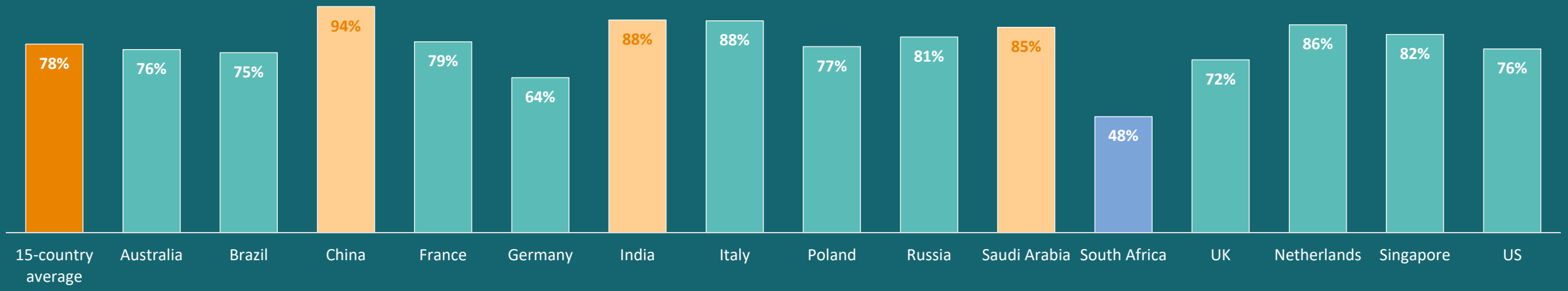
In earlier years of the Future Health Index, we saw that some emerging countries had the potential to **leapfrog others in their adoption of digital health technology**. In 2019, we see that some countries (mainly China, India and Saudi Arabia) have already leapfrogged and that these technologies are increasingly part of the everyday healthcare experience for both healthcare professionals and patients.

Although specific challenges and circumstances differ from country to country, the experiences of digital health technology forerunners provide lessons that South Africa can learn from and apply to its own healthcare systems.

Some countries are making the most of digital health technology, moving steadily from **gaining access** to the technology, to **using it**

China and **Saudi Arabia** are consistent forerunners when it comes to adoption and use of all new technologies. Some other emerging countries, including **India**, are also excelling in specific areas.

Percentage of healthcare professionals who currently use any **digital health technology** or **mobile health apps**:



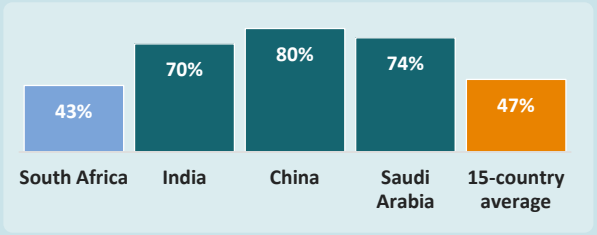
Base: Total healthcare professionals

Exposure to digital health technology increases how **proactive individuals are in managing their health**

Some emerging countries are particularly likely to have individuals that track healthcare indicators, and use that data as a prompt to take action regarding their health and contact their healthcare professionals. While only slightly behind the 15-country average, South African individuals, however, are not yet leveraging digital health technology to its full potential.

Increasing not only the adoption, but also the utilization of digital health tech among South African individuals could empower patients to adopt a more proactive attitude toward health management, ultimately improving healthcare outcomes.

Individuals in **India, China,** and **Saudi Arabia** who use digital health technology or mobile apps frequently report that the information they receive from their digital health technology or mobile apps led them to contact a healthcare professional



Base: Total individuals who use digital health technology or mobile apps (n=705)

South Africa falls slightly below the 15-country average when it comes to individuals tracking their health indicators.

41% of South African individuals who have seen a healthcare professional in the past year **take action** relating to their health by **tracking their health indicators.**

46% 15-country average

Base: Total individuals who have seen a healthcare professional in the past year (n=514)

In **India** specifically, revenue for wearables is expected to show annual growth of **5.8%**. User penetration is expected to hit **4.6%** by 2023, which is steady growth from the current level of **4.5%.**

China generates the most revenue across the 15 countries included in the 2019 Future Health Index, for wearables, at **$4,553 million** in 2019, and is expected to see annual growth rate of **3.6%.**

In Saudi Arabia, revenue for wearables is **$49 million** in 2019 and is expected to show annual growth of **4.6%.** User penetration is currently at **3.9%.**

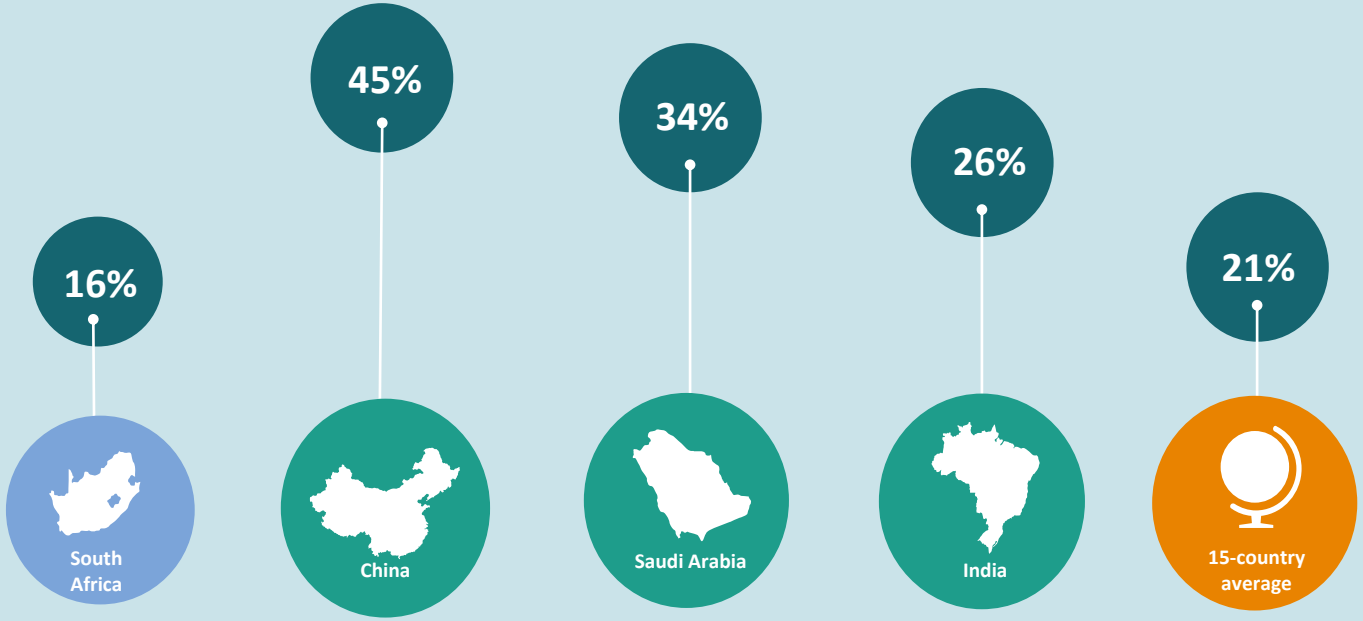
Within the wearables market, South Africa is performing well when it comes to annual growth rate and user penetration, indicating an upward trend in digital health tech adoption.

Countries such as China are **leading the way for AI in healthcare**

China has led the share of global investment and financing in the field of AI between 2013 and Q1 2018 with 60% of the global total, followed by the US (29%) and India (5%). This could be allowing them to experience more of AI's benefits, and other emerging countries perform strongly in the Future Health Index data when it comes to AI.

South Africa lags behind these other emerging countries, as well as the 15-country average, when it comes to the usage of AI within healthcare. Patients in South Africa are likely worried that AI will substitute the human aspects of their healthcare experience, as almost a third (32%) associate AI with less human interaction.

Healthcare professionals in China, India and Saudi Arabia are among the most **likely to use AI technologies to improve the accuracy of diagnosis**



Base: Total individuals

Forerunner countries have used technology to overcome **availability challenges**

Through our research we found that, in many cases, telehealth adoption is higher among healthcare professionals in countries with low physician density, perhaps due to a demand for an alternative solution.

South Africa appears to be the exception here, which poses a large opportunity for the country's healthcare system to leverage telehealth technologies to address the challenges associated with a shortage of healthcare professionals.

	Physician density per 1000 people*	Telehealth adoption among healthcare professionals
South Africa	0.8	47%
China	1.8	89%
Saudi Arabia	2.6	75%
India	0.8	67%
15-country average	2.7	61%

Base: Total healthcare professionals

When asked what would best enable an environment where healthcare practitioners can optimally provide care to the whole population, healthcare professionals selected a higher number of healthcare professionals and state-of-the-art technology. The South African healthcare system could be leveraging telehealth technologies to address these gaps in availability.

37% **A higher number of appropriately skilled healthcare professionals**

29% **State-of-the-art technology to assist with diagnosis and treatment**

18% **Improved compensation**

Base: Total healthcare professionals

*Based on 2016 and 2015 data, depending on which is available per country

Conclusions: how can health systems best prepare themselves for continuous transformation?

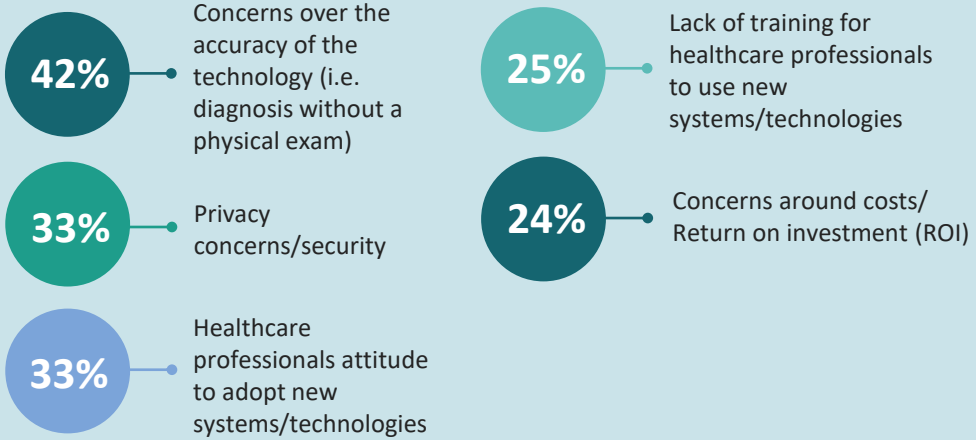
Health systems are in continuous transformation. And so are the digital healthcare technologies that countries are adopting.

As our research shows, the adoption of these technologies is a journey, not a one-time event. That is why, as the challenges and needs evolve from country to country and certain barriers fall away, healthcare professionals and patients **must adapt as they adopt** new technologies, learning and adjusting as they go.

While the forerunners are solving challenges and using digital health technologies, barriers to **broader adoption** remain

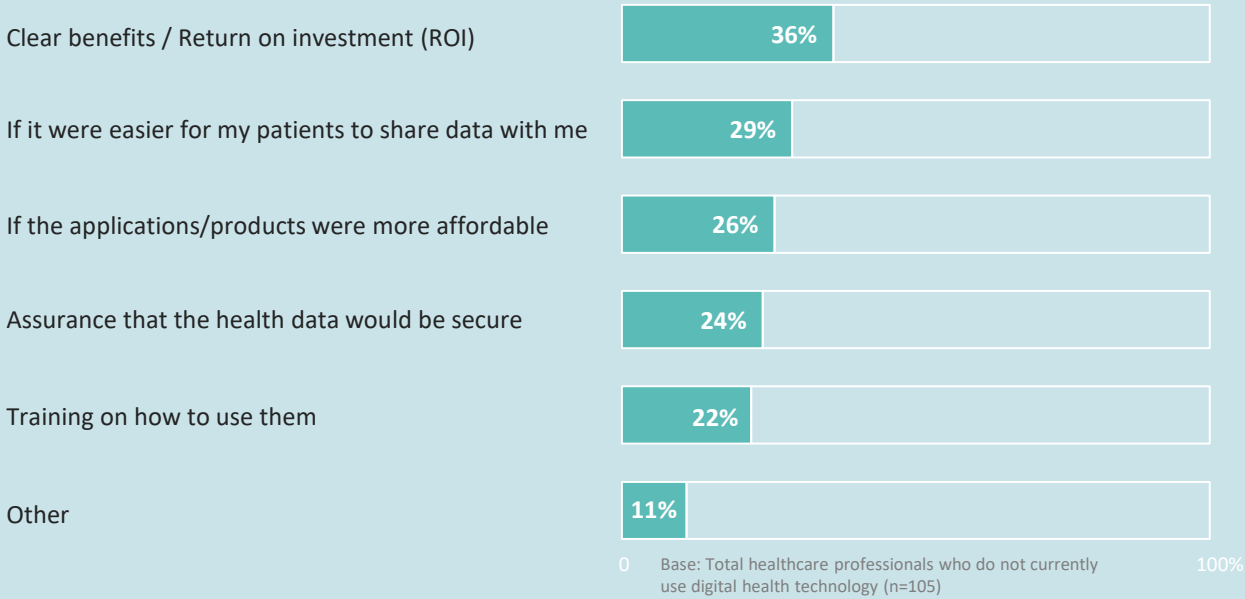
Even among the most advanced countries in terms of the adoption and usage of healthcare technologies, such as China, challenges still exist on an ongoing basis. To increase the usage of new healthcare technologies including telehealth and AI within the South African healthcare system, healthcare professionals need to be ensured that these advancements are reliable, secure and lead to better outcomes for both patients and healthcare professionals.

Top barriers in telehealth adoption in healthcare professional-to-healthcare professional settings include**:**



Base: Total healthcare professionals

To **drive usage of digital health technology or mobile health apps** among South African healthcare professionals, they see **clear benefits** and **easy patient sharing** as the way forward:

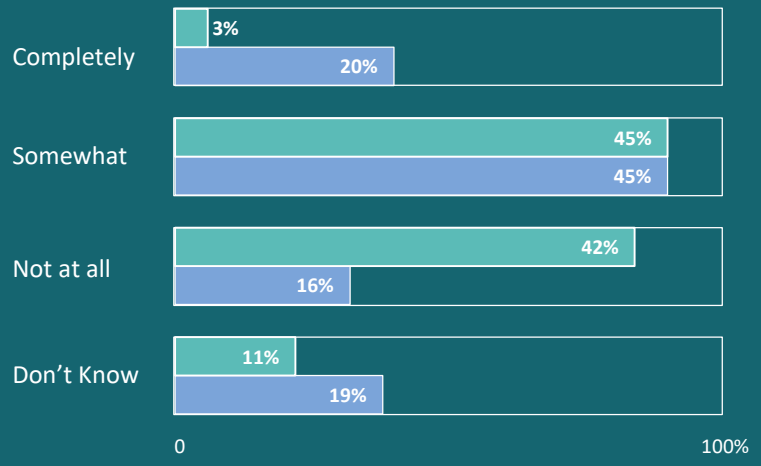


Focus on **enhancing South Africa's healthcare infrastructure** as a way to evolve its National Health Insurance (NHI) is needed

South Africans are more optimistic than healthcare professionals about the extent to which the National Health Insurance (NHI) will be able to provide affordable quality care within a reasonable time. In fact, over two in five South African healthcare professionals believe the NHI will not be able to do so.

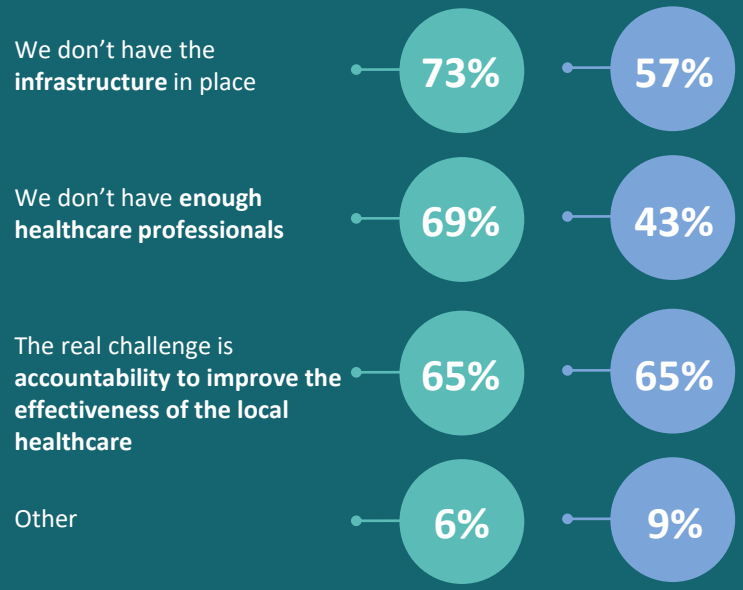
While healthcare professionals believe the major barriers to affordable, quality care are a lack of infrastructure and staff, South Africans believe the real challenge is accountability to improve the effectiveness of the local healthcare.

Extent to which the National Health Insurance (NHI) will be able to provide affordable quality care within a reasonable time



Base: Total individuals
Base: Total healthcare professionals

Reasons for belief that the NHI will **not** be able to deliver affordable quality care within a reasonable time



Base: Total healthcare professionals who believe the NHI will not be able to provide quality care within a reasonable time (n=83)
Base: Total individuals who believe the NHI will not be able to provide quality care within a reasonable time (n=161)

Conclusions

Methodology

Research overview and objectives

The Future Health Index (FHI) is a research-based platform designed to help determine the readiness of countries to address global health challenges and build efficient and effective health systems. In the context of ever-growing pressure on resources and costs, the Future Health Index focuses on the crucial role digital tools and connected care technology can play in delivering more affordable, integrated and sustainable healthcare.

In 2019, the FHI explores the role of digital health technology on two aspects of the Quadruple Aim: the healthcare experience for both patients and healthcare professionals[1] and how it is moving us to a new era of continuous transformation.

The 2019 Future Health Index comprises a survey of the general population and healthcare professionals in 15 countries (Australia, Brazil, China[2] , France, Germany, India, Italy, Netherlands, Russia, Saudi Arabia, Singapore, South Africa, Poland, the United Kingdom and the United States of America).

The survey was conducted in partnership with independent global market research firms. The data collection method was online and offline (as relevant to the needs of each country) with a sample size of 1,000 per country for the general population and 200 per country for healthcare professionals. The exceptions were the US and Germany, who each had slightly larger samples of healthcare professionals. For the individuals (general population) audience, the survey is representative of key demographics e.g. age, gender, region, location type (i.e. rural/urban), income/SEL/education and ethnicity (where appropriate to ask). This was achieved through a mix of balancing and weighting. In Saudi Arabia and Brazil, the survey is nationally representative of the online population. The survey length was approximately 15 minutes for the US, Germany, and the Netherlands, and approximately 10 minutes for the remaining countries.

[1]For the purposes of this survey, healthcare professionals are defined as those who work in healthcare as a doctor, surgeon, nurse practitioner, registered nurse, licensed practical nurse or nurse across a variety of specializations.

[2]Each data source approaches data collection for China differently. Some include Taiwan and/or Hong Kong, others treat them separately. For the purposes of this research, when third-party data has been used, we have not adjusted the data from the way it was collected. As such the data is reflective of each source's approach to measuring China. Survey data is representative of Mainland China.

Methodology

2019 survey data

At the 95% confidence level, the 15-country total for the general population has a margin of error at +/- 0.8 percentage points and the 15-country total for the healthcare professional population has an estimated margin of error[3] of +/- 1.7 percentage points.

Below is the specific sample size, margin of error at the 95% confidence level, and interviewing methodology used for each country.

	Individuals (General Population)			Healthcare Professionals		
	Unweighted Sample Size (N=)	Margin of Error (at 95% confidence level)	Interview Methodology	Unweighted Sample Size (N=)	Estimated Margin of Error	Interview Methodology
15-Country Total	15,114	+/- 0.8%	Online and offline	3,194	+/-1.7%	Online
South Africa	1,007	+/- 3.1%	Online, Face-to-Face	200	+/- 6.9%	Online

Local Country General Population Weighting
For the general population sample, all countries were weighted to be representative of the national population based on census statistics (where available) for key demographics. The weighting was applied to ensure the sample is representative of individuals age 18+ in each country. In South Africa, this included age, gender, rural/urban, region, race/ethnicity and education.

Total Country Weighting (Healthcare professionals and Individuals)
The 15-country average is an average calculation with each country's sample size weighted to have the same value to ensure each country has an equal weight in this total. The same was done for all regional totals.

[3]Estimated Margin of Error is the margin of error that would be associated with a sample of this size for the full healthcare professional population in each country. However, this is estimated since robust data is not available on the number of healthcare professionals and specialty mixes in each country surveyed.

Methodology

Third party data

Reports

	Source	Link
Wearables: China	Statista.	https://www.statista.com/outlook/319/117/wearables/china
Wearables: India	Statista.	https://www.statista.com/outlook/319/119/wearables/india
Wearables: South Africa	Statista.	https://www.statista.com/outlook/319/112/wearables/south-africa
Wearables: Saudi Arabia	Statista.	https://www.statista.com/outlook/319/110/wearables/saudi-arabia
Share of global artificial intelligence (AI) investment and financing by country from 2013 to 1Q'18	Statista (2018)	https://www.statista.com/statistics/941446/ai-investment-and-funding-share-by-country/
Physician density (per 1,000 population)	World Health Organization (2014-2016)	http://apps.who.int/gho/data/view.main.GDO1801v

Country profiles

	Source	Link
GDP per capita	World Bank (2017)	https://data.worldbank.org/indicator/ny.gdp.pcap.cd
Healthcare expenditure per capita	World Bank (2015)	https://data.worldbank.org/indicator/SH.XPD.CHEX.PC.CD
Healthcare expenditure as a percentage of GDP	World Bank (2015)	https://data.worldbank.org/indicator/SH.XPD.CHEX.GD.ZS
Type of health system	Commonwealth Fund (or other source – varies by country)	https://international.commonwealthfund.org/countries/
Median age	United Nations (2015)	hatttps://population.un.org/wpp/DataQuery/
Life expectancy at birth	World Health Organization (2016)	http://apps.who.int/gho/data/node.main.688?lang=en
Healthy life expectancy at birth	World Health Organization (2016)	http://apps.who.int/gho/data/node.main.HALE?lang=en
Infant mortality rate (per 1,000)	World Bank (2017)	https://data.worldbank.org/indicator/sp.dyn.imrt.in?view=chart
Top Cause of death	Institute for Health Metrics and Evaluation (2017)	http://www.healthdata.org/results/country-profiles

Glossary of **terms**

Access [to care]: The ability to access medical care when needed.

Artificial intelligence (AI): The ability of a device/technology to copy intelligent human behaviors to assist with different tasks.

Availability [of care]: The doctor a patient needs to see is available when care is required.

Data privacy: Ensuring personal or private information about individuals or organizations is only collected and/or stored by those who have authorized access.

Data security: Protecting data against unauthorized access.

Digital health communication capabilities/tools: Technologies that allow a patient to communicate with its healthcare professional (e.g. through a patient portal, remote appointments, etc.)

Digital health records: Digital health records can store a variety of health information, including medical history, test results, health indicators, etc. They can be used within a certain healthcare facility, across different healthcare facilities, by only the patient themselves, by one healthcare professional or across all healthcare professionals involved in a patient's care.

Digital health technology: Technology that enables sharing of information throughout all parts of healthcare (doctors, nurses, community nurses, patients, hospitals, specialists, insurers, and government). This technology can take a variety of forms, including, but not limited to: devices that track various health indicators such as heart rate or steps (e.g., wearables such as a smart watch/fitness trackers or home health monitoring devices); computer software that allows secure communication between doctors and hospitals (e.g., digital health records) or allows communication between doctors and patients (e.g., patient platforms); health devices that are internet enabled and transmit data.

Future Health Index: The Future Health Index (FHI) is a research based platform designed to help determine the readiness of countries to address global health challenges and build sustainable, fit for purpose, national health systems. In the context of ever growing pressure on resources and costs, the Future Health Index focuses on the crucial role digital tools
and connected care technology can play in delivering more affordable, integrated and sustainable healthcare. Since its inception in 2016, the Future Health Index program has used credible research to derive actionable insights that have initiated dialogue across the industry, with the aim to drive change.

Healthcare: All areas of the health system a person might interact with, from visiting a general practitioner to emergency services and specialists.

Healthcare professional: All medical staff - including doctors, nurses, surgeons, radiologists, etc.

Interoperability: The ability of health information systems to work together within and across organizational boundaries regardless of brand, operating system, hardware, etc.

Telehealth: The use of electronic information, digital health technology or mobile health applications and telecommunications technologies to support long-distance exchange between healthcare professionals, patient and healthcare professional as well as health-related education, public health and health administration.

Value-based care: Value-based care describes a healthcare system that aims to increase access to care and improve patient outcomes at lower cost. It is a people-centric approach that spans the entire health continuum. In short, it is about providing the right care in the right place, at the right time and the right level of cost. At Philips, we also focus on improving the experiences of both the patient and the healthcare professionals in line with the 'quadruple aim':

- Improved patient experience
- Better health outcomes
- Improved staff experience
- Lower cost of care

www.philips.com/futurehealthindex-2019