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Bridging the Gap from Policy to Practice:

Diabetes in Rural Morocco

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Abstract

Morocco is in the midst of an epidemiologic transition ushered in by reduced fertility rates and extended life expectancy. Unlike two decades ago, today's leading cause of death is chronic disease. In 2006, Moroccan officials launched Vision 2020, a comprehensive plan that seeks to expand access to healthcare and reign back the prevalence of noncommunicable disease, among other goals related to development. Through qualitative interviews with the residents of Tarmilat and Oulmes, a rural community south of Khamissat, this paper represents the first assessment of Vision 2020's performance thus far to combat the spread of type 2 diabetes among rural Moroccans. This paper evaluates type 2 diabetes care in Tarmilat and Oulmes using three indicators: (1) degree of individual health agency, (2) access to capable healthcare facilities, and (3) attainment of healthcare coverage or insurance. The interviews demonstrate limited health agency, specifically regarding primary prevention methods. In addition, the paper finds that healthcare facilities in the Oulmes and Tarmilat region lack the human resources to operate at full capacity, although they may be equipped with adequate technology. Lastly, despite increased access to healthcare coverage, in practice, patients often struggle to attain secondary care due to wait times, bribery, and supply shortages. This preliminary analysis shows evidence that health officials are making strides in rural healthcare, however much work is needed to bridge the gap between policy and practice. To address the most urgent healthcare failings, this paper recommends that officials at the Ministry of Health make Morocco's human resource deficit their utmost priority.

Keywords: rural Morocco, diabetes care, health literacy, health equity, chronic disease

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Contents

Abstract.....	1
Acknowledgements.....	2
Introduction.....	4
Background	6
The Current State of Moroccan Healthcare.	6
Morocco’s Strategic Plan.....	9
Literature Review.....	10
Type 2 Diabetes.....	10
Health Literacy and Communication	12
Human Resources and Healthcare Facilities	14
Health Coverage and RAMED.....	16
Analysis.....	19
Methods.....	19
Findings.....	21
Health Literacy and Communication.....	21
Human Resources and Healthcare Facilities.....	27
Health Coverage and RAMED	31
Conclusion	33
Appendix A.....	35
Appendix B.....	36
Appendix C.....	37
Appendix D.....	38
References.....	39

Introduction

Healthcare is one of the most valuable political resources. Much like monetary capital, the power of health is harnessed by the wealthy. Esteemed doctors present their medical advances to political elites. Through board meetings and conference calls shrouded in secrecy, politicians meticulously plan the circulation of medication, technology, and information among the people.

In 2011, the Arab Spring changed the political landscape in much of the Middle East; healthcare was no exception. In Morocco, King Mohammed VI initiated constitutional reform following waves of protests. Article 31 of the new constitution, passed in 2011, enshrined into law the universal right to healthcare.

With a focus on type 2 diabetes, this study seeks to examine the primary barriers to accessing healthcare among rural Moroccans by analyzing three indicators: (1) individual health agency, (2) access to capable healthcare facilities, and (3) attainment of healthcare coverage or insurance. This research will attempt to answer and validate the following questions and propositions:

Research Question One (RQ1): Do rural Moroccans have the tools to exercise agency over their health, and how is health information circulated?

Proposition One (P1): Over 30% of Moroccans are illiterate (UNICEF, 2013), while nearly all households have a television (United Nations Statistics Division, 2017). Therefore, effective health communication is primarily carried out through televised commercials and programs.

Research Question Two (RQ2): How is the relationship between rural Moroccans and public health officials?

Proposition Two (P2): Due to human resource shortages in healthcare, doctors and staff are challenged to meet demand. This reality often compromises patient care, leading to long wait times, substandard conditions, and bribery.

Research Question Three (RQ3): How is RAMED facilitating access to healthcare?

Proposition Three (P3): By providing beneficiaries with access to secondary and tertiary care, RAMED is expanding access. This is essential for diabetes patients, many of whom suffer from costly complications.

To answer these questions, this paper will first provide a brief overview of the Moroccan healthcare system, current policies, and healthcare goals. The research seeks to evaluate Morocco's progress in combating type 2 diabetes among rural populations through qualitative interviews with residents of Oulmes and Tarmilat. Although Morocco has made significant strides to reduce chronic disease, this study finds that access and quality of care remain inadequate.

Background

The Current State of Moroccan Healthcare.

The Moroccan healthcare system is divided between a public system, which includes the Ministry of Health, and private system, which comprises non-profit and profit-seeking subdivisions. Public health officials adapt coverage to the needs to local communities using a fixed, mobile, or roaming strategy. This paper will focus on the public system.

In the past two decades, Morocco has undergone an epidemiologic and demographic shift due to a sharp decline in fertility and mortality (Ministère de la Santé, 2012). Moroccans are living longer and having less children. Table 1 demonstrates the decline in the annual population growth rate.

YEAR	TOTAL POPULATION	RATE OF INCREASE (%)
1960	11,626,470	2.58
1971	15,379,259	2.58
1982	20,419,555	2.61
1994	26,073,717	2.06
2004	29,891,708	1.38
2011	32,187,000	1.05

Table 1: Moroccan population growth

Source : (Ministère de la Santé, 2012)

This decline can be attributed to a number of factors. From 1960 to 2011, Morocco's total fertility rate dropped from 7 to 2.2 children per family (Ministère de la Santé, 2012). While there remains a difference in the fertility rate of urban and rural Moroccans, the gap has significantly declined (Ministère de la Santé, 2012). In addition, Moroccan officials have largely eradicated

most of the most lethal communicable diseases, including polio, trachoma, and malaria (Ministry of Health H. o., 2017).

Today, Morocco has a smaller proportion of children under 14, and a larger proportion of adults over 60 (Ministère de la Santé, 2012). Figure 1 provides information about the changing demographics of the Moroccan population. In the past two decades, Moroccan healthcare has improved drastically. According to the WHO, the maternal mortality ratio has dropped from 227 deaths per 100,000 live births to 112, and infant mortality has declined from 40 deaths per 1,000 live births to 30.2 (Oxford Business Group , 2016). In addition to maternal health, the prevalence of infectious diseases has notably plummeted across the country (Dinar & Belahsen, 2014).

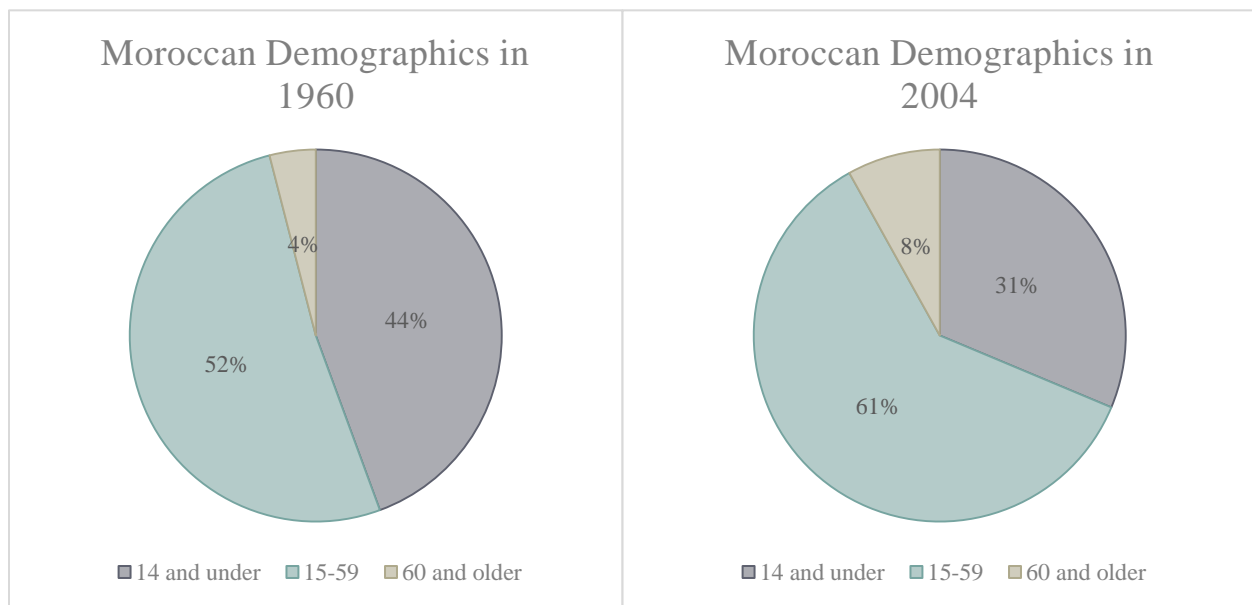


Figure 1: Moroccan demographic change
Source : (Ministère de la Santé, 2012)

Despite these promising improvements, healthcare in Morocco is staggeringly unequal. The Haut Commissariat au Plan (HCP), a Moroccan institution charged with evaluating policy through research, and the Enquête Nationale sur la Consommation et les Dépenses, a national

economic survey, allow public health officials to view the per capita ratio of urban to rural health spending. The statics reveal spending in urban areas is more than double rural areas. Table 2 demonstrates the national expenditure on healthcare and urban to rural ratio from 2000 – 2012.

YEAR	NATIONAL	URBAN	RURAL	RATIO U/R
2000/2001	8,280	10,642 (67%)	5,288 (33%)	2.01
2006/2007	11,233	13,894 (64%)	7,777 (36%)	1.79
2012	19,267	23,687 (68%)	11,101 (32%)	2.13

Table 2: Evolution of expenditure per capita (value in MAD and % of total expenditure)

Source : (Boutayeb A. , 2011)

The impact of unequal health spending can be viewed by comparing urban and rural life expectancy. From 2000-2008, average life expectancy differed by over six years between urban and rural Moroccans (Boutayeb A. , 2011).

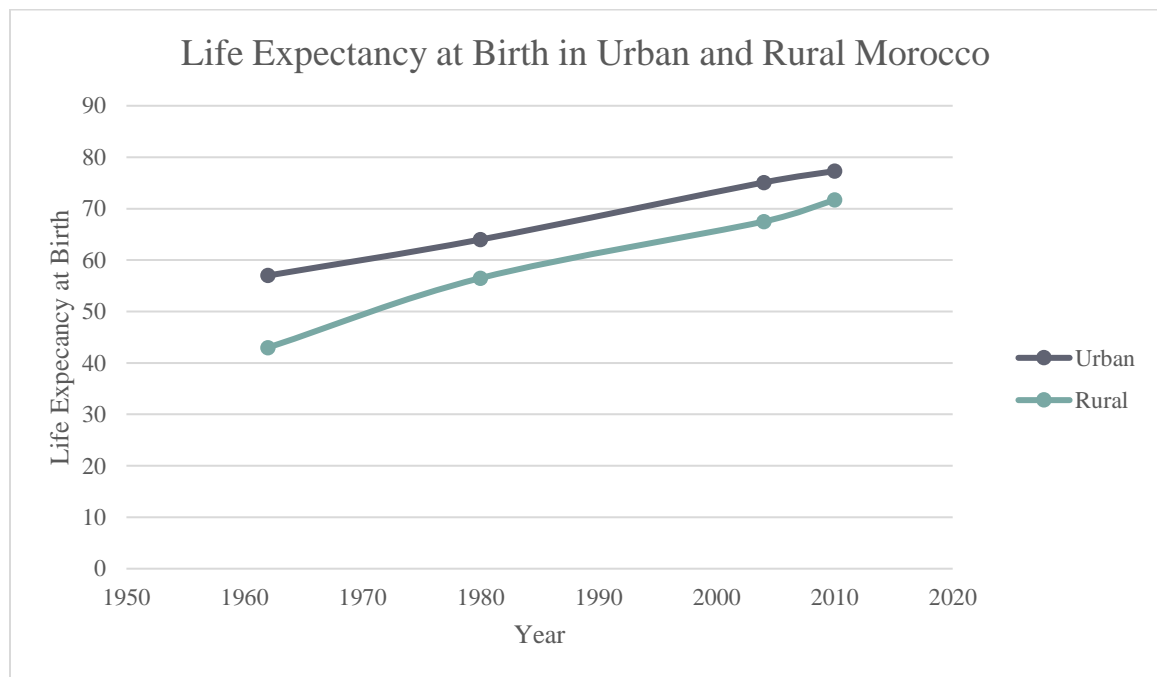
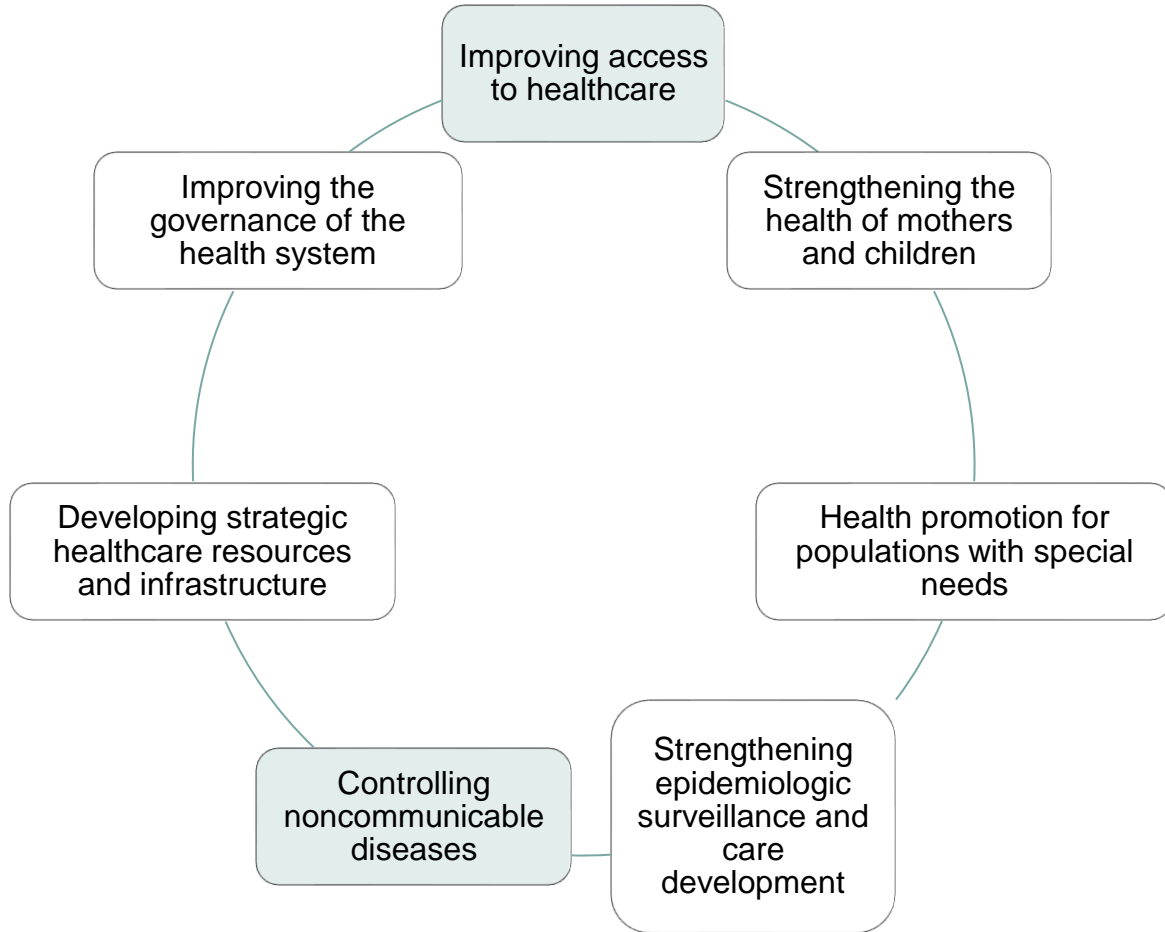


Figure 2: Evolution of life expectancy at birth in Morocco

Source : (Boutayeb A. , 2011)

Morocco's Strategic Plan.

In 2006, Morocco launched Vision 2020, its long-term strategy to improve the health system by 2020. The 2012-2016 phase comprised the following seven axes:



The current phase of the Vision 2020 strategy makes non-communicable diseases, which account for about 75% of deaths in Morocco (Dinar & Belahsen, 2014), a top priority for the Ministry of Health. The Ministry is currently working to improve care, expand access, and spread information to curb the spread of chronic disease.

Literature Review

Type 2 Diabetes

Lifestyle has changed in Morocco, a country which has witnessed rapid development. Evidence of the change in lifestyle and demographics can be seen in the leading causes of death, which now include cancer, heart disease, and diabetes (Ministry of Health E. , 2017). The increase in type 2 diabetes prevalence may also be due to changes in monitoring and diagnostic criteria (Berraho, et al., 2012). Currently, 80% of the world diabetic population lives in low- and middle-income countries such as Morocco (Dinar & Belahsen, 2014). Around 9% of adults in Morocco are diabetic and 90% of cases are type 2 (Dinar & Belahsen, 2014). 37% of diabetics are supported by the Ministry of Health with free medications and consultations (Dinar & Belahsen, 2014). According to the Head of Noncommunicable Disease at the Ministry of Health, there are currently 650,000 diabetic who rely on the public health system for their treatment (Ministry of Health H. o., 2017). In total, two million people rely on the public health system (Ministry of Health H. o., 2017).

According to Professor and Doctor Belkhadir, an endocrine, nutrition, and diabetes specialist, who is also the President of the Moroccan League for the Fight Against Diabetes, approximately 40% of diabetics in Morocco are not aware of their condition (Belkhadir, 2017), a figure that is especially troubling considering all parts of the body suffer the repercussions of poorly controlled diabetes, which can lead to neuropathy, cardiovascular disease, and retinopathy (Dinar & Belahsen, 2014). In the MENA region, over half of diabetics have not been tested or received care for their condition (Belkhadir, 2017). While this is a global problem, considerably more diabetics are under the auspices of medical professionals in Europe, where less than 30% of diabetics are unaware of their condition (Belkhadir, 2017).

Complications from type 2 diabetes are one of leading causes of non-traumatic lower limb amputations, blindness, and renal failure (Dinar & Belahsen, 2014). Although urban areas experience a slightly higher prevalence of type 2 diabetes, low-income people living in rural areas may be less prepared to pay for prolonged treatment, putting them at a high risk for developing comorbidities (Boutayeb A. , 2011). Generally, old age, female gender, low education, and low-income people are at the highest risk of developing comorbidities (Boutayeb A. , 2011). The Ministry of Health reported that from 2001-2010, 5.6% of deaths in Morocco were diabetic people, a figure that is especially alarming in light of comorbidities (Ministère de la Santé, 2012). Because of comorbidities, officials must also consider death due to cardiovascular disease, which most often arises as a complication of poorly controlled diabetes (Dinar & Belahsen, 2014). The prevalence of hypertension among diabetics is nearly twice that of the general, non-diabetic population (Dinar & Belahsen, 2014). On the other hand, poorly controlled hypertension patients are also at risk for diabetes (Ministry of Health E. , 2017). According to the Head of Cardiovascular Health at the Ministry of Health, collaboration with policy makers from the Department of Diabetes Care is vital (Ministry of Health E. , 2017). Despite the importance of controlling diabetes to prevent complications, research has shown that only 24% of people with diabetes are able to adequately control their condition (Dinar & Belahsen, 2014).

Due to the chronic nature of diabetes and the risks of serious complications, care must be protracted and regular, placing an especially high burden on global health systems (Boutayeb, Lamlili, Boutayeb, & Saber, 2013). Health economists estimate the average per capita direct cost of type 2 diabetes in Morocco to be between US \$259 and US \$830, a figure which includes insulin, oral drugs, and other diabetes treatments (Boutayeb, Lamlili, Boutayeb, & Saber, 2013).

The per capita indirect cost of diabetes, including foregone earnings due to premature death or disability, was estimated to be around US \$1113 (Boutayeb, Lamlili, Boutayeb, & Saber, 2013).

Dr. Belkhadir stressed the impact of comorbidities on the cost of caring for type 2 diabetes (Belkhadir, 2017). With microvascular complications, the cost of treating a diabetic patient grows by 50% (Belkhadir, 2017). With hypertension, the cost doubles (Belkhadir, 2017). With both microvascular complications and hypertension, two common comorbidities, the cost of treatment typically triples (Belkhadir, 2017).

The Head of Noncommunicable Diseases at the Ministry of Health explained that officials are working to integrate diabetes care into existing primary care facilities, with the goal of developing a more comprehensive and systematic screening program nationwide (Ministry of Health H. o., 2017). In addition to blood pressure monitors, the Ministry is working to ensure all facilities have a functioning glucometer (Ministry of Health H. o., 2017). One of his top projects this year is to map the distribution of diabetes risk factors, including obesity and hypertension (Ministry of Health H. o., 2017).

Health Literacy and Communication

An estimated 50 percent of a person's health status can be attributed to lifestyle habits (Zarcadoolas, Pleasant, & Greer, 2006), a fact which heightens the importance of health literacy. In addition to expanding access to tangible care, Moroccan officials have sought to expand access to health information through advertising. Health communication should accomplish two primary goals: increase demand for necessary healthcare and encourage healthy lifestyle choices.

Health communication includes text, pictures, graphics, and spoken language. Although functional literacy, the ability to read and write, is not required for health literacy, the two are closely connected. For example, a low degree of functional literacy limits an individual's ability

to read a pill bottle, consent form, health advisory, or warning label (Zarcadoolas, Pleasant, & Greer, 2006).

Health literacy is particularly important to prevent communicable diseases and comorbidities. Health officials must focus on both primary prevention, which is executed before an individual develops an illness, and secondary prevention, which seeks to stop patients with chronic disease from developing complications or co-morbidities (Belkhadir, 2017).

In terms of media strategy, numerous health campaigns in the United States¹ have used top-down models of health communication, which aim generic advertisements at broad and diverse audiences. Research has repeatedly demonstrated the shortcomings of this one-size-fits-all public health strategy (Zarcadoolas, Pleasant, & Greer, 2006). Instead, carefully targeted and culturally conscious health messages are most effective at achieving behavior change.

In June of 2015, Morocco spent 15 million dirhams (1.5 million USD) to launch an awareness campaign about diabetes and healthy behaviors (Dinar & Belahsen, 2014). Through diabetes awareness videos and commercials aired on television, the Ministry of Health seeks to reach a wide audience. Morocco also celebrates World Diabetes Day along with the international community with a day-long campaign. In the past, the Ministry of Health has carried out campaigns about diabetes and Ramadan, diabetes prevention, and diabetes management (National Diabetes Awareness Campaign , 2015). Outside of the Ministry of Health, televised health programs on the news are popular among many Moroccans. Nabil Ayachi is one such doctor who hosts a daily healthcare program covering topics from super foods to triglycerides.

¹ Although I would prefer to cite more relevant health communication research, I was unable to find high quality studies from Morocco.

Human Resources and Healthcare Facilities

While the Ministry of Health has expanded access to public healthcare, facilities often lack the human resources to meet demand. In some rural communities, RAMEL coverage is near irrelevant because medical infrastructure and personnel are lacking even for those who can pay. These medical shortages existed before RAMEL expanded health coverage to over nine million people (Oxford Business Group , 2016). These beneficiaries are an additional strain on an already weak system.

In 2012, Morocco had 0.62 doctors for every 1,000 inhabitants; its Vision 2020 goal is to reach one doctor for every 1,000 inhabitants (Oxford Business Group , 2016). To achieve this goal, the government has set out to train 3,300 doctors each year (Ministère de la Santé, 2012). In practice however, about 900 doctors graduate from the five Moroccan public medical universities annually, less than one third of Morocco's goal, and the vast majority of them have chosen to work in urban areas (Oxford Business Group , 2016).

As the leading causes of death have changed in Morocco, so too must the medical capabilities of new doctors and facilities. In many rural communities, access to care for widespread chronic illnesses is lacking. Nationally, there are about 200 endocrinologists, a number insufficient to combat Morocco's diabetes epidemic (Dinar & Belahsen, 2014). Of these doctors, 105 work in the public sector (Berraho, et al., 2012). Unfortunately for those living in rural areas, 60% of endocrinologists are located in the Casablanca-Rabat axis, and very few work in the middle region, where the prevalence of diabetes hovers around 10% (Berraho, et al., 2012). Of general doctors, only 24% work in rural areas of Morocco (Oxford Business Group , 2016).

To combat the rise of chronic disease, Morocco has made headway expanding healthcare capabilities. The Ministry of Health has focused on training diabetes and hypertension specialists through nationwide training sessions (Ministry of Health H. o., 2017). In 2005, Morocco established 46 new monitoring and diabetes care units, all of which are equipped with advanced medical technology to measure blood glucose, urinary parameters, and hemoglobin (Dinar & Belahsen, 2014). However, these monitoring centers are unequipped to deal with the full burden of diabetes.

Furthermore, Morocco has increased the supply and accessibility of diabetes treatment and secondary prevention methods. According to a Pharmacy Specialist from the Ministry of Health, hospital and medical center administrators report to the Ministry every three months about their supply levels (Ministry of Health P. , 2017). The Ministry then buys and distributes the drugs, including diabetes and hypertension medications, a system that ensures even rural medical centers are equipped with secondary prevention mechanisms (Ministry of Health P. , 2017).

The Ministry of Health also organizes medical caravans that target communities far from healthcare facilities (Obtel, 2017). The caravans primarily seek to increase diabetes and hypertension screenings, to ensure more people are aware of their condition and can engage in secondary prevention (Obtel, 2017).

Regardless of their technological capabilities, many hospitals and medical centers in Morocco suffer from inefficient management and poor administration, a reality that bears fatal implications for patients. Social media has placed a spotlight on the decrepit and sometimes fetid conditions of public hospitals, with many patients and their families posting pictures and videos on Facebook of leaking roofs, broken hospital beds, overflowing toilets, and wailing patients

ignored by doctors. According to the Head of Noncommunicable Diseases at the Ministry of Health, policy makers are working to strengthen the public-private partnership in Morocco to give patients more options when hospitals are at capacity (Ministry of Health H. o., 2017).

In addition, the public health sector is one of the most corrupt in Morocco. Corruption exists among policy makers and administrators. Because this paper concerns rural people's ability to access care at the local level, it will focus on hospital-based corruption as this is most visible to patients. According to Dr. Obtel, a physician and health economist, the Ministry of Health, along with Moroccan society, is making strides to eliminate the practice of bribery through the courts (Obtel, 2017). Institutional problems, such as long wait times in many public facilities, encourage patients to engage in bribing security guards or other low-level staff members (Obtel, 2017). To combat bribery, officials at the Ministry of Health have developed a toll-free number that patients and healthcare providers can call if they notice bribery in a medical facility (Ministry of Health H. o., 2017). According to the Head of Noncommunicable Diseases at the Ministry of Health, the prevalence of bribery has significantly reduced in recent years (Ministry of Health H. o., 2017).

Health Coverage and RAMED

In Morocco, primary healthcare is dispensed for free at public hospitals, health centers, and clinics across the country. Primary healthcare comprises vaccinations, perinatal care, medical consultations, in addition to a special diabetes program. According to Dr. Obtel, the Ministry of Health's diabetes system is vital for patients to get free medication, diabetes follow-up visits, and cardiological consultations to avoid complications (Obtel, 2017). According to the Head of Cardiovascular Care at the Ministry of Health, Morocco also has a program to ensure all

individuals are able to access hypertension medications and consultations for free (Ministry of Health E. , 2017).

More expensive medical interventions, including most surgeries and elective procedures, are classified as secondary or tertiary healthcare, neither of which is covered for free. For example, a diabetes patient in Morocco without any insurance could obtain diabetes medication and consult with a doctor for free at public facilities. The patient would have to pay out of pocket for other items and services necessary to control diabetes, including laboratory tests, lancets, reagent strips, urine strips, and a glucose meter (Boutayeb A. , 2011). If the patient suffered a complication of diabetes, such as a heart attack, the life-saving surgery would be extremely expensive at a public facility. As the leading causes of death in Morocco have changed from communicable to non-communicable diseases such as cancer and hypertension, which often require costly and invasive procedures, affordable access to secondary and tertiary healthcare is vital for the low-income population.

Morocco has made strides in the last two decades, launching a mandatory health insurance package (Assurance Maladie Obligatoire: AMO) for public and private sector employees, a health coverage scheme for low-income households (Régime d'Assistance Médicale: RAMED), and an insurance program for individuals (Medical Insurance for Independents: MII) (Boutayeb A. , 2011). According to the Ministry of Health, insurance coverage reached 60% of the population in 2015, a number which is expected to rise (Boutayeb A. , 2011).

This paper will focus on RAMED, as it was the most commonly used form of health coverage among survey respondents in Tarmilat and Oulmes. In 2009, the Ministry of Health launched RAMED, to provide coverage for low income Moroccans who lack the means to obtain

secondary care. Originally launched as a pilot program in the Beni Mellal region, RAMED was expanded to the rest of the country in 2012. The Ministry of Health is the primary funder of the program, contributing 1 billion dirhams (105 million US dollars) in 2016. According to a Pharmacy Specialist from the Ministry of Health, RAMED is also financed through medical device taxes (Ministry of Health P. , 2017). Beneficiaries make an annual contribution of 120 dirhams (US \$12) per person or 600 dirhams (US \$63) per household (Dinar & Belahsen, 2014). According to Dr. Obtel, public hospitals and medical centers finance the care of RAMED patients from their individual budgets; the Ministry of Health then sends a reimbursement (Obtel, 2017).

Financially, the Ministry of Health is strained to cover the cost of the program. In 2012, public health officials launched RAMED with the goal of expanding health coverage to 8.5 million people, making up 28% of Morocco's population (Dinar & Belahsen, 2014). Yet by December 2015, 9.2 million people were RAMED beneficiaries, exceeding the initial target by almost one million (Dinar & Belahsen, 2014) and demonstrating the vast demand for health coverage among the low-income population. According to Dr. Obtel, the Ministry of Health was financially and operationally unprepared to handle the number of beneficiaries who signed up for the program (Obtel, 2017).

Compounding the existing economic issues, the vast number of current RAMED beneficiaries suffer from a chronic condition requiring costly and prolonged care such as diabetes or cancer (Obtel, 2017). Healthy young adults are significantly underrepresented among RAMED beneficiaries, a reality which makes the strategy of pooling risk impossible (Obtel, 2017). The large number of beneficiaries and their health status means that more funds are needed to pay for the scheme. Contributing to the Ministry of Health's financial strain, an

estimated 700,000 existing beneficiaries have been unable to make their annual contribution (Oxford Business Group , 2016).

According to Dr. Obtel, due to the policy's budget miscalculation, public hospitals around the country are waiting on reimbursements from the Ministry of Health (Obtel, 2017). When hospitals admit a RAMED beneficiary, the facility loses money from its budget (Obtel, 2017). In some instances, RAMED patients are blocked from care in public hospitals because of their insurance; there is mistrust that the Ministry of Health will accurately reimburse hospitals for the care of a RAMED patient (Obtel, 2017). In the meantime, the number of RAMED beneficiaries continues to rise along with the rate of chronic disease.

Analysis

Methods

To evaluate the Ministry's performance in combating chronic disease in rural Morocco, I conducted a qualitative, descriptive study of the Tarmilat and Oulmes area, a primarily Amazigh town near Khamissat. Nearly every household has electricity, a stove, and a television. Residents speak a mix of Moroccan Darija and Tamazight. Most families subsist from work at the Sidi Ali plant, or from agriculture.

I conducted interviews with 26 residents of Tarmilat and Oulmes, including 23 women and 3 men. I used a translator who is fluent in Darija, Tamazight, French, and English. In addition to translating, she helped me locate and select interviewees. I am proficient in Modern Standard Arabic and French, although fluent in neither, which allowed me a degree of participation and control over the interviews.

To be included as subjects in my study, participants had to meet the following criteria: (1) maintain a permanent residence in Tarmilat or Oulmes for at least five years; (2) speak Tamazight, Darija, English, or French; (3) verbally consent to note-taking or use of a recording device during the interview; and (4) be above the age of 18. Before each interview, my translator explained my research project and asked for consent in the interviewee's native language (see Appendix D).

The majority of interviews were conducted in small groups of two people. In addition, I hosted a focus group with seven women. Interviewees were largely selected based on their availability, which accounts for the gender disparity, as most men were at work during the day. Some of the subjects, I met through my translator or friends. Others, I met on the street and struck up a conversation. Often after an interview, my subjects would refer me to a friend or family member who would be willing to speak with me.

I also visited the Oulmes Health Center, the closest public health facility for the residents of Oulmes and Tarmilat. It should be noted that the Oulmes Health Center is not a hospital. Although it is equipped with advanced medical technology, it lacks the capacity to care for a large number of people. When I first arrived, I took a tour of the facility with the Center Administrator. During the tour, I was able to interview him about healthcare in Oulmes. I later returned to shadow health practitioners at the Oulmes Health Center. While I was there, I interviewed a midwife and two nurses, one of whom specializes in diabetes care. With the verbal consent of patients, I was able to observe HIV tests, breast-cancer screenings, prenatal visits, diabetes check-ups, and hypertension prescription refills. If patients were available following one of these medical consultations, I asked them about their visit to assess communication between

doctor and patient. Independently of the medical center's staff, I spoke to patients in the waiting room, hallway, and those exiting the facility about their degree of satisfaction.

Findings

Health Literacy and Communication

The majority of my interviewees gained their healthcare knowledge through word-of-mouth. Although considerably less used, the second leading medium of health communication was television, followed by radio. Of my 26 interviewees, only two had ever used the internet. Neither internet user had ever searched for health information: one subject used it to read about history, and the other to search for cooking recipes. Despite the numerous pamphlets and brochures printed by the Ministry of Health at the Oulmes Health Center, only one of my interviewees recalled learning information about health from them.

Televised educational health programs were primarily accessed and used by literate people, and people with a health condition, all of whom reported enjoying them. Mariam, a 27-year-old literate woman reported using the television to learn about health information and health technology:

I like the shows. I learned from watching television how to hold my baby. Before I knew how, but now I know why it's important to hold the head higher...I also learned that the doctors can see the heart of the mom and her baby because they have new machines in the hospital. You can now go to the doctor and learn if you're having a boy or girl when you're still pregnant. (Mariam, 2017)

Five respondents including Mariam reported listening to Doctor Nabil Ayachi, making his television and radio programs the most commonly reported source of mass

media health information. I spoke to one 60-year-old diabetic woman, Majzuba, who had a basic understanding of her condition and the recommended health guidelines. When I asked about her source of information, she told me, “I saw some information on the news, but I also see Nabil Ayachi. He’s on a show in the morning where he talks about health, especially diabetes” (Majzuba, 2017).

Other subjects reported seeing or hearing health communications, but had trouble recalling the specific doctor or program.

Of disease-free, illiterate subjects, all of whom were women, none reported understanding the health communications they had seen or heard. For example, Khadija, a 26-year-old disease-free, illiterate woman, told me that she recently saw a commercial on television about HIV/AIDS. However, when I asked her what she knew about the virus, she laughed and shook her head before responding, “I don’t know anything. I saw the commercial on TV, but I forgot about it. I’m uneducated, so I don’t know about this stuff” (Khadija, 2017).

Khadija’s response was common among many women in Tarmilat and Oulmes who have been exposed to health communication through mass media, but unable to understand it. The commercials and programs were too advanced and complicated. Distribution was not the problem. Instead, it was content.

Outside of mass media strategies, I surveyed respondents about health information obtained from health professionals at the Oulmes Health Center or medical caravans. Although all respondents reported seeing or using a healthcare caravan at least once in their lives, none reported learning from the doctors there. The healthcare caravans were a supply of medication and diagnostic testing, rather than health communication.

When I toured the Oulmes Health Center, I was told about mothering classes which took place in a designated room. I requested to attend one of these classes, and received a feeble response about scheduling difficulties. I asked all 26 respondents if they had attended the classes; none were aware of the class's existence. Aziza, a 45-year-old illiterate woman responded to this question by saying, "No, no one told us about the mothering classes. This town is forgotten by everyone. No one cares to tell us anything" (Aziza, 2017).

As demonstrated by Aziza's response, the lack of health information was a source of resentment among respondents, connected to a larger issue of limited access to care and poor administration. The towns of Oulmes and Tarmilat lack adequate infrastructure. This is especially true of the medical center, an issue I will take up in more detail in the upcoming section. For Aziza and many others, healthcare is yet another governmental disappointment.

To assess current health knowledge, I asked all respondents to explain the causes of diabetes, and whether it is preventable. Seven respondents were unaware that diabetes is a preventable condition. Among respondents who believed in the prevention of diabetes, many harbored other misconceptions about its causes and recommended prevention behaviors.

The most common misconception about type 2 diabetes concerned its degree of heritability. Even among respondents who believed in the preventability of type 2 diabetes, many drastically underestimated the impact of lifestyle prior to contracting the disease. Majda, a 36-year-old, partially literate, disease-free woman told me, "If your father has it, you have it. That's it. There's nothing you can do to stop or prevent it." (Majda, 2017).

Another common misconception was the conflation of type 1 and type 2 diabetes. Fatima, a 60-year-old diabetic woman told me, "No, I don't think you can prevent it, because I heard some babies are born with it" (Fatima, 2017).

Of those who believed that diabetes is preventable, many overestimated the impact of stress and underestimated the impact of other lifestyle factors. Four interviewees reported that nervousness was the primary or only cause of diabetes. For example, Hafida, a 55-year-old woman told me, “Diabetes comes from being nervous. My mom got diabetes because my brother went off to be a soldier. She couldn’t stop crying and worrying about it and then she got the disease” (Hafida, 2017).

A non-diabetic 50-year-old man named Fassali similarly told me, “People get it because they’re nervous or excited. It happens when you go gambling a lot” (Fassali, 2017).

Interestingly, when I asked Fatima what diabetic patients should do after developing the disease, she responded, “They should stop eating sugar, do more sports, and go to the doctor regularly” (Fatima, 2017).

Fatima’s responses are indicative of a larger trend in Tarmilat and Oulmes. Although over half of respondents underestimated lifestyle in the development of diabetes, nearly all, diabetic and non-diabetic, knew the recommended care regimen after contracting the disease. The majority had learned these recommendations from a friend or family member who was or is diabetic.

This trend may also explain some responses to my questions about healthy lifestyle habits, focused primarily on diet. When I asked about healthy foods, five respondents mentioned vegetables. Interestingly, five other respondents told me that everything is healthy. Other answers included croissants, *Milwi*, a fried Amazigh bread, and milk.

Even among interviewees who were aware of standard dietary recommendations to prevent chronic disease, most underestimated its impact. This seemed to be the foremost reason

for disregarding dietary advice. For example, Arguia, a 55-year-old illiterate woman with diabetes told me:

Getting diabetes is up to Allah. Everyone keeps on eating what they want until they find out they're sick. My doctor said I should go on a diet and stop eating sugar, but I still eat it sometimes. Sometimes you just do. (Arguia, 2017)

I also spoke with Morad Faekkek and Asmaa Llijzaar, two nurses at the Oulmes Health Center to understand their role in the health literacy process. Morad Faekkek is also a diabetes specialist. I reported my results to Faekkek and Llijzaar, and asked them if there is a communication breakdown between the people and their doctors. Llijzaar argued that the problem lies not with the healthcare staff, but with the people themselves:

They [the people of Oulmes and Tarmilat] all hear the information. They know it and they understand it. Now, everyone knows about diabetes. Most of them have technology, like a TV, and even if they can't read, they have sons and daughters to look up health advice. There's education. There's information. I promise you, there is. (Llijzaar, 2017)

Faekkek agreed, telling me:

There's no communication problem. A lot of women from the village don't respect their diet. They know about the proper diet to treat diabetes, but they don't respect it because of their traditional way of life. They're eating traditional food and sitting in the house all day... Whenever people come in, I tell them about food

and diet. I know the information, they know it, and we tell them the guidelines all the time. No respect. (Faekkek, 2017)

I found some evidence to substantiate Faekkek's claim that the culture of Oulmes and Tarmilat conflicted with standard care recommendations for diabetes. Majzuba, the 60-year-old diabetic woman told me about the custom of having tea with sugar each day in the village, "We add sugar to our tea, but you have to have this. It's necessary. I have diabetes, so I have to drink less sugar in my tea. But I still need some" (Majzuba, 2017).

However, the fact that some patients neglect dietary advice fails to substantiate the claim that there is adequate health communication. As mentioned before, many patients are unknowingly violating lifestyle recommendations because they are unable to understand health advice. Others struggle to comply with recommendations, but struggle due to a lack of guidance and support. The patients complained about their lack of health information, while the nurses complained about lack of compliance. Each side blames the other for the community's substandard health outcomes.

Both nurses also had promising recommendations for reducing Morocco's diabetes prevalence. Their ideas included implementing a comprehensive diabetes curriculum to be started in primary school, increased diabetes awareness through television programs, and the development of special sports programs for young adults (Faekkek, 2017) (Lijzaar, 2017)

Human Resources and Healthcare Facilities

Among all interviewees, there was widespread distrust of the public hospitals and medical facilities. Respondents cited problems with hospital staff, widespread extortion of bribes, and lack of medicines and other supplies.

While the subject of my research was not child birth or pregnancy, many women and men brought up stories of their experience when I asked about their attitudes. Prenatal care is especially relevant when discussing the impact of the medical system on people's daily lives. For many women in Tarmilat, prenatal care was an entry point into the health system. It may be the first time they visited a hospital in their lives. Their degree of satisfaction with the medical system throughout the pregnancy and birth was often a predictor of their degree of satisfaction with the healthcare system overall.

For example, many women in my sample expressed concerns about the relationship between doctor and patient during the birthing process. During the focus group, Jameela, a 31-year-old illiterate woman told me:

The nurses and midwives don't care about the women. They don't respect any of us. They'll make you give birth without a blanket to cover you, in front of everyone. There's no modesty or respect in the public hospitals. It's more like a machine. (Jameela, 2017)

Jameela's comments reveal a desire for a more personal relationship between doctor and patient. In Tarmilat, Jameela's generation is the first to regularly visit hospitals and doctors' offices during milestones such as the birth of a child. All women under the age of forty who I interviewed had their children with some degree of medical surveillance. This contrasted with the experience of women over 40, many of whom had their children with no degree of medical

intervention. Instead, they had their children with the help of family, friends, and neighbors, people with whom they had intimate personal relationships. While there are many problems with the public hospitals, this issue may also stem from a cultural shift around childbirth. Rather than their mother delivering their babies in the house they grew up in, today, a stranger delivers their babies on a sterile sheet of paper.

Additionally, subjects voiced material concerns about medical supplies. Fatima, the 60-year-old diabetic woman, told me she would never go to a public hospital, saying, “They don’t have enough supplies. There’s no oxygen, no medicine, and no doctors” (Fatima, 2017).

Fassali, the 50-year-old man, told me a story about the lack of medication at the public hospital:

Once, my daughter was sick in the public hospital, and the doctor told me she needed medicine that they didn’t have. He gave me a list and I went to pharmacies and private hospital and bought the medicine and all the other supplies he needed. But when I got back with all the supplies, I couldn’t even find the doctor. I think he just left and went home. (Fassali, 2017)

The doctor absenteeism reported by both Fassali and Fatima is an interesting issue. Many of my interviewees and patients who I met in the health center told me that none of the doctors and midwives lived in Tarmilat, or even in Oulmes. Rather, all the medical staff, aside from the security guards, lived in Khamissat, a three-hour car ride away. Many people complained about insufficient operational hours, when the Oulmes Medical Center was opened with inadequate staff.

When I visited the medical center, there was one midwife and two nurses on staff, in addition to the center administrator. 53 patients were packed into the hallway and crowded in the lobby. Some told me that they had come early, because they suspected that the doctors would go back to Khammissat in the afternoon. Soha, a 24-year-old woman, was among those waiting in line. She told me:

I am only here because I have a little ache in my throat. I wouldn't come for something more serious because they don't have enough supplies. There's barely any oxygen, unlike the private hospitals. We don't even have the essentials here. We barely even have the doctors here – they live so far and none of them would come in early or stay late to save you. (Soha, 2017)

I shadowed both the midwife and the nurses for one day. There was little regard for confidentiality or privacy. Before shadowing any patient examinations, I obtained consent from both doctor and patient. However, throughout the examinations, strangers often came in, asking the midwife and nurses questions or laughing with the patient. I am unsure if this is common practice in Moroccan medical culture, or if the long lines triggered privacy infringement.

During my time shadowing the diabetes nurse, he operated a blood pressure machine for one patient, while writing a prescription for another, who circumvented the long lines by having his consultation from outside the center, communicating through a window. The nurses and midwife seemed passionate about their jobs and concerned for the wellbeing of their patients, however, they struggled to meet demand. While I take into account their behavior changes due to

my scrutiny, the medical staff at the Oulmes Health Center seemed to be doing their best they could, given their numbers.

Although absent from my conversations with patients at the Oulmes Medical Center, the most often reported source of distrust between the Tarmilat population and the medical system was bribery. A 27-year-old woman named Assia told me she would never go to a public hospital again following the birth of her child in the public hospital in Khamissat, explaining:

I was in the Khamissat hospital and ready to give birth, but there was no midwife or doctor. My husband went to the security guard and tried to get the doctor to come. He wouldn't come until my husband paid him 50 dh, and then the doctor came. When you go to the hospital here, the first thing they say is, 'No doctor, we have nothing.' That's when you give the money. If you don't give them money, you should just leave. You could sit in the public hospital waiting for help forever. (Assia, 2017)

Fassali, the 50-year-old man, echoed these sentiments telling me, "If you don't pay a bribe, you get nothing. There is no healthcare. With money, you get everything here. You can kill someone and go free. It's everything" (Fassali, 2017).

Bribery is rampant throughout most public services in Morocco. To understand the legal context, I met with Badr Hagem, Commissioner of Justice at the Oulmes Tribunal. He told me that many people try to cajole him with bribes at the courts. While he is working to change this behavior, he advocated for compassion:

I understand why it happens. It's the only way to do anything around here. People have this stereotype about us (public employees), but I'm trying to fix this and

change our way of doing things... in my opinion, social problems like this can be fixed through discussion and transparency. (Hagemi, 2017)

I also asked Morad Faekkak and Asmaa Lijazzar, nurses at the Oulmes Health Center, about the prevalence of bribery. Both agreed that although bribery was rampant in the past, the current situation is improving (Faekkak, 2017) (Lijzaar, 2017). Ms. Lijzaar went on to say:

Someone tried to give me a bribe when I was treating her, but I told her no, this is my job. I'm trying to change the way people think about the healthcare system, so we can have more trust between us and our patients. (Lijzaar, 2017)

Health Coverage and RAMED

In my sample, seven people reported having RAMED, although a number had expired cards, and the majority of respondents had a close friend or family member with it. The responses to my questions about RAMED were highly varied.

Patients who were satisfied reported using RAMED to obtain low-cost medications and consultations. All respondents except one gave the caveat that RAMED works for smaller sicknesses, like a common cold or diabetes consultation, but not for more serious procedures. For example, one woman told me she was satisfied with RAMED because it helped her pay for her diabetes medication. Two women reported using RAMED for a medical consultation at a hospital. Considering the Ministry of Health provides primary care, including diabetes medication and consultations, for free to all Moroccans regardless of health coverage, it is unclear if their RAMED card had anything to do with their care. On the other hand, it is possible that obtaining a RAMED card served as an entry point into the medical system, encouraging

them to seek out care for the first time. Only one person in my sample reported successfully using RAMED for an invasive, emergency procedure.

Of those who complained about RAMED, the issues concerned wait times and bribes. Although they were never outright denied services, multiple beneficiaries reported exorbitant wait times. For example, Fatima, a 60-year-old woman told me she got the RAMED card following extensive advertising from the Ministry of Health:

I thought it would help me. I heard about it on the TV and the *Moqdem* of my village came and knocked on my door. When RAMED came out, it was like a celebrity. Everyone knew and was talking about it. So I paid 120 dh to apply and it took a few months. (Fatima, 2017)

After obtaining her RAMED card, Fatima became sick and needed an urgent operation. She told me:

Once I was sick and I went to the public hospital. I got nothing, they just want bribes. You need to pay a bribe in all public places. When I went, they kept pushing back my appointment. They said, ‘We can’t see you for three months,’ so I gave up. RAMED is like having another ID card. It just sits in my house and does nothing. (Fatima, 2017)

For many patients, particularly uneducated women, the gap between policy and practice regarding RAMED is staggering. While the Ministry of Health may have a piece of paper granting patients free access to secondary care facilities, in practice, they are targets for

extortion. The problem lies not in insurance. Until the Ministry of Health can eliminate the practice of bribery, low-income Moroccans will not be able to afford healthcare.

Conclusion

While Morocco continues to make strides to extend life expectancy and enhance quality of life, health equity is lacking between rural and urban communities. This study represents a case study of diabetes care in the region of Tarmilat and Oulmes, characterized through health literacy, facilities, and coverage.

In the community of Tarmilat and Oulmes, people lack adequate information to exercise agency over their health outcomes. This study found that among community members, the most widespread and serious gap in health literacy concerned the ability to prevent type 2 diabetes through lifestyle change. However, Morocco is making promising steps forward, with the advent of aggressive mass media campaigns to educate the public about healthy lifestyle habits and chronic conditions. This paper found that a significant minority of subjects had been exposed to mass media healthcare information through television or radio.

The Oulmes Medical Center was the closest public healthcare facility for interviewees. Although the center was equipped with advanced technology and competent staff members, it lacked the capacity to handle its massive patient stream. The resulting wait times plagued the relationship between the community and the medical center, often driving patients to resort to bribery.

Although many patients were formally insured by RAMED, many members of the study sample were unsatisfied with their coverage. Until the Ministry of Health can fix basic healthcare

issues including a lack of human resources, insurance is nearly irrelevant. Hospitals already strapped for funds are unable to take on the additional patient flow triggered by RAMED.

Limitations of this study include the low sample size and the small number of indicators used to assess access to healthcare. With additional resources and time, future studies may consider further indicators and increase sample size. Additionally, studies should be conducted that focus on access to care for vulnerable populations in rural Morocco, including the elderly, women, and illiterate people.

This study recommends that the Ministry of Health focuses on addressing the human resources issue, before tackling issues of insurance or epidemiologic surveillance. The Ministry must encourage university applicants to strongly consider attending medical school through economic incentives. The government could partially or fully subsidize medical school for students who commit to spend at least five years working at a rural medical center following graduation. Subsidies or scholarships should also be given to students who are interested in specializing in widespread chronic diseases, such as hypertension, diabetes, and cancer. Past proposals to implement such a program have died in Morocco's parliament; struggling rural communities are out of sight and often out of mind. By drawing awareness to the floundering state of rural healthcare, the goal of this study is to ignite change.

Appendix A

Interview Questions for People from Oulmes and Tarmilat

1. What is your name?
2. Where are you from?
3. How long have you lived in Oulmes or Tarmilat?

4. In your opinion, is it better to have a child in the house or in the hospital?
5. Do you like the public hospital?

1. What kinds of foods do you think are healthy?
2. What is diabetes?
3. Why do people get it?
4. Can you prevent it?
5. What should you do if you have diabetes?
6. Have you seen anything on TV about diabetes? What did it say?
7. Do you have any books about diabetes?

8. Have you been tested for diabetes?
9. Where were you tested?
10. Have you ever seen a healthcare caravan? What happened there?

11. Do you have insurance? Do you have RAMED?
12. How did you learn about the RAMED program?
13. How did you get the RAMED card?
14. Do you like RAMED? What has RAMED done for you?

Appendix B

Interview Questions for Oulmes Hospital Staff

1. What is your name and title?
2. What qualifications do you possess?
3. Which is a bigger problem here: type 1 or type 2?
4. How important is diabetes education?
5. I've talked to a lot of people who don't understand that type 2 diabetes is preventable. Do you think there's a problem with communication?
6. How can we better educate Moroccans about healthy lifestyle?
7. How many of your patients are using RAMED?
8. Is corruption or bribery a problem in the Oulmes Health Center?

Appendix C

Questions for Academics and Policy Makers

1. I read a study about diabetes in Morocco, which found that over half of diabetics aren't aware of their condition. Why is this?
2. Does the public respect medical advice?
3. What are some misconceptions about diabetes and hypertension?
4. What is the most difficult part about treating hypertension or diabetes?

5. What is the impact of co-morbidities on diabetes or hypertension care?
6. What are the limits of preventative care?

7. In the past two decades, the leading causes of death in Morocco have changed from communicable diseases to noncommunicable diseases. How do you view this?
8. What is the goal of medicine in your opinion?

9. Why is hypertension and diabetes a priority for the Moroccan government?
10. What is the relationship like between the government, doctors, and academics?
11. Morocco has been implementing a strategic plan to reform healthcare. How do you view the strategy?
12. How has the strategy worked in practice?
13. Compare care before and after the strategic plan.
14. How do urban and rural healthcare, specifically related to chronic disease, stack up?
15. What types of chronic disease care is covered under primary care? What falls under secondary and tertiary care?

16. To what degree do low-income patients rely on RAMED to attain treatment for their chronic condition?
17. How successful is RAMED thus far? What are its strong and weak points?

Appendix D

Participant Consent Form

I. Brief description of the purpose of this study

The purpose of this study is to evaluate the Ministry of Health's degree of success in combating type 2 diabetes in the Oulmes/Tarmilat community.

II. Rights Notice

In an endeavor to uphold the ethical standards of all SIT ISP proposals, this study has been reviewed and approved by a Local Review Board or SIT Institutional Review Board. If at any time, you feel that you are at risk or exposed to unreasonable harm, you may terminate and stop the interview. Please take some time to think about the following statement, which will be read to you in your native language.

- a. Privacy - all information you present in this interview may be recorded, by hand, and safeguarded. Your interview will not be tape recorded without your consent. If you do not want the information recorded, you need to let the interviewer know.
- b. Anonymity - all names in this study will be kept anonymous. The author will use pseudonyms.
- c. Confidentiality - all names will remain completely confidential and fully protected by the interviewer.

By verbally consenting before the interviewer and a witness, you give the interviewer full responsibility to uphold this contract and its contents.

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