

Roshan's telemedicine: expanding the frontier of quality healthcare through mobile technology

Shainoor Khoja

Roshan, Afghanistan

Correspondence to: Shainoor Khoja. Roshan, Afghanistan. Email: shafi.sharifi@roshan.af.

Abstract: The article highlights the power of mobile technology in expanding access to quality healthcare by telling the story of the first successful operation by Afghan doctors to separate conjoined twins at The French Medical Institute for Mothers and Children (FMIC) in Kabul, Afghanistan's capital. Roshan, Afghanistan's leading telecommunications provider, set up the telemedicine link in 2007, connecting three hospitals in Kandahar, Bamiyan and Badakhshan provinces to FMIC in Kabul, and all three to one of the best and most modern hospitals in the region: The Aga Khan University Hospital in Karachi, Pakistan.

Keywords: Technology; telemedicine; healthcare; mobile; Roshan; Afghanistan; telecommunications

Received: 18 December 2016; Accepted: 27 February 2017; Published: 23 March 2017.

doi: 10.21037/mhealth.2017.02.05

View this article at: <http://dx.doi.org/10.21037/mhealth.2017.02.05>

Haidar Mohammad is an Afghan farmer who lives with 11 members of his family in a remote village tucked away behind the towering mountains of Shahri Buzurug district of Badakhshan Province in north eastern Afghanistan. The province is blessed with pristine natural beauty where villages are surrounded by mountains that rise as high as 25,000 ft. It is also one of the most remote provinces of Afghanistan where residents are desperately poor.

In the summer of 2015, after a long and complicated pregnancy, Haidar's wife Maghul gave birth with the help of a trained village midwife. Haidar was working when the midwife rushed to tell him the good news that he was blessed with twins.

Haidar, a proud and happy father to the twins, called them Ramish and Tabish, names that are for boys. But the midwife told him that all was not well. The twins were conjoined. And she could not tell the gender of the twins either because of the way they were attached, at the abdomen and in the groin areas.

For Haidar, it was devastating news! Many children, especially in remote areas such as in Haidar's home village, do not make it to their 5th birthday, let alone when they are conjoined. According to UNICEF, Afghanistan already has one of the highest under five mortality rates, 149 per 1,000 live births.

But even if they survived, the conjoined twins would need specialized care, something that is neither available in Haidar's home village nor in most of Afghanistan. The nearest health facility to Haidar is about 40 km away in Faizabad, the capital of Badakhshan Province.

Haidar and his wife could go for another option to save their twins: travel to India or Pakistan, a journey that tens of thousands of Afghan families embark on every year to seek access to a better quality healthcare. But with their monthly income of less than \$100, they could not even fathom the idea of affording the cost of travel nor the treatment and specialized care which could run into tens of thousands of US dollars.

It seemed all odds were against them trying to save their conjoined twins. And time was running out. So when the twins were barely 15 days old, Haidar took his wife and the twins and set out to reach Faizabad clinic, braving security challenges and the harsh weather across the rugged terrain which dominates much of the landscape in their native province of Badakhshan.

Upon arriving at the Faizabad Clinic, they did not hold much hope. Yet it was the only option available to them.

But to their utter surprise, the doctors and health workers examined the twins and used a new technology, telemedicine, which Haidar had never heard of, to connect

to The French Medical Institute for Mothers and Children (FMIC) in Kabul, more than 500 km away.

Having examined the conjoined twins using the telemedicine link and in consultation with world-renowned specialists thousands of miles away, the doctors at FMIC gave a ray of hope to Mohammad Haidar: they told him that it was possible to perform the surgery to separate his conjoined twins inside Afghanistan, even though such operations had never been done before. They also told him that his twins were actually two little girls, not boys as Haidar had initially assumed.

This sounded like a dream come true to Haidar! He could not believe such complicated operations could be possible in Afghanistan. So he gave his consent to the doctors to proceed with the surgery.

The conjoined twins were transported to Kabul where Afghan doctors at FMIC successfully separated them after a five-hour surgery. When it was over successfully, Haidar renamed his two little twin daughters promptly—Ayesha and Seddiqa.

Today, Ayesha and Seddiqa are alive and thriving though they still need at least two more operations, according to Dr. Jalil Wardak, the Afghan surgeon at FMIC. The parents still have to bring them for regular check-ups at FMIC. However, because of the telemedicine link, they do not have to travel all the way to Kabul, Afghanistan's capital city.

The story of Ayesha and Seddiqa and their surgery, which marked a milestone for Afghanistan's medical history, is one of many which highlights the importance of telemedicine and the power of mobile technology to bring quality healthcare to the most disadvantaged communities in the far corners of the country.

The telemedicine link that helped to save the twins was first implemented in Afghanistan in 2007 by Roshan, Afghanistan's leading telecommunications provider. Using its robust network which covers more than 70% of Afghanistan's population, Roshan connected Faizabad hospital in Badakhshan Province, Mirwais Hospital in Kandahar and Bamiyan hospital in the central highlands of the country to FMIC in Kabul. Through FMIC, all three hospitals were connected to one of the best and most modern hospitals in the region: The Aga Khan University Hospital in Karachi, Pakistan.

With high speed broadband connection and a dedicated bandwidth, Afghan doctors use the telemedicine link to communicate with one another and to international medical experts in real-time hundreds of miles away, transmit high

volumes of data (MRI, X-RAY, CT Scan, etc.), and organize trainings with world-renowned specialists. Telemedicine is also set up to conduct teleradiology, telepathology and even hospital management.

For Afghans, the Roshan supported telemedicine link has eliminated lengthy trips to specialists who only practice in major cities, saving patients an average of US\$125 and 5 working days—resources that most Afghans do not even possess.

Since 2007, through Roshan's telemedicine link, more than 15,000 patients have received treatment and nearly 6,000 teleconsultations and teleradiology sessions have been conducted.

Additionally, all medical services can be paid for remotely and instantaneously with Roshan's mobile payment system, M-Paisa, which is yet another revolutionary technology first introduced to Afghanistan by Roshan.

Telemedicine has also proven to be critical in training and expanding medical knowledge of Afghan health workers and doctors. While connectivity powered by mobile network technology over the last decade has helped expand the scope of knowledge in the medical professional's community in Afghanistan, many of the texts and resources available to Afghan students at the country's medical institutions are still outdated.

Roshan's telemedicine link has made it possible for many Afghan doctors to stay up to date on all recent medical research, providing them with the opportunity to watch lectures and receive trainings from some of the best physicians in the world on some of the common illnesses in the country. In fact, more than 4,000 doctors and health professionals in Afghanistan have been trained through telemedicine.

This technology has also helped in developing an entire e-health curriculum, empowering Afghan doctors to expand their knowledge, conduct peer-to-peer reviews, exchange information and share their experiences and resources with other medical experts across the region and beyond geographical barriers. The result is a long-term program that develops professional medical expertise in Afghanistan and connects the best healthcare professionals to the most desperate in need of them.

Today, telemedicine plays an essential role in enabling Afghanistan's access to quality healthcare and technology which can be the difference between life and death for thousands of Afghans.

Despite improvements over the last decade, Afghanistan's healthcare system still remains poor. Because of security

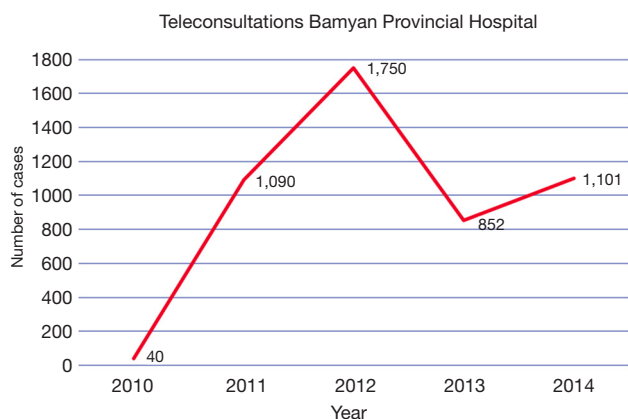


Figure 1 Number of teleconsultations cases at Bamiyan Central Hospital in Bamiyan Province of Afghanistan conducted through Roshan supported telemedicine link from 2010–2014.

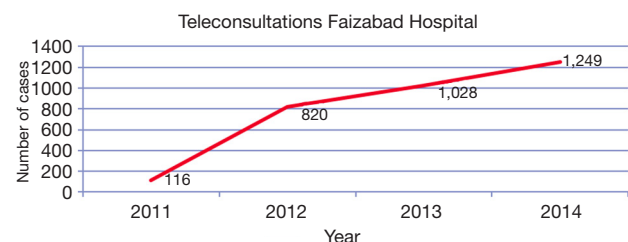


Figure 2 Number of teleconsultations cases at Faizabad Hospital in Badakhshan Province of Afghanistan conducted through Roshan supported telemedicine link from 2011 through 2014.

challenges, most of the doctors and healthcare facilities are confined to larger cities. According to the World Health Organization (WHO), Afghanistan has 4.8 doctors, nurses and health workers for 10,000 people while the standard is 23 per 10,000 in order to ensure access to basic healthcare.

In such conditions, telemedicine plays a vital role in ensuring availability of quality healthcare to Afghans across the country and expanding the frontier of knowledge of Afghan healthcare professionals.

This progress was made possible because of the contributions of Roshan, introducing this revolutionary technology to the country.

Roshan is owned 51% by the Aga Khan Fund for

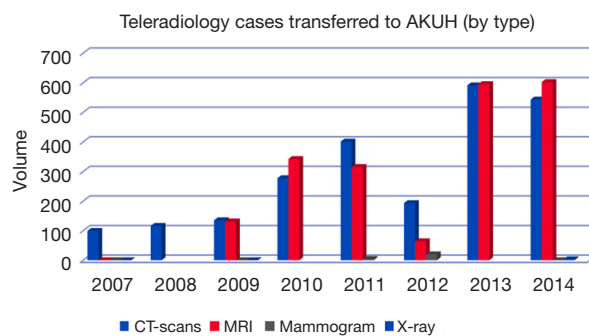


Figure 3 Number of teleradiology cases transferred to Aga Khan University Hospital in Karachi Pakistan (by type) from 2007 through 2014. These are the cases sent from The French Medical Institute for Mothers and Children (FMIC) in Kabul which is linked via Roshan supported telemedicine program.

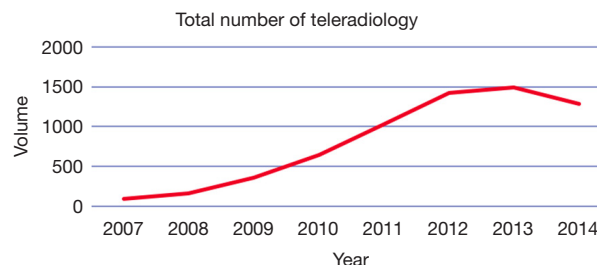


Figure 4 Total number of teleradiology cases transferred to FMIC and AKUH from 2007 to 2014.

Economic Development (AKFED) and has invested almost \$700 million in developing its telecommunications infrastructure. Since its inception in 2003, Roshan has operated as a catalyst for change, leveraging its technology and network to support the development of education, healthcare and other critical sectors of Afghanistan in addition to connecting more than 6 million customers through telecommunications services. Through Roshan Community, the Corporate Social Responsibility (CSR) arm of the company, Roshan has also helped to build 10 schools, 55 E-Learning centers, 30 playgrounds, 224 drinking water wells and has launched tens of other projects nationwide to empower communities and set an example for the rest of Afghanistan’s private sector (Figures 1-6).



Figure 5 Picture of a female patient at Bamiyan Central Hospital being examined by an Afghan specialist doctor at The French Medical Institute for Mothers and Children (FMIC) in Kabul via telemedicine. There are few or no specialist doctors in remote rural provinces of Afghanistan because of geographic and security issues.

Acknowledgements

None.

doi: 10.21037/mhealth.2017.02.05

Cite this article as: Khoja S. Roshan's telemedicine: expanding the frontier of quality healthcare through mobile technology. mHealth 2017;3:10.



Figure 6 Adolescent Afghan patient at Bamiyan Central Hospital being examined by an Afghan doctor specialist at The French Medical Institute for Mothers and Children (FMIC) in Kabul.

Footnote

Conflicts of Interest: The author has no conflicts of interest to declare.

Informed Consent: We have verbal consent and it's not possible to get written consent as these people are illiterate and rely on verbal communication.