

Fall 2018

SILENT KILLERS: DIABETES AND THE ACTIVE IGNORANCE OF NONCOMMUNICABLE DISEASE IN BALI

Madeleine Lambert
SIT Study Abroad

Follow this and additional works at: https://digitalcollections.sit.edu/isp_collection

 Part of the [Food Studies Commons](#), [International and Community Nutrition Commons](#), and the [South and Southeast Asian Languages and Societies Commons](#)

Recommended Citation

Lambert, Madeleine, "SILENT KILLERS: DIABETES AND THE ACTIVE IGNORANCE OF NONCOMMUNICABLE DISEASE IN BALI" (2018). *Independent Study Project (ISP) Collection*. 2935.
https://digitalcollections.sit.edu/isp_collection/2935

This Unpublished Paper is brought to you for free and open access by the SIT Study Abroad at SIT Digital Collections. It has been accepted for inclusion in Independent Study Project (ISP) Collection by an authorized administrator of SIT Digital Collections. For more information, please contact digitalcollections@sit.edu.

SILENT KILLERS: DIABETES AND THE ACTIVE IGNORANCE OF
NONCOMMUNICABLE DISEASE IN BALI

Madeleine Lambert

Project Advisor: Dr I Made Januarbawa

SIT Study Abroad

Indonesia: Arts, Religion, and Social Change

Fall 2018

Table of Contents

<i>Acknowledgements</i>	4
<i>Abstract</i>	6
<i>Introduction</i>	7
Research Questions and Objectives	8
Field Methods and Ethics	9
List of terms	12
Limitations	12
<i>Background</i>	14
Literature Review	14
Interviews in Tabanan	16
<i>Overview of Diabetes in Bali</i>	18
Diagnosis	18
Treatment	19
<i>BPJS</i>	20
<i>Non-BPJS</i>	21
Outcomes	22
<i>Case Studies from Kayubih</i>	25
Pak Wayan Karem	25
Pak Nyoman Kuat	26
<i>Analysis</i>	29
Resistance to Seeking Medical Care	29
Misunderstandings about Chronic Disease	30
Regional Differences	31
BPJS	33
<i>Focus on Primary Care</i>	33
<i>Resistance to Use</i>	33
<i>Confusion over Usage</i>	34
Trends in Diabetes Diagnosis and Management	34
<i>Increasingly Earlier Diagnosis</i>	34
<i>Increasing Adherence to Medication and Lifestyle Changes</i>	35
<i>Increasing Insulin</i>	35
<i>Conclusion</i>	36
<i>Suggestions for Further Research</i>	38
Regionally Specific Data	38

Health Equity	38
Other Noncommunicable Diseases	38
Balian in Present-Day Healthcare	39
<i>References</i>.....	42
Primary Sources	42
Secondary Sources.....	42

Acknowledgements

First and foremost, I have to thank my advisor Dr. Jon for his constant guidance and support. Dr. Jon, you have been absolutely invaluable to my independent study project. I had never conducted my own field research before, and your connections in the field and your invariable responsiveness to my questions, no matter how vague or nitpicky, saved me from a lot of frustration. For that, and for the many small acts of kindness you have shown me along the way, thank you for making my ISP a thoroughly exciting experience.

Second, a huge thank you to all the informants who let me into their busy lives for an hour or so and made writing my ISP enjoyable. To all the healthcare providers and the patients, Pak Nyoman and Pak Wayan, you have taught me so much more about diabetes in Bali than any medical publication. Specifically, I want to thank Pak Romi and his family, who let me into their lives for a little over an hour and allowed me to tag along to their village of Kayubihi for a day to interview Pak Romi's patients. Pak Romi, your experience in your field and your generosity truly helped shape my ISP. I had so much fun talking and laughing with your daughter, and I will never forget the kindness (or the delicious food!) your wife and mother showed me over dinner. I want to thank you, your family, and your village for your hospitality.

Third, I have to thank the staff of SIT Indonesia: Arts, Religion, and Social Change for their support in preparing us for the challenges of the ISP period. Bu Ary, you are like a second mother to us. Your good humor, experience, patience, and your extreme compassion have made my time in Indonesia unforgettable. I cannot thank you enough for giving me such a highlight in my life. To Pak Yudi, you have been a mentor and a friend to me. Thank you for your openness and for your willingness to have long discussions with me before I had even fully formed an idea for my ISP; your feedback more than anything prepared me to start my project. To Sani, Dian,

and Kazu, thank you for your support and responsiveness throughout our time in Indonesia. You have been excellent teachers and excellent company.

Finally, to my homestay family in Kerambitan: you have been so much more than a place to eat and sleep. Especially to my Ibu and my sister Sinta, you have so thoroughly and generously invited me into your lives. You have given me comfort and compassion in an entirely new environment for me. I have felt more welcome here than I ever thought possible, and truly think of you as family. I can only hope I ever get the chance to repay you for your hospitality and love. Thank you for giving me a second home on the other side of the world.

Abstract

In this paper, I will explore the growing burden of non-communicable diseases and specifically diabetes in Bali. I will study the general publics' awareness and behaviors about noncommunicable diseases, as well as the attitudes and behaviors of diabetic patients towards their own condition. Furthermore, I will explore the diagnosis, treatment, and outcomes of diabetes, as well as the impact of the Indonesian national healthcare reform of 2014 on these issues. My objectives in this study were to explore the perspectives of both patients and healthcare providers towards diabetes, and to compare and contrast these perspectives both against each other and against the assumptions I had made from my literature review going into the field. I found that they often challenged each other.

More than anything, I found that healthcare in Bali is in a massive state of transition, from the introduction of the single state healthcare provider and increasing awareness about noncommunicable disease. Conflicting accounts from healthcare providers on the diagnosis, treatment, and outcomes for diabetes reflect both regional differences and the changes that have already begun in Balinese health. While old mindsets about resistance to seeking medical care and misunderstandings about the nature of chronic disease persist, even strongly in more rural regencies, providers are reporting increasingly earlier diagnosis, better adherence to medication, and fewer complications in patients with diabetes.

Introduction

Lower middle-income countries, especially in Southeast Asia, have experienced a rise in noncommunicable disease (NCD) burden in recent decades as populations adapt to more “modern” lifestyles. In Indonesia, NCDs represented 43% of the country’s disease burden in 1990 (Fountaine, Lembong, Nair, & Süßmuth-Dyckerhoff, 2016). As of 2016, that percent had increased to 69%, a number that continues to rise. The growth in NCDs is both deadly and expensive. Three NCDs – cardiovascular disease, diabetes, and respiratory diseases – accounted for 50% of all deaths in Indonesia in 2014. The costs associated with these same NCDs will cost the country 2.8 trillion USD from 2012 to 2030 (Fountaine, Lembong, Nair, & Süßmuth-Dyckerhoff, 2016).

The annual rise of type 2 diabetes in particular caught my interest. As a pre-medical student studying Global Health, as well as a member of a Southeast Asian family with a history of diabetes myself, I noticed immediately in country that many aspects of modern Balinese lifestyle – including but not limited to the high smoking rates in men, the frequent consumption of sugar-sweetened beverages and the carbohydrate-rich diet, and the reduction in physical activity in favor of motorbikes – are risk factors for type 2 diabetes. In my preliminary research, I found that Indonesia represents the fifth largest population of diabetics in the world, with the disease affecting 6-7% of Indonesians (Snouffer, 2017). That population is expected to rise from 9 million in 2014 to 14 million by 2035. Most alarmingly, I found that 70% of cases go undiagnosed (Soewondo, Ferrario, & Tahapary, 2013). When patients are diagnosed, it most often occurs late in the disease pathway, with patients waiting for two or more complications to develop before seeking care. Furthermore, once diagnosed, only 30-35% of patients are hitting recommended treatment targets in Indonesia (Fountaine, Lembong, Nair, & Süßmuth-

Dyckerhoff, 2016). Patients frequently do not follow-up properly with their healthcare providers, and adherence to medication and lifestyle changes is inconsistent.

These issues are inseparable from the Indonesian healthcare system as a whole and specifically with access to primary healthcare, which can detect health issues before they become major complications and severely reduce the costs and life years lost associated with diabetes. To address these issues, along with growing health inequity, Indonesia launched a massive healthcare scheme called *Jaminan Kesehatan Nasional* (JKN, the National Health Insurance) in 2014 to achieve universal health coverage by 2019. This reform launched the *Badan Penyelenggara Jaminan Sosial* (BPJS, or the Social Insurance Administration Body), one of the largest state single healthcare providers in the world with 195 million people enrolled in the program as of April 2018 (“The Financial Sustainability,” 2018). Regardless, more than one third of the country remains without health coverage of any kind. Even among BPJS members, out-of-pocket spending remains common (Wiseman et al., 2018).

Research Questions and Objectives

As a student of both medicine and health systems, I came out of my preliminary research with questions about the perspectives of the patient, the healthcare provider, and the healthcare system as a whole. To guide my study, I composed a set of research questions as follows:

1. Why do Indonesians wait so long before seeking care in the case of serious symptoms?
2. What treatment choices are available for diabetics?
3. How are self-care behaviors, among the most common treatments for type 2 diabetes, prescribed and implemented?
4. How has BPJS changed the diagnosis and treatment outcomes for type 2 diabetes?

5. How is the landscape of healthcare shifting to primary care to accommodate the growing burden of noncommunicable diseases, if at all?

My objectives in this study were to explore the perspectives of the public, diabetic patients, and healthcare providers towards diabetes, and to compare and contrast these perspectives against each other and against the assumptions I made going into the field. I specifically focused on the diagnosis, treatment, and outcomes of the disease. Furthermore, I wanted to view these perspectives against the backdrop of a drastically changing healthcare landscape and to see firsthand the impact of BPJS on diabetics' everyday lives.

Field Methods and Ethics

I was based in Denpasar for the majority of the ISP period. As the capital of Bali, healthcare providers are concentrated here. In Denpasar, a city-regency itself surrounded by the wealthy Badung regency, I conducted interviews with practitioners at private hospitals practices. I travelled outside Denpasar to conduct interviews with the public and with diabetes patients. I conducted two interviews with diabetes patients in a village called Kayubihi in the Bangli regency. These were two patients of one of the healthcare practitioners I interviewed, Pak Romi, a nurse who now runs his own private practice. Thus, I was able to interview stakeholders from multiple regencies in Bali, from urban to rural. Each interview was about 40 minutes to an hour.

For my interviews, I wrote down sets of 15-20 questions tailored to each stakeholder. I had separate questions for healthcare practitioners and for patients. Each set of questions was written first in English then translated to Bahasa Indonesia. My procedure for each interview was as follows: I first informed my interviewee about the scope of my project and the final paper I would produce. I then obtained verbal consent to include the interview in this project, as well as consent to record the interview. Next, I began with my set of questions, although the actual

conversation would often deviate based on the participants' answers, such that some questions became obsolete and some new follow-up questions emerged. I also took notes, either on my computer or in paper. That way, I later had access to what I had been thinking at the time, as well as a verbal record to clarify any issues that arose with the language barriers or that I missed in my notes. All of my interviews with healthcare practitioners and patients had been scheduled by either my advisor or Pak Romi, so each interviewee had been informed of my study and knew they were going to be interviewed.

I went into each interview with a healthcare professional with the same set of about 20 questions. After explaining the purpose of the interview and obtaining consent, I asked about my interviewee's background in healthcare. Then I would begin asking about the diagnosis of diabetic patients, such as the most common reason for seeking medical care, the typical age of diagnosis, and the frequency of routine medical check-ups. I would then ask about treatment options for diabetics, the typical patients' adherence to treatment, and the most common complications that arise. The final section of the interview focused on how BPJS has affected diabetics' ability to obtain medication, come in for follow-up appointments, and otherwise manage their condition.

I interviewed four healthcare practitioners, three doctors and one nurse. The first doctor I interviewed on November 8, 2018 at Surya Husadha hospital. Dr. Kade Martini has worked at this private hospital as a general practitioner for 15 years and is good friends with my advisor Dr. Jon, who used to work at the hospital and accompanied me to the interview. She works in the emergency room of Surya Husadha and at a BPJS clinic, a *Puskesmas*, public health center in Badung. She spoke in mixed Bahasa Indonesia and English, with Dr. Jon helping fill in the gaps for me.

I interviewed another doctor at Surya Husadha hospital on November 27, 2018, Dr. Wahyu Permana. He has been a general practitioner for two years, and in 2016 started working in the executive ward, which frequently deals with tourists. Dr. Wahyu also has a Master's degree in management for hospitals and was well versed in the details of BPJS. This interview was conducted largely in English, with Dr. Jon occasionally serving as an intermediary.

The last doctor I interviewed on November 30, 2018 at Udayana University in his office, Dr. Ketut Suarjana. He has been a general practitioner since 2003. He worked at a hospital from 2003-2006, but since 2006 he has worked at the private Klinik Pratama Wiratia in Denpasar. Most of his patients are BPJS members living in Denpasar, although he sometimes gets patients from rural villages that come to the city to confirm their diagnoses. About half his clients are actually from Java. Dr. Ketut is a BPJS provider. His practice focuses on primary care and preventing noncommunicable diseases. I used the same set of questions with Dr. Ketut as I did with the doctors at Surya Husadha. This interview was conducted in largely in English, without the aid of Dr. Jon.

The other healthcare practitioner I interviewed was Pak Romi on November 12, 2018, at his private practice called Bali One Care in Denpasar. Pak Romi worked with my advisor as a nurse at BIMC hospital for 14 years in the emergency room, dealing with many international patients. He started Bali One Care in 2012, a private practice that leases medical equipment and the first company in Bali to offer mobile assistance to people with disabilities or other motor issues. I used the same set of questions with Pak Romi as I did with the doctors. This interview was conducted entirely in English and without the presence of my advisor, as Pak Romi has a much better command of medical English than I do of medical Bahasa Indonesia.

During our interview, Pak Romi invited me to join his family to his village of Kayubihi the following weekend to conduct interviews with some of his patients in the village. I accepted, and interviewed two older men from the village on Sunday November 18, 2018. These interviews necessitated help from Pak Romi, as the patients only spoke Balinese or spoke very limited Bahasa Indonesia. Thus, these interviews were conducted in a mix of English, Bahasa Indonesia, and Balinese, with Pak Romi serving as the intermediary.

I had a set of interview questions for patients consisting of about 15 questions. After explaining my project and obtaining consent, I asked about prior knowledge of diabetes before diagnosis and about any family history with noncommunicable diseases. Then, I asked about when they received their diagnosis, and namely what symptoms drove them to seek medical care. I then asked about their treatment regimen and how their lifestyle had changed since their diagnosis, as well as about family involvement in this. Finally, I ended the interview by asking about their BPJS status and where they obtained their medication.

Limitations

One of my largest limitations in this study was my location. I stayed in Denpasar and the Badung regency because of the concentration of healthcare services here, but this also kept me in the wealthiest parts of Bali for my interviews with healthcare practitioners. The experience of doctors and nurses in Denpasar and Badung might differ greatly from that of their peers in other poorer and less urban regencies, where there are less health facilities and resources.

Likewise, I was only able to interview patients in Kayubihi, a rural village. As described above, the situation of diabetics in rural regencies is quite different than that of their counterparts in more urban regencies with more money in healthcare. Patients in Denpasar and Badung seem more apt to come in for regular check-ups or to seek medical care in general because of the

abundance of clinics and hospitals in these regencies. These populations also tend to have more awareness about noncommunicable diseases. Although I heard about the experience of patients in the city from the healthcare providers I interviewed, I was unable to interview someone firsthand about their experience as a diabetic in Denpasar or Badung.

Another limitation was obviously the language barrier. Although the healthcare practitioners I spoke to were mostly fluent in English, occasionally exact translations (especially for medical terms) can convey slightly different ideas. For example, in English when I think of a medical check-up, I think of regularly scheduled preventative appointments. For many people in Bali, a medical check-up usually occurs when someone experiences severe symptoms and then schedules an appointment with a professional. My second and larger limitation was in interviewing people from the village in Kayubihi. Here, my interviewees spoke little to no Bahasa Indonesia, and my strong accent in Bahasa Indonesia made it hard for my interviewees to understand my questions. These interviews were conducted entirely with the use of a translator, Pak Romi, who doubles as these patients' healthcare providers. Thus, I was unable to get direct answers from the patients, as Pak Romi would also answer with his experience as the primary healthcare provider for these patients.

Background

Literature Review

I prepared for my study by conducting a literature review about type 2 diabetes in Bali and in Indonesia, as well as noncommunicable diseases in general and the Indonesian health care system. I found a lack of regionally specific data about type 2 diabetes, and the research I found was often outdated due to the massive healthcare reform in 2014 and the introduction of BPJS. Nevertheless, this literature review allowed me to make several assumptions going into my interviews.

First, there is low public awareness about type 2 diabetes or its symptoms. 70% of diabetes cases go undiagnosed and diagnosis happens late in the disease pathway after two or more complications have developed (Soewondo, Ferrario, & Tahapary, 2013). Adherence and consistency in treatment is generally low, with practitioners citing low public awareness of chronic disease (Fountain, Lembong, Nair, & Süssmuth-Dyckerhoff, 2016).

Second, Indonesian health habits have generally worsened over the past three or four decades as the archipelago transitions economically. Through personal experience, I know that the Indonesian diet is composed of a lot of rice and fried foods. I found that Indonesians have some of the highest smoking rates in the world especially for young men, which is tied to a 30-40% higher risk for developing type 2 diabetes (Fountain, Lembong, Nair, & Süssmuth-Dyckerhoff, 2016). Indonesians also consume far above the WHO recommended amount of sugar-sweetened beverages per week. 24% of children, 41% of adolescents, and 33% of adults consume at least one sugar-sweetened beverage a day, associated with a 25% increased risk of diabetes in the future (Laksmi et al., 2018). Furthermore, the shift in the labor sector away from manual labor has reduced physical activity. About 25% of adults in Indonesia are physically

inactive, compared to around 15-16% in other Southeast Asian countries (Fountain, Lembong, Nair, & Süßmuth-Dyckerhoff, 2016). The widespread use of motorbikes to commute to school and work has also cut down on walking.

Finally, I saw the effects of BPJS on the health of Indonesians is still unclear, as the program is quite new. Essentially, in response to poor health outcomes in the country, the Indonesian government launched a scheme in 2014 called *Jaminan Kesehatan Nasional (JKN)* to achieve universal health coverage by 2019. Before the launch of JKN, Indonesian healthcare was fragmented between private insurance for those who could afford it and public programs for various groups, such as the very poorest, government employees, etc. The JKN united these various schemes under a single provider, BPJS *Kesehatan*. BPJS is provided free for the very poorest, but is available to all Indonesians for purchase in different “classes” by the public. These classes vary only in the quality of the facilities (eg: class 1 might get a private room in a hospital whereas class 3 might share a room with eight other beds), not in the quality of care received or in the coverage (Wiseman et al., 2018).

In 2018, the monthly fees for classes 1, 2, and 3 were 80,000 Rp, 51,000 Rp, and 25,500 Rp respectively (Armalia, 2018). BPJS has a large focus on preventative care, and the Puskesmas are expected to promote healthy lifestyles for their members (Wiseman et al., 2018). The coverage is fairly standard, covering all degenerative and infectious diseases. Yet over one third of Indonesians, mostly those working in the informal sector, remain uninsured. Additionally, even members of BPJS are still incurring high out-of-pocket fees. In the first year of BPJS, 18% of members still made out-of-pocket payments in health facilities, usually from privately purchasing medicine (Hidayat et al., 2015). Public health financing remains at just half the requirement to achieve universal health coverage (Wiseman et al., 2018).

Interviews in Tabanan

To prepare for my ISP, I conducted a smaller set of interviews in a village in North Tabanan while studying and living with a family there for one week. In the village, I conducted a group interview with four female 18-year-old students from Institut Hindu Dharma Negeri, as well as individual interviews with two village locals, a middle-aged man at a *warung* (street restaurant) and a teenaged girl at her compound. All interviews were conducted with oral consent and entirely in Bahasa Indonesia. I had the same set of questions for each interview.

The first category for primary data was about healthy habits and people's lifestyles. Each participant drank at least one sugar-sweetened beverage per day, usually sweetened tea in the morning, although this number leaned higher for young people. None of the participants smoked, although all participants said that most of their male friends did. All but one respondent admitted to rarely physically exercising, typically just once a week – the man I interviewed said that he got physical activity every morning through farming. When asked how people could improve their health, all participants replied that one can live a healthy lifestyle through eating better, eating less sugar, drinking more water, and exercising more.

I also asked about people's habits of seeking medical care. This conversation started with questions about what people do when they feel sick, what medicines are kept around the house, the frequency of visits to healthcare professionals, etc. The responses were fairly uniform. People mostly go to the doctor when they can no longer handle the pain on their own. "Check-up" mostly referred to any visit to a medical facility, only used for when the patient feels ill. There was a consistent protocol for treating an illness. First, one either does nothing or takes traditional medicine and waits for the pain to go away. If symptoms persist, one might take one of the medications kept around the house. The interviewees provided a standard list: paracetamol,

bodrex, hypertension, and cajuput oil. If symptoms continue to persist and cannot be withstood, patients will go to the Puskesmas or to a private nurse or GP, where in severe circumstances they may be referred to the hospital. Generally, participants said that they would only go to the balian for a medical problem if going to the hospital did not relieve symptoms, although some mentioned older generations going to the balian at higher frequencies.

We then discussed diabetes and other noncommunicable diseases. By far the most well-recognized non-communicable disease was hypertension. Each interviewee knew this disease and had some understanding that eating too much salt is a risk factor. The village people did not know diabetes, or *kencing manis*. However, all of the students knew it by one of those names. All students seemed to know that diabetes type 2 is developed by too much sugar in the diet, although they also seemed to think it was passed down genetically.

One of the students had a family history of diabetes. Her father suffers from diabetes, and her grandfather has diabetes and hypertension. She told me that both use oral antidiabetic drugs 2-3 times a day to treat their diabetes, without injections of insulin. Her father goes to the doctor about two times a month to keep his diabetes under control. She connected diabetes to both the older age of her father and grandfather, and their smoking and drinking habits.

Overview of Diabetes in Bali

Diagnosis

Depending on the patient's awareness of diabetes and the accessibility of health services, diagnosis might occur at a Puskesmas, a general practitioner (GP) or nurse's private practice, or even at the emergency room (Dr. K. Martini, pc, November 8, 2018). At the first two locations, diagnosis most frequently occurs when a patient comes in with neuropathic symptoms, typically with a wound that is healing slowly or not at all (Dr. K. Martini, pc, November 8, 2018) (Pak Romi, personal communication, November 12, 2018). Many patients also report feeling completely drained and tired before they reach this stage (Pak Romi, pc, November 12, 2018). Blood tests are standard and affordable, so most diagnosis occurs in one of these two locations. In Denpasar, diagnosis often occurs at the Puskesmas because they are so abundant in the city. However, for patients in some rural areas, the closest Puskesmas is still inconveniently far. These patients will visit a private practice, either a general practitioner or a nurse, who will suggest a diagnosis of diabetes. Some of the older patients might try to go to the balian first, and only resort to the hospital if symptoms persist (Dr. K. Martini, pc, November 8, 2018). Thus, for the bulk of diabetic patients, diagnosis occurs relatively late in the disease pathway, with patients waiting for severe complications to develop before seeking medical care (Pak Romi, pc, November 12, 2018).

In Denpasar, where awareness of diabetes tends to be higher than in rural areas, patients might discover they have diabetes at a routinely scheduled medical check-up at a Puskesmas or at a GP (Dr. K. Suarjana, personal communication, November 30, 2018). BPJS covers a medical check-up every six months for individuals over the age of 35 to test blood pressure, blood sugar, uric acid content (a high-risk factor for diabetes in Indonesia), and sometimes cholesterol (Dr.

W. Permana, pc, November 27, 2018). The situation of late diagnosis seems to be improving with the introduction of BPJS, as the program has removed at least the financial barrier (Dr. K. Suarjana, pc, November 30, 2018). In Denpasar, it is not uncommon for patients over the age of 35 with a family history of noncommunicable diseases to come in for proper routine check-ups (Dr. W. Permana, pc, November 27, 2018). Additionally, it is mandatory for many hotel workers to have a medical check-up once a year including a blood test, so many workers in the tourism industry get diagnosed earlier (Dr. K. Martini, pc, November 8, 2018).

The Ministry of Health is taking steps towards earlier diagnosis in rural areas. In some villages, the Puskesmas occasionally holds outreach programs at the *Bale Banjar*, the Balinese equivalent of the town hall. Here, the Puskesmas will educate citizens about their health and the importance of preventing noncommunicable diseases, and provide free check-ups including blood sugar tests. These meetings occur infrequently, once a year if at all, and not in every village. Regardless, some patients will come to Denpasar to confirm their diabetes diagnosis if they test for high blood sugar at the *Bale Banjar* meetings.

For patients that are diagnosed at the emergency room, they might discover their diabetic status completely on accident. A blood test is routine for anyone over 40 years old, so sometimes patients come to the emergency room for unrelated reasons and discover that they have diabetes on accident (Dr. K. Martini, pc, November 8, 2018). Occasionally patients who have waited for severe complications to develop will be sent to the emergency room for kidney failure, and only then receive a diagnosis of diabetes.

Treatment

After diagnosis, the patient is typically referred to the Puskesmas or to a GP if they were diagnosed elsewhere. There, patients typically are prescribed a dosage of oral antidiabetic drugs,

commonly metformin or glibenclamide (Pak Romi, pc, November 12, 2018). The Puskesmas and the GP are supposed to be able to handle noncommunicable diseases on their own, but if the patient's condition is too severe, they will be recommended to a specialist at a hospital (Dr. K. Suarjana, pc, November 30, 2018). Once the patient is recommended to this level, insulin is almost always prescribed. One recent trend in diabetes care is the increasingly frequent use of insulin (Pak Romi, pc, November 12, 2018). Providers are prescribing insulin earlier in the treatment pathway because outcomes tend to be better the earlier insulin is used, although some patients are intimidated because they think insulin use is a sign that their condition is more deadly (Dr. K. Martini, pc, November 8, 2018). In any case, patients that accept are usually given a mix of insulin and metformin in this situation, as glibenclamide can make the blood sugar too low (Dr. W. Permana, pc, November 27, 2018). Once the patient is under control, they are referred back to the GP or the Puskesmas to manage their condition.

BPJS

For patients with BPJS, there is a list of oral antidiabetic drugs that BPJS will cover in a certain quantity per month, including a typical dosage of metformin and glibenclamide. Insulin is covered as well. Any patient who needs a different medication or a higher dosage must pay out-of-pocket to cover the difference (Pak Romi, pc, November 12, 2018). The pharmacy will send the medication to the Puskesmas, where the patient can pick it up. The medication is typically given for one month at a time (Dr. K. Martini, pc, November 8, 2018) (Dr. K. Suarjana, pc, November 30, 2018).

The Puskesmas will then cooperate with Prolanis, a monthly program to educate patients with noncommunicable diseases about lifestyle changes, to manage treatment (Dr. K. Martini, pc, November 8, 2018). Patients can also get a small check-up on blood pressure and blood sugar

here (Dr. K. Suarjana, pc, November 30, 2018). In Denpasar, Prolanis is quite popular, as about 70% of pre-diabetic or diabetic individuals over the age of 50 will attend monthly meetings at the Puskesmas (Dr. W. Permana, pc, November 27, 2018). The Puskesmas and the GP are quite active about follow up with their patients, calling them to remind them to come to Prolanis meetings (Dr. K. Suarjana, pc, November 30, 2018).

Patients under BPJS are supposed to come to the clinic check-up once a month to manage their condition. For a diabetic with other diseases such as hypertension, that number might be two or three times a month. In Denpasar and Badung, where there are many clinics, a patient may come in three times a week for any minor complication (Dr. K. Martini, pc, November 8, 2018). BPJS providers say that this is because patients feel as though they have already paid for BPJS or have had BPJS deducted from their salaries from their employers (Dr. K. Suarjana, pc, November 30, 2018). Thus, they want to “get their money’s worth” and will come in frequently.

Non-BPJS

The situation looks quite different for individuals that do not use either remain uncovered by BPJS or have BPJS and choose not to use it. For the former, families that are not low-income enough to qualify for free BPJS from the government might not be willing to pay for BPJS themselves, especially if the public facilities are located far away. For the latter, many individuals that are covered by BPJS choose not to use their insurance in certain situations to forego the bureaucratic regulations involved (Dr. Jon, personal communication, November 15, 2018).

These patients will obtain their medication not from the Puskesmas or from the GP, but from a private pharmacy, where it can be purchased in larger doses. Metformin is affordable and

can be purchased over the counter, with an average monthly dosage costing about 50,000 Rp (Pak Nyoman Kuat, personal communication, November 18, 2018).

These patients will go to the clinic or the private nurse for a check-up only when complications arise. Outside of Denpasar and Badung, the resistance to seeking medical care is much stronger. Even if their blood sugar is not well-managed, the patient will typically only come seek care when their condition worsens to the point that they cannot go about their daily lives, and even then only at the urging of family (Pak Wayan Karem, personal communication, November 18, 2018). They typically have lower adherence to medication as well, as some patients will stop taking their medications once they feel back to normal (Dr. K. Suarjana, pc, November 30, 2018).

As for lifestyle changes, as self-care behaviors are extremely important in the treatment of noncommunicable diseases, they vary drastically case by case. When asked about patients' adherence to lifestyle changes, healthcare practitioners had very different answers. Dr. Kade Martini reported generally poor adherence to healthier habits, citing her own family as examples. Pak Romi reported that he knew just as many patients that poorly adhered to their regimens as he did patients that were very strict. Dr. Wahyu Permana, the youngest doctor, said that patients were generally very good with changing their diets.

Outcomes

Outcomes are heavily correlated to location, as seen above. Patients in Denpasar and Badung tend to have better adherence to medication and are better about follow-up appointments with their counterparts in different regencies, so their outcomes tend to be better. Dr. Ketut Suarjana reported that most of his patients take their health very seriously, and that he in fact had never had a diabetic patient with complications.

After the first six months of treatment, many diabetic patients in Denpasar and Badung will achieve a HbA1c under 200 mg/dL. The most common complications are neuropathic, with patients coming to the clinic frequently for small wounds that are not healing. Hypoglycemia (dangerously low blood sugar) is also common, resulting from poor management of blood sugar, with Dr. Wahyu Permana estimating that it affects around 20-30% of diabetics in Denpasar (Dr. W. Permana, pc, November 27, 2018). Patients for this complication often come to the Puskesmas complaining of swollen hands and feet (Dr. W. Permana, pc, November 27, 2018).

Patients in other regencies of Bali also experience neuropathic complications, but because they generally wait longer to seek medical care and have worse adherence to medication, their complications might progress to more severe stages. They may let their neuropathy progress to the state of infection or even amputation. In rural areas, hyperglycemia (dangerously high blood sugar) is much more common than hypoglycemia. Extreme fatigue and weight loss are common (Pak Romi, pc, November 12, 2018).

Outcomes tend to worsen the longer a person has type 2 diabetes. Healthcare providers report that patients get “bored” of taking their medications when they have been diabetic for five or more years (Dr. K. Martini, pc, November 8, 2018), as the average type 2 diabetic in Indonesia has to take oral medicine two to three times every day. With insulin injections, this can result in as many as seven or eight doses of medication a day. Additionally, in areas where awareness of diabetes is lower, patients might stop taking their medicine once their neuropathic or hypo/hyperglycemic symptoms go away even if their blood sugar remains over 200 mg/dL (Pak Romi, pc, November 12, 2018). Thus, as adherence to medication worsens as time goes on, so do health outcomes. Dr. Wahyu Permana estimated that in Denpasar, about 30% of patients

will develop kidney disease (Dr. W. Permana, pc, November 27, 2018). Most of these patients are those that have had diabetes for over five years.

Case Studies from Kayubihi

Pak Wayan Karem

Pak Wayan is a 70-year-old male from Kayubihi who works as a farmer. He was diagnosed with diabetes in 2015. Upon experiencing extreme fatigue and frequent urination, at the urging of his wife, Pak Wayan allowed his son to take him to a nearby nurse's private practice. The nurse performed a blood test and found a high HbA1c level and informed Pak Wayan that he might be diabetic, and recommended that he go to the hospital to have the diagnosis confirmed and receive medication. As Pak Wayan did not receive an exact diagnosis, he remained concerned about his condition but nevertheless held off on going to the hospital.

After three months of extreme fatigue, frequent urination, and weight loss, Pak Wayan's wife urged him to seek care. He went to another nurse for a second opinion, who agreed that he was likely diabetic. At this point, Pak Wayan called Pak Romi, who frequently serves as a caretaker for the people in his village for various ailments. Pak Wayan had no experience with *kencing manis* prior to his diagnosis and reported no family history of the disease. In fact, he reported feelings of embarrassment after his diagnosis because he did not know anyone else with the disease. As Pak Wayan had no previous experience with diabetes, Pak Romi explained the condition to him and provided him with privately purchased metformin. Pak Wayan was diagnosed with 500 mg of metformin to take twice a day. After one month, as his blood sugar remained quite high, Pak Romi increased this to three times a day in addition to two tablets of glibenclamide a day. Pak Wayan also uses traditional herbal medicine to treat his fatigue symptoms.

Pak Wayan has BPJS, although he was not sure what class he had purchased because he rarely uses it. Metformin and glibenclamide are relatively cheap, and BPJS is a hassle to use

because it requires lots of referrals and bureaucratic hoops to jump through. Thus, Pak Wayan's family pays out-of-pocket to avoid the hassle and obtain medication quickly. His medication costs about 50,000 Rp a month.

Since his diagnosis, with the help of Pak Romi and his family, Pak Wayan's condition has improved considerably. His wife is very strict about his adherence to medication and lifestyle changes, such that Pak Wayan takes his medicine regularly. He has also made drastic changes to his diet, eating very little rice and cutting down on sugar while increasing his vegetable intake. After about one month on the increased medication dosage, Pak Wayan reported feeling better. He was able to start working again soon afterwards, and has felt largely back to normal since then. He normally does routine check-ups every few months. His last appointment was in August, when his blood sugar was perfectly healthy around 200 mg/dL.

Pak Nyoman Kuat

Pak Nyoman is a 63-year-old male from Kayubihi who works as a farmer. He was diagnosed with diabetes in 2010. He experienced extreme fatigue, thirst, frequent urination, and weight loss (all telltale signs of type 2 diabetes). Like Pak Wayan, he first went to see a private nurse, who did a blood test. She found that his HbA1c was 450 mg/dL and told him he was diabetic, and that he needed to go to the hospital. Pak Nyoman, who had no prior exposure to *kencing manis*, further resisted going to the hospital for two more months, after which point his son called Pak Romi for advice. Pak Romi came back to the village and took Pak Nyoman to a hospital in Denpasar to see an internist to confirm his diagnosis and receive medication.

Pak Nyoman was prescribed 500 mg of metformin, twice a day, and two tablets of glibenclamide a day. His initial prescription lasted for two weeks, and he renewed his prescription three more times, so he took his medication consistently for eight weeks. After eight

weeks, Pak Nyoman's blood sugar was under control. He regained his energy and was able to get back to work. Because he felt normal again, Pak Nyoman thought his diabetes was cured and that he no longer needed to take medication. He stopped renewing his prescriptions for metformin and glibenclamide.

Pak Nyoman remained unmedicated until 2017. During this time, he would occasionally experience neuropathic symptoms such as small wounds healing slowly, and would go to a private nurse to treat the wounds. But he did not start taking medication again until 2017, when he again started to experience extreme fatigue. At the urging of his family, he began taking the same dosage of metformin again. His energy level again improved, although he continued to experience small infections he would treat on a case-by-case basis.

In April 2018, Pak Nyoman got a sizable cut on his third toe while farming. He taped it tightly and covered it with plastic, closing off circulation, because he was scared that his family would see it and pressure him to go to the hospital. After five days, his son noticed that the wound was infected and called Pak Romi, who told him to take Pak Nyoman to the doctor. Pak Nyoman resisted for fear that the doctor would amputate the toe. He continued to wait until the toe turned black and gangrenous, even when Pak Romi urged him to go to the hospital to prevent the infection from spreading. Finally, Pak Nyoman said he would go to the hospital if Pak Romi came back to the village to inspect his toe in person and still ordered him to go.

Pak Romi came back to the village and took Pak Nyoman to a hospital, where the doctors had to amputate his two middle toes to stop the infection from spreading to his blood. Here, his prescription was changed. Glibenclamide was stopped, and Pak Nyoman was prescribed injections of insulin four times a day in addition to his normal dose of metformin. He also takes a different, longer lasting form of insulin called Lantus to control his blood sugar at night. His

prescription changed again slightly in November 2018, to a slightly higher dose of metformin. He now goes to the hospital every month to check on his blood sugar and to see if his insulin prescription needs to be adjusted.

Pak Nyoman has class 3 BPJS and uses it to pay for his medication. BPJS covers all of his insulin and other medications, so he incurs no out-of-pocket charges. He usually goes to Bangli General Hospital, the public hospital in his regency, where there is an apothecary where he can pick up his medication.

Since April 2017 when his prescription first changed, Pak Nyoman's health has improved. His energy level has improved, and he has been working as normal. Like Pak Wayan, Pak Nyoman also made changes to his diet and lifestyle. He eats little rice and no sugar at all, and very little meat. The morning of our interview, his HbA1c level was an impressive 126 mg/dL. His normal level is a healthy 200 mg/dL.

Analysis

Resistance to Seeking Medical Care

Balinese generally wait for severe complications to develop before seeking medical help, and often only at the pressure of family members. The situation is much better in Denpasar and Badung, where there are more health facilities and greater awareness of noncommunicable diseases, but in other regencies the public resists visits to healthcare professionals.

There are complex factors beyond this resistance, but essentially many Balinese actively avoid seeking medical care because they do not want to know if they have health issues. For some, this is a financial issue. If they know they have a disease, they will have to spend money to take care of it, and they would rather remain ignorant of their status until it seriously impedes their daily life (Pak Romi, pc, November 12, 2018).

But more widespread is the mindset that knowing they have a disease will somehow make the disease worse, and that they are happier not knowing. Both Dr. Kade Martini and Pak Romi cited this mindset as the single largest issue with treating diabetic patients, because patients are so scared to find out that something is wrong with their bodies that they will avoid getting primary care even if they have BPJS and the appointment is free of charge (Dr. K. Martini, pc, November 8, 2018). Although blood tests are relatively cheap (about 50,000 Rp in Denpasar) and required for patients over 40, patients will still refuse them out of this fear (Dr. K. Martini, pc, November 8, 2018). They would rather not know they have an illness and live in peace than expend the stress and mental energy to properly manage their condition. This was seen in the case of Pak Romi's patients from Kayubihi, who both received diagnoses from private nurses and still refused to go to the doctor to get proper confirmation until Pak Romi came to the village in person and took them.

Thus, lack of awareness is not the only factor impeding diagnosis, and certainly not the largest. The mindset of many Balinese that “ignorance is bliss” when it comes to their health status is a major contributor.

Misunderstandings about Chronic Disease

There is widespread misunderstanding about diabetes as a chronic disease. Many Balinese think of being “sick” as synonymous with “having symptoms,” such as extreme fatigue or frequent urination. The thought process is that the disease is cured when the symptoms disappear. For many common illnesses in Bali, this is true: a patient takes medication for their fever, and they are cured when their temperature is back to normal. But for diabetes, even if a patient is perfectly able to go about their daily lives, they are considered diabetic as long as their blood sugar is above a certain level. Even well-managed diabetics need to continue taking medication and coming in for follow-up appointments with their healthcare professionals in order to maintain their health. The mindset that having no symptoms means the disease has been cured is problematic for chronic diseases.

This is one reason why many Balinese do not do regular check-ups, as they typically wait for symptoms to develop before seeking care, but it also has a great impact on adherence to medication. For some patients, once symptoms are relieved, they consider themselves to no longer be sick even if their HbA1c level is far above 200 mg/dL (Pak Romi, pc, November 12, 2018). Some of this may be psychological, as patients want to believe they are in good health. They do not want to believe that their illness is chronic and will likely affect them for the rest of their lives. In the case of Pak Nyoman, he fully stopped taking his medication for seven years when his symptoms stopped because he did not understand diabetes as a chronic disease

requiring long term treatment. He only went to the hospital to care for small infections, not for consistent treatment.

In the long term, this mentality is harmful as it decreases adherence to medication, which can lead to negative health outcomes. The bulk of diabetics that experience kidney failure are patients that have had diabetes for over five years, and are “bored” of taking their medication when their symptoms have already disappeared and they feel perfectly normal (Dr. W. Permana, pc, November 27, 2018).

Regional Differences

An overarching theme throughout my project was the difference in behavior between different regencies. The health behaviors of patients in the richer provinces of Denpasar and Badung were systematically more positive than in other provinces. Denpasar and Badung are richer provinces with more resources in their healthcare facilities, increasing the accessibility of public healthcare. Additionally, the Puskesmas and the GP are expected to strictly adhere to the principles of BPJS in these regencies due to the money involved, and to focus on prevention and awareness (Dr. K. Martini, pc, November 8, 2018). Thus, the people living here have greater awareness of noncommunicable diseases. They may also have family members working in the health sector that alert them to health issues. If they are hotel workers, many companies mandate that they have an annual medical check-up. Other employers purchase BPJS for their employees, sometimes deducting it out of their salary, so that patients feel they have to get check-ups so as to not waste their money (Dr. K. Suarjana, pc, November 30, 2018). Additionally, most people here are insured by BPJS and use it to obtain medication free-of-charge from the Puskesmas. Diabetes here is mostly handled at the Puskesmas and GP level.

Two of the healthcare providers I interviewed, Dr. Wahyu Permana and Dr. Ketut Suarjana, had mostly positive things to say about diabetes. They reported that their patients usually discovered their diagnosis through a regular check-up before complications developed, and that most of them were good about taking their medication and following up with appointments, especially those who had a family history of the disease. Dr. Wahyu Permana reported that complications like hypoglycemia and neuropathy are common enough but not usually severe, and that patients frequently come to the clinic for check-ups anyway. Dr. Ketut Suarjana, who works in a primary care facility that focuses on early diagnosis and prevention, said he had never had to treat a diabetes patient with a complication. Both seemed to attribute these positive changes to the introduction of BPJS, as the removal of the financial barrier to service has made more and more people come in for medical care.

These accounts differed drastically from the other healthcare providers I interviewed, Dr. Kade Martini and Pak Romi, who have more patients that live in other regencies and stated that diagnosis occurs more often at late stages. People in other regencies are less likely to seek medical care and adhere to treatment (Dr. K. Suarjana, pc, November 30, 2018). They also tend to have lower utilization of BPJS services. Due to lower accessibility of health facilities, most patients go to private nurse practices until their complications grow serious. Many will also only discover that they have blood sugar when the Puskesmas holds a health education meeting and free check-up at the Bale Banjar, and only then come to a hospital to confirm their diagnosis (Dr. K. Suarjana, pc, November 30, 2018). People that do not utilize BPJS are also less likely to adhere to medication and to follow-up with their doctors.

This makes the analysis of diabetes in Bali quite complex, as statements that hold true for patients in rural areas might be completely contradictory to the reality of patients in Denpasar

(Pak Romi, pc, November 12, 2018). The issues described above are more applicable to the former areas than the latter.

BPJS

Focus on Primary Care

Every healthcare practitioner I interviewed mentioned the massive deficit of BPJS. The program is deeply in debt, much of which can be attributed to the late diagnosis of chronic diseases such as diabetes. When the diagnosis occurs early in the disease pathway, BPJS need only pay for the patient's medication, which is relatively cheap. When diagnosis occurs after complications develop, especially serious complications like kidney failure, BPJS has to cover treatment for these complications as well as ensuing regular medication. It is far cheaper to prevent noncommunicable diseases than to treat them. Thus, in regencies where it is financially feasible, BPJS has a large focus on prevention and early identification of noncommunicable diseases (Dr. K. Suarjana, pc, November 30, 2018). In Badung, BPJS even covers home visits (Dr. K. Martini, pc, November 8, 2018). The program covers 6-monthly check-ups for all members, including a blood test (Dr. W. Permana, pc, November 27, 2018).

Resistance to Use

Through both my interviews and informal interactions, I found that many people that are covered by BPJS resist using their public health insurance. Most people I met in informal situations had BPJS, but reported that they rarely used it, preferring to pay privately to avoid the many bureaucratic regulations of the program (Dr. Jon, personal communication, November 15, 2018). For example, BPJS has a strict system of referrals wherein a diabetic must first go to a GP or the Puskesmas to get referred to a specialist doctor, rather than going directly to the specialist

themselves. It is not uncommon for patients to just pay out-of-pocket to avoid jumping through these hoops.

Confusion over Usage

BPJS is a very new program, and is constantly undergoing revisions to its procedures. As such, many of the healthcare providers I met expressed some confusion over the program. The regulations, particularly in regards to the complex system of referrals, are revised frequently and often without alerting the facilities or the public (Dr. Jon, pc, November 15, 2018). This leads to wasted time and frustration for both the patient and the provider, and wasted money for the program. This inefficiency goes beyond complications with communicable diseases and seems to be an overarching theme in BPJS, necessitating better communication between the program, the practitioner, and the patient.

Trends in Diabetes Diagnosis and Management

Increasingly Earlier Diagnosis

While the problem of late-stage diagnosis remains serious, the healthcare professionals I interviewed seemed hopeful that the situation has taken a positive turn in recent years. With the introduction of smartphones, awareness about noncommunicable diseases has increased because even patients fearful of a diagnosis can simply look up their symptoms on the internet (Dr. K. Suarjana, pc, November 30, 2018). The focus of BPJS on primary care and outreach to Bale Banjars from the Puskesmas has also led to diagnosis earlier in the disease pathway. Healthcare providers seemed confident that the mindset of Balinese who resist medical care can and will change as health education grows more widespread. In fact, that change has clearly already started in Denpasar, where practitioners reported that many people come in for regular check-ups.

Increasing Adherence to Medication and Lifestyle Changes

In the same vein, good adherence to medication and lifestyle changes seems to be increasing in Bali as awareness and health education increases. The influence of BPJS in Denpasar and Badung is apparent. Prolanis in particular is surprisingly popular, with an estimated 70% of BPJS members that qualify for the program attending the monthly meetings (Dr. W. Permana, pc, November 27, 2018). Patients with BPJS are better about coming in for follow-up appointments, as they want to get their money's worth from the program. It also helps that the Puskesmas in Denpasar and Badung are quite proactive about calling patients and reminding them to follow up. As awareness of the nature of chronic disease spreads, practitioners seem to be thinking positively about treatment outcomes in the future.

Increasing Insulin

The most common medication for a type 2 diabetic is oral antidiabetic drugs, most commonly metformin at a dosage of 500 milligrams twice a day. However, doctors report that insulin is becoming increasingly common when patients are referred to the hospital (Dr. K. Martini, pc, November 8, 2018). If the GP or the Puskesmas is unable to handle the patients' complications, they will refer the patient to see the hospital to see an internist. More commonly than not, these days the patient will be prescribed insulin in addition to whatever oral antidiabetic drug they are using (Dr. W. Permana, pc, November 27, 2018). Doctors say this is done because insulin is a more effective treatment and health outcomes tend to be better the earlier a patient starts on insulin, although insulin is more expensive.

Conclusion

As expected, many of the assumptions I had made from my literature review were challenged by my primary data. After first four interviews, which were with Dr. Kade Martini, Pak Romi, and the two patients Pak Wayan and Pak Nyoman, combined with the primary data I gathered in Tabanan before the start of my independent study, I thought I had confirmed some of those assumptions. In these interviews, I learned that diagnosis occurred late in the disease pathway, that awareness of noncommunicable diseases among patients was generally low, and that adherence to treatment was difficult to achieve. However, every healthcare providers' perspective is different, and my last two interviews with Dr. Wahyu Permana and Dr. Ketut Suarjana provided completely contrasting viewpoints. They found diagnosis to happen early in the disease pathway, adherence to medication and lifestyle changes to be generally good, and complications to be rare. This can partly be attributed to the regional differences in my interviews, but these contradictions also reflect the rapidly changing state of healthcare in Bali. Awareness and education of health issues are rising, with the ease of access to the internet and the introduction of BPJS removing barriers to healthcare.

Mindsets can change. In the words of Dr. Kade Martini, “semua bisa berubah” – anything can change. Even ten or fifteen years ago, she says, the Balinese did not like to travel outside their villages. Now people from every regency live and work in Denpasar and travel to other provinces of Indonesia, or even other parts of the world. The mindsets around resisting medical care and adherence to medication can and will change as awareness around noncommunicable diseases increases. This state of change is reflected in my paper. Beyond regional differences, the conflicting reports of healthcare professionals of the state of diabetes in Bali reflect the changes that have already begun.

Bali's health system is in a state of transition. Even as the prevalence of noncommunicable diseases is rising quickly and healthcare-resistant mindsets persist, the island is taking massive steps in conjunction with BPJS towards prevention and earlier diagnosis of the disease. These steps are highly ambitious and not without confusion, as practitioners and patients alike are sometimes blindsided by the constant revising of BPJS, but they nevertheless will be essential to the future of Balinese health.

Suggestions for Further Research

Regionally Specific Data

One challenge in my study has been the lack of statistics specific to Bali, not just Indonesians. Indonesia is a country composed of over 17,000 islands, incredibly diverse in its languages, ethnicities, geographies, religions, etc. Yet BPJS is a single state provider with a uniform set of regulations for every province. Further study of noncommunicable disease in Indonesia should make an effort to differentiate between regions. If possible, studies in Bali should break down data by regency as well, as outcomes seem to vary drastically.

Health Equity

In the same vein, more research is needed in health equity in Indonesia and Bali with the introduction of BPJS. Health outcomes are clearly improving for some populations more than others, as some regencies have more money to spend on BPJS facilities. Work should be done on how BPJS can increase the health equity of its programming.

Other Noncommunicable Diseases

Diabetes is not the only noncommunicable disease on the rise in Indonesia. Hypertension came up frequently during my interviews. Patients with diabetes are more likely to suffer from other noncommunicable diseases such as hypertension, cardiovascular disease, and respiratory disease. In fact, some healthcare providers expressed concern that many of their patients are suffering from two noncommunicable diseases simultaneously (Dr. W. Permana, pc, November 27, 2018) (Dr. K. Suarjana, pc, November 30, 2018). More research is needed on the joint treatment of diabetes and hypertension, as well as treatment for noncommunicable diseases in general.

Balian in Present-Day Healthcare

One topic left unclear by my study was the importance of the balian, Balinese Hindu spiritual healers, in present-day healthcare. My interviews in Tabanan with younger students from Denpasar yielded contradictory results, with some students saying that they only go to the balian for spiritual issues while other students claimed to visit for medical issues as well. The latter seemed to think of the balian as a last resort for medical issues, when a trip to the hospital does not relieve symptoms. Dr. Kade Martini and Pak Romi seemed to view the balian as a preferred method of seeking medical care for older people in the village, while Dr. Wahyu Permana claimed that Balinese patients will typically seek a mixture of care from the balian and from healthcare facilities.

Glossary

Badan Penyelenggara Jaminan Sosial (BPJS): The Social Insurance Administration

Organization, one of the largest single state providers in the world. As of 2018, 195 million Indonesians are covered. BPJS covers all degenerative and infectious diseases. It is offered free of charge to low-income families, and is offered in three classes for purchase to all Indonesians. Employers can also purchase BPJS in any class for their employees. These classes differ only in the facilities, not in coverage or quality of care (Wiseman et al., 2018).

Glycated hemoglobin test (HbA1c): One of the most common tests to diagnose diabetes, this test is used to determine the average blood sugar of a patient over the past two to three months. The target HbA1c level for diabetic individuals is usually under 7.0 millimoles per liter, or under 200 milligrams per deciliter (mg/dL) (Dansinger, 2018).

Kencing manis: Literally meaning “sweet urine,” this is the colloquial term for type 2 diabetes. Many people in rural areas do not know the word “diabetes” (even diabetics themselves) but are familiar with *kencing manis*.

Jaminan Kesehatan Nasional (JKN): Indonesia’s healthcare scheme launched in 2014 to achieve universal health coverage by 2019. This scheme combined all previous government schemes under one national provider, BPJS (Wiseman et al., 2018).

Metformin and glibenclamide: Two of the most common oral antidiabetic drugs prescribed for type 2 diabetes. BPJS provides these medications free of charge for pick-up at the Puskesmas for a month at a time (Dr. K. Martini, pc, November 8, 2018).

Neuropathy: One of the most common symptoms of poorly managed or unmanaged diabetes. It refers to nerve damage that occurs as a result of consistently high blood sugar, causing affected areas such as the hands and feet to lose sensation.

Prolanis: A program under BPJS for individuals identified as at-risk for diabetes and other noncommunicable diseases. It is a monthly program held at the Puskesmas, focusing on education of healthy lifestyles such as proper exercise and diet (Dr. K. Martini, personal communication, November 8, 2018).

Puskesmas: Public clinics. One Puskesmas serves every 3000 people (Dr. W. Permana, personal communication (pc), November 27, 2018). Most care for diabetes, hypertension, and other noncommunicable diseases occurs here.

Type 2 diabetes mellitus: A metabolic disorder that refers to the inability or impaired ability of cells to respond properly to insulin or to make insulin, characterized by dangerously high blood sugar. Compared to type 1 diabetes mellitus, in which afflicted individuals are born without the ability to secrete sufficient insulin, type 2 diabetes mellitus is typically adult-onset and tends to affect older individuals.

References

Primary Sources

Dr. Kade Martini, personal communication, November 8, 2018.

Dr. Ketut Suarjana, personal communication, November 30, 2018.

Dr. Jon, personal communication, November 15, 2018.

Dr. Wahyu Permana, personal communication, November 27, 018.

Pak Romi, personal communication, November 12, 2018.

Pak Nyoman Kuat, personal communication, November 18, 2018.

Pak Wayan Karem, personal communication, November 18, 2018.

Secondary Sources

Amelia, F. (2018, January 19). Bisakah Penderita Diabetes Berobat dengan BPJS? Retrieved November 1, 2018, from <https://www.klikdokter.com/>

Armalia, D. (2018, September 05). Iuran atau Tarif BPJS Kesehatan Terbaru 2018. Retrieved November 1, 2018, from <https://www.panduanbpjs.com>

Dansinger, M. (n.d.). Hemoglobin A1c (HbA1c) Test for Diabetes. Retrieved November 1, 2018, from <https://www.webmd.com/>

Fontaine, T., Lembong, J., Nair, R., & Süßmuth-Dyckerhoff, C. (2016, May). *Tackling Indonesia's diabetes challenge: Eight approaches from around the world*. Retrieved November 1, 2018, from the McKinsey&Company website: <https://www.mckinsey.com/>

Health Policy Plus and National Team for the Acceleration of Poverty Reduction, Indonesia. (2018, May). *The Financial Sustainability of Indonesia's National Health Insurance Scheme: 2017–2021*. Retrieved November 1, 2018, from the Health Policy Plus website: <http://www.healthpolicyplus.com/>

- Hidayat, B., Mundiharno, Nemeč, D., Rabovskaja, V., Sri Rozanna, C., Spatz, J. (2015, November). *Out-of-Pocket Payments in the National Health Insurance of Indonesia: A First Year Review*. Retrieved November 1, 2018, from the Healthy Developments website: <https://health.bmz.de/>
- Laksmi, P. W., Morin, C., Gandy, J., Moreno, L. A., Kavouras, S. A., Martinez, H., . . . Guelinckx, I. (2018). Fluid intake of children, adolescents and adults in Indonesia: Results of the 2016 Liq.In7 national cross-sectional survey. *European Journal of Nutrition*, 57(S3), 89-100. doi:10.1007/s00394-018-1740-z
- Snouffer, E. (2017, July). Indonesia snapshot: Access to diabetes care in Bali. *Diabetes Voice Online*, 63(2), 22-23.
- Soewondo, P., Ferrario, A., & Tahapary, D. (2013). Challenges in diabetes management in Indonesia: A literature review. *Globalization and Health*, 9(1), 63. doi:10.1186/1744-8603-9-63
- Wiseman, V., Thabrany, H., Asante, A., Haemmerli, M., Kosen, S., Gilson, L., . . . Patcharanarumol, W. (2018). An evaluation of health systems equity in Indonesia: Study protocol. *International Journal for Equity in Health*, 17(1). doi:10.1186/s12939-018-0822-0