Chapter 4
The Use of Mobile Phones in Rural Javanese Villages: Knowledge Production and Information Exchange Among Poor Women with Diabetes

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Abstract Previous studies have found mHealth-based smartphone applications are promising tools to help improve diabetes management and self-care. However, rural populations are often not smartphone-equipped and therefore cannot access diabetes management apps. Guided by a culture-centered approach, this chapter describes an ethnographic study of health behaviors among women in two Javanese villages. In-depth interviews were conducted with 30 female participants in Central Java, Indonesia. Grounded theory was adopted for data analysis. This study sought to unearth the existing modes of communication and it was found that—in conversation with mantri (a male health practitioner)—the participants developed alternative modes of mHealth communication based on SMS. The sending and receiving of diabetes-related SMS became embedded in the women’s daily lives and enabled them to navigate their health routines as people living with diabetes.

Keywords Diabetes • Self-management • mHealth • Culture-centered approach • Rural Javanese women • Indonesia

4.1 Introduction

According to one estimate, the number of SIM card subscriptions in Indonesia at January 2016 was 326.3 million (We Are Social, 2016). Given that the total population of Indonesia numbers around 255 million individuals (Indonesia Population Census, 2010) with the adult population estimated at 150 million, this means many people have more than one device and/or SIM cards. It also indicates that large numbers of the poor now have mobile phones. Indeed, over the past decade, lower service prices have attracted new consumer segments to enter the market. Prepaid Internet packages for smartphones range from US$ 0.50 a day to $2.50 a month...
This low service price allowed new consumer segments with limited spending capacity to enter the market.

For rural people, a prepaid tariff (prabayar)—commonly known as buying “pulsa” (prepaid mobile phones minutes)—is the most common mode of connecting to mobile networks. Pulsa is sold in the market, on the street and in grocery shops in electronic form or as vouchers. In most cities, pulsa vendors are open 24 hour and apply only a small extra charge for their service. Pulsa can also be purchased via ATMs, e-banking, and 24-hour convenience stores without extra charge. In villages, people usually go to the market to buy pulsa or to their neighbor who becomes an individual pulsa reseller.

The number of people suffering from diabetes is rising globally and impoverished rural populations are at higher risk of poor self-management and complications associated with the illness (Banerjee, Rathod, Konda, & Bhawalkar, 2014; Hsu et al., 2012; Pujilestari, Ng, Hakimi, & Eriksson, 2014; Utz et al., 2008). 2013 data from RISKEDAS indicate that 10 million people have been diagnosed with diabetes in Indonesia, with roughly equal figures for adult diabetes prevalence in rural and urban areas (7 and 6.8%, respectively). This puts Indonesia among the top five countries for diabetes prevalence (WHO, 2016) with most cases recorded on the island of Java. More than 70% of the cases were undiagnosed and women are reported as more susceptible than men.

Previous studies have found mHealth-based smartphone applications are promising tools to help improve diabetes management and self-care (Cui, Wu, Mao, Wang, & Nie, 2016; Shah & Garg, 2015). For instance, mobile phone interventions for people with diabetes can improve healthcare outcomes by facilitating an individual’s ability to control, monitor, and measure blood sugar level and thereby adopt healthier behaviors (Kitsiou, Pare, Jaana, & Gerber, 2017; Krishna & Boren, 2008). Indeed patients’ adherence to self-management regimes is recognized as a marker of success for mHealth intervention. However, rural populations are often not smartphone-equipped and therefore cannot access diabetes management apps.

This study adopts the culture-centered approach (Dutta, 2008, 2011) to enquire into the role of local women’s organizations and networks in encouraging rural women’s use of mobile phones for sharing and disseminating information about health and sugar disease. Central to the culture-centered approach is that health communication involves “the negotiation of shared meanings embedded in socially constructed identities, relationships, social norms, and structures” (Dutta, 2008: 55). Therefore, the main target of diabetes communication interventions is culture.

Javanese women have been perceived as being tied to three domestic areas: kitchen, bedroom, and washing area (well). Studies conducted on Javanese women (Manderson, 1983; Sears, 1996; Sullivan, 1983, 1994; Wolf, 1994) suggested that due to their long working hours, women have less time than men to socialize and be involved in religious activities. However, this study found that women are actively engaged in both social and religious activities including women’s rotating credit associations or saving-and-loan activities (arisan) and Qur’an recitation groups (pengajian), both of which serve as important forms for the promotion of women’s health and well-being.
Eight months of ethnographic fieldwork were conducted in two villages located about 1 hour south of Magelang municipality in the Central Java province. This study was part of my larger study of women, culture, and diabetes in Java. Through a close contact with a local male health provider (mantri in Indonesian), I managed to conduct observations and in-depth interviews with 30 women from two villages. Being familiar with the district and as a fluent speaker of the Javanese language, I managed to connect with my participants and was invited to their houses to observe their everyday activities and to experience the challenges they faced. I also attended recitations and arisan to understand the interactions among rural women in the villages.

4.2 Traditional Gender Roles in Rural Java and Women’s Autonomy

My quest to understand how poor rural women manage diabetes took me to a late afternoon conversation with mantri (local male health provider) with whom I have been collaborating for this research. He discussed his concerns about the increasing number of people, especially women, suffering diabetes in the villages. Most of the time his patients had to be hospitalized because they do not know about the severity of the disease and how to monitor their blood sugar level. According to mantri, rural women work very hard to support their families and “because of their hard life, these women get so tough. They won’t let anything interrupt their routines, including illness. Therefore, it requires extra patience to talk to them about their health issues.”

Traditional gender roles in rural areas in Java assigned women with managerial positions both in domestic and public (societal) spheres. Rural women in both the Kembangarum and Selojajar villages investigated in this study mostly work as petty traders. In 2014, poor rural villagers in Central Java were estimated to earn between US$20 and 40/month (BPS Jateng, 2014). Therefore, the villagers live on less than US$2/day and must balance their everyday needs with the social costs required to maintain harmonious interactions within the village. The work and the money they earned gave these rural women a sense of self-reliance and of space to negotiate their personal needs. For example, Wani (all participant names have been replaced with pseudonyms) said:

Having a job, earning my own money, I can ‘move’ myself around a little bit (Neknyambut damel, nyekel arta piyambak, kula saged obah - obah or move literary means ‘a more flexible condition that allows someone to make a decision amidst his/her limited resources).

Participants expressed that it is important for them to keep working and to earn their own money, because by having their own income, these women could:

1Pseudonyms used.
(1) participate more in *arisan*, (2) fulfill personal needs (such as seeing a doctor or *mantri*, purchasing medication, buying a mobile phone, or topping up phone credit), (3) give pocket money to their children or grandchildren, and (4) donate to their neighbors and social events in the villages.

The day starts at 4 am every morning for many of these women. After performing early morning prayers, those who sell traditional snacks such as banana and/or vegetable fritters must have all the food ready by 6 am. They then must complete all chores and be ready to go to the market by 7.30 am. None of them questioned this division of labor, which saw them responsible for both household duties and working outside of the home. During interview, Parti said:

“To make sure that the house is clean and the food for my family is ready before I go to the market is important to me. I feel guilty if I wake up late and leave the house in a messy condition” [Javanese would say *mboten ilok* (taboo)].

None of the women lamented their health condition or complained about having to work to support their family. Some of them walk as far as 15 km to the market while carrying a 30 kg basket filled with merchandise. Others take public transportation to do the trading in the next village. They usually return home at around 5 pm before *magrib* (after sunset) the fourth of five formal daily prayers for Muslims, so they can join the mass prayer in the mosque with other villagers.

Their sense of self-reliance and the ability to perform domestic responsibilities and maintain multiple roles within the household and the community is of central importance to these women. As petty traders, the women do not earn big money. But they do earn a degree of economic autonomy and an ability to manage and control household spending.

I observed that by being petty traders, these women attain a strong sense of self-reliance and bargaining power to take decisions regarding both household matters and social affairs in the village more broadly. The women believe that the ability to perform daily activities represents a core component of being a good Javanese woman—self-reliant, strong, an effective manager of the household, makes household financial decisions autonomously, and with the power to manage social networks (Geertz, 1961; Jay, 1969; Koentjaraningrat, 1967; Pitaloka, 2014; Pitaloka & Hsieh, 2015). Many of these women display a high degree of discipline in their management of finances. While showing me an old wooden box full of labeled envelopes, Restu explained her strategy for managing the family’s limited income:

I’m poor, so I must manage the money we earned each day. This is to buy groceries, rice, washing soap, shampoo. This is for my youngest son’s school fee, this is for the mosque, and this is for other social events. These social events always give me headache, but it’s important. This one envelope is actually for my personal needs, but it also serves as a secure funding for me. I use the money from this envelope to buy my medicines or *pulsa*, but if I received too many social events invitations, I will use it to cover the social events first.
4.3 Mobile Phone and Health Needs Among Rural Village Women

Understanding how these women perceive and negotiate their multiple roles is crucial to grasping existing mHealth practices. Using the culture-centered approach, this study located the cultural factors that influenced—and were influenced by—the everyday narratives of health and well-being experienced by these rural Javanese women. For instance, Tuti’s description of her mobile phone use demonstrated the organic emergence of personal mHealth behaviors:

This is a cheap phone. I got it from the market. My son asked me to get one so he can contact me if something urgent happens. I rarely use it…well, mostly for receiving calls. Sometimes, I use it to call Pak\(^2\) mantri to have a health check, or to order some stuffs from the city. Pak mantri send me texts and calls to make sure that I take my medicines and attend the monthly health meeting at his house. He and his wife are very nice to me.

Some rural women in this study purchased mobile phones with money saved through arisan saving-and-loan scheme, while others use their own savings to purchase cheap mobile phones at the market. Some rural women in these villages are still practicing a traditional saving method by keeping their money inside a small envelope or in a wooden box, which they keep in a safe place at home. Some of the older women participants were bought mobile phones by their children. As mentioned, the phones enabled them to stay connected with their family members (i.e., husband, children, and grandchildren), fellow traders, friends, and also with mantri.

While the women perceived doctors as socially higher than them, and therefore they feel sungkan (Javanese respectful behavior that means feeling of shame without the feeling of doing something wrong) to call or text them, they perceived mantri as part of their family. They felt they could contact mantri whenever they needed his help or advice. “I usually visit my patients one by one…riding this motorbike, going around the villages,” mantri explained. Living in the same neighborhood as the women, mantri and his family are considered as kin. Regardless of their resource-poor conditions, these women highly appreciated the “inner peace” (ketenangan batin) that a mobile phone brought to their life. Samsiah said:

I don’t really need a mobile phone, but one day I was very sick. I don’t know why, but I felt weak and suddenly collapsed. When I woke up, I was already in the hospital. Pak mantri told me, ‘Alhamdulillah (Thank God) my wife was already at your door when your sister cried out for help.’ After I recovered, my son got me a used phone…He told me, ‘Mak (mom), just in case. Pak mantri can check on you. If you refuse [to take the phone], I won’t let you go to the market again’ Well, it’s hard for me to use it at first, but I feel ayem (peace). I can work and my son won’t have to worry about me.

\(^2\) Pak is an abbreviation of Bapak, originally meaning ‘father’ but nowadays used to respectfully address an adult male.
Rural women of low education and socioeconomic status are important actors in the informal sector (as market traders, factory workers, and housemaids) of the economy, significant providers within their families (Kusujiarti, 1997; Tickamyer & Kusujiarti, 2012; Wolf, 1994), and overrepresented in various indices of poor health. Many of the women lack medical knowledge of diabetes symptoms, but have developed their own language to articulate their experience of living with diabetes. They perceive diabetes as less severe than cancer, asthma, heart disease, and skin problems because their diabetes was asymptomatic and their condition is relatively stable. As they say, they are “not stranded in bed” and are able to perform everyday duties (Pitaloka, 2014). When their blood sugar level increases, these women would express it as “they do not feel well” or “too much in mind” (kakehan pikiran).

These vernacular understandings of the causes and symptoms of diabetes grow up in context of several gaps left by top-down approaches to health care and the exclusion of much of the rural population from web connectivity, increasingly central to the ability to access professional medical information. Currently, Indonesian health system still focuses more on battling infectious diseases such as malaria, tuberculosis, diarrhea, and dengue fever. Resources have not been allocated proportionally to the larger and increasingly threatening burden of chronic noncommunicable diseases such as heart diseases, stroke, diabetes, cancer, and hypertension (Ng et al., 2006). A yawning gap also exists between the promise of a technologically determined health utopia and the reality of actual uses and access to such technologies among poor and rural populations.

The rapid growth of mobile telephony is often held to create an opportunity for the emergence of mHealth—the use of mobile communication devices for health services and information, in improving the access and quality of health services, and overall health outcomes in many parts of the world, including facilitating diabetes self-management (Chib, 2010; Chib & Chen, 2011; Chigona, Nyemba-Mudenda, & Metfula, 2013; Kratzke, Wilson, & Vilchis, 2013; Klasnja & Pratt, 2012; Kreps & Neuhaser, 2010; Soegijoko, 2009). In Indonesia, mHealth designers have produced apps such as Dokter Diabetes and Xanesha Diabetic Analytic Console to encourage individuals with diabetes to self-manage their illness. A few mHealth apps developed by foreign companies were also available such as Diabetes:M by Sirma Medical Systems, the Dario app by Dario Health, OnTrack Diabetes and BlueStar Diabetes.

The enthusiastic development of health self-management apps so often proceeds with disregard for the technical, socioeconomic, and cultural barriers that stand in the way of poor, rural, and marginalized people using them (Kaplan, 2006). In Indonesia, the available diabetes mHealth applications can only be accessed through Android and iOS smartphones—use of which is largely restricted to middle and upper social economic groups. The use of mix languages (English and Indonesian) requires users to understand the terms used by the providers, such as...
“check-up record” and “diabetes risk”. In addition, these applications require patients to understand their diabetic condition, especially their blood sugar level and the medication regime they have taken. Such mHealth interventions, then, reflect approaches to health promotion have largely focused on public individual cognitive determinants that often neglect the social structure and cultural aspects that surround those individuals (Green, Richard, & Potvin, 1996; Patrick, Intille, & Zabinski, 2005; Sallis & Owen, 2002).

Moreover, issues of connectivity and cost also restrict many rural dwellers’ access to the Internet. For example, prepaid mobile phone users in Indonesia must have a minimum data plan which varies between Rp 10,000 to unlimited in order to be able to access the Internet. The women in this study spend between Rp 10,000 and Rp 20,000 per month to keep their number. This urban-rural inequality in Internet access (Indonesian national socioeconomic survey/Susenas 2010–2012; Sujarwoto & Tampubolon, 2016) excludes the poor from accessing health-related information. As health information increasingly circulates online, and health interventions are linked to costly devices and English proficiency, many rural poor can be “rendered voiceless through inaccess to this communication platforms where policies are debated, implemented, and evaluated” (Dutta, 2008, p. 149).

4.4 Culture and Rural Women’s Use of Mobile Phones

As petty traders and income earners, these rural women do not rely on their husbands’ wages to fulfill their personal needs. Nor do those who no longer have a husband (by death or divorce) rely on their children’s support for their living. One of them said, “As parents, we should be the one to help our children, not the one to burden them.” This behavior is guided by the Javanese sense of “pekewuh” (ashamed in the presence of one’s better), a feeling induced by asking your husband or children for a favor. The maintenance of harmony, order, and self-mastery are key tenets of Javanese social work (Immajati, 1996; Mulder, 1996; Pitaloka, 2014), and this context is crucial to understanding rural women’s uses of mobile phones.

Cheap mobile phones are sold at the local phone shop or at the market with the price for between Rp 150,000 ($15) and Rp 250,000 ($25). Such phones provide basic mobile phone calling and SMS services that according to these women, “is enough” (cukup) and “appropriate” (cocok, pas). The notion of cukup and pas represent the Javanese cultural notions of appreciation and sincere acceptance that forbid them from being greedy. Siti said:

Since I got diabetes, my children have been asking me to buy a phone so they can check on my condition. I feel reluctant, because I could not use the household money just to buy a mobile phone. I refused when my children want to get me one, because I know they also have a hard life. I got this one when I got the arisan money. Just a cheap one…as long as my children can contact me, it’s enough.
Cukup reflects a sense of self-control that implies women’s ability to control complex interactions within the self (at a personal level) and with others (at a social level). Women are constantly reminded to carefully manage money in order to support basic household needs and to be able to perform social obligations in the village (e.g., contribute appropriate *sumbangan* (gifts) to other villagers at lifecycle rituals).

Women in this study confirmed that they use their mobile phones mostly for making and receiving a call. They would respond to a text message, only when someone texted them first. Calling is much easier for these women, especially the older ones. This finding echoes the LIRNEasia qualitative demand-side study ‘Teleuse at the Bottom of the Pyramid 4’ (2011) which found that 89% of rural poor women in Java used their mobile phones mostly for making a voice call (see Fig. 4.1).

Women in this study explained that having a mobile phone means extra spending, and they are aware that this spending must not interfere with their household needs. Tasriyah said “If I need to top up my phone credit, I don’t buy too much. As long as it’s enough to call my children and Pak mantri. I must carefully manage my money.” All women in this study used prepaid since it enabled them to control their spending. As daily wage earners, these women are aware that their main concern is their family. Anti said:

> My daughter got me this phone to learn my whereabouts. I rarely make a call. I will top up my credit if I have spare money, if not then wait until I get money. Sometimes, I forget [to buy pulsa] and I have to buy a new number [because the subscription expires when you do not recharge]. If my son has extra money, sometimes he buys me Rp 20,000 ($2) and it lasts for 2 to 3 weeks. I don’t want to trouble my kids. I never spend much.

Anti’s statement echoes the LIRNEasia (2011) data which indicates that bottom of pyramid mobile users with irregular income use a prepaid card to limit their phone credit spending (see Fig. 4.2).

In addition, this study found that a sense of *pekewuh* (feeling of reluctant or uncomfortable from doing something that is considered as culturally inappropriate) guided women’s use of mobile phones. These women do not want to be preoc-
cupied with their phones when they are at home. Some of these women share the house and kitchen with their children’s family. To maintain harmonious life, one of them said, “Kudu njogo, ngerti wong liyo,” which can be translated as considering and appreciating others (tepa selira). They used their phones in their ‘private domains’ e.g. at the market, at arisan or at pengajian. Javanese society perceives women as in control at the marketplace (Brenner, 1998) hence the women considered it appropriate to act as they chose in this domain.

4.5 Text Message as an Alternative Communicative Space

With such limited material resources, exchanging health-related text messages is an organic community activity that encourages these rural women to participate in the health-seeking process as well as knowledge production. Mantri plays a vital role as an initiator. In most villages, in Indonesia, mantri plays an important role in providing health-related support and educating rural people about health (Ferzacca, 1996; Geertz, 1961; Harper & Amrith, 2014). When I asked him why he thinks that texting could be the solution, mantri said:

Actually, they have mobile phones, but they don’t use it. If I don’t call them, they won’t call me. If I don’t remind them ‘don’t forget to have your blood sugar check’ ‘don’t forget to drink your medication’...well...they will remain quiet. Then before I know it, their son or family member is calling me because my patient is unconscious. They could’ve use their phones to ask me: ‘why do I have such and such a problem’ ‘what do I do when I have such and such a symptom’, so I can help them before it’s too late’. But then, the problem is, they don’t really know what to ask, right?

Above, I have discussed how limited material resources excluded these poor rural women from accessing and experiencing health and health care. The enthusiastic development of mHealth apps may well serve generously resourced urban communities in Indonesia, but can fail to reach community members like the women in this study. The texting activities I have described above address the local
contexts that framed Javanese health beliefs and the complexity of the rural women’s needs and priorities. They also provide an alternative communicative space for these rural women to experience health and maintain their well-being.

As a progressive disease, type 2 diabetes may cause complications and disability over time. The women in this study articulated their health condition by using these words: *semangat* (spirit or energy) which symbolizes health, and *lemes* (weak) or *loyo* (exhausted) which symbolizes illness (Ferzacca, 2001; Pitaloka, 2014). These women believed that diabetes is caused by hard thoughts and a restless mind. Therefore, balancing one’s *inner peace* (*ati tentrem*) with outer/physical health (*awak penak*) is perceived to be the main key to health. Participating in informal local organizations, such as *arisân* and *pengajian* Quran is an occasion to relax and to get-together with other women in the village. Sarni, for example, expressed her participation in recitation as:

All of these burdens and hard thoughts are gone. I tried to come to recitation, at least once a month to recharge myself. When I recite Quran together, I feel peace and calm. *Gusti* (God) always listens to our prayer, right? The leader [of the recitation] is also very nice and funny. The discussion is light, so I can understand [the context and application of the surah (chapter) being recited].

*Mandri*’s wife also participated in these local women’s organizations. In addition, she was also a volunteer at *posyandu* (community health and nutrition integrated service center)—a center which is run by the community and provides services, such as Family Planning, Mother and Child Health, Nutrition (growth monitoring, supplemental feeding, vitamin and mineral supplementation, and nutrition education), Immunization, and Diarrhea Disease Control (Anwar, Khomsan, Sukandar, Riyadi, & Mudjajanto, 2010).

**Facilitating Self-help:** With the help of his wife Dwi and two women volunteers Erna and Tuti, *mandri* began to initiate texting activities back in 2012. His simple aim was to text those villagers that he could not visit due to his schedule to encourage them to be actively involved in their personal healthcare. He also wished to encourage his diabetic patients to participate in taking care of their own health as well as their friends’. When I asked *mandri* why he focused his efforts so much on women, he said:

Women in these villages are very self-reliant and they take care of everything. They attended *arisân*, *pengajian*, and volunteering to hold *Posyandu* meeting each month. They prepare the food and work to earn money to support the family. And most importantly, my diabetic patients are mostly women…

*Mandri* relies on SMS to communicate with the women because it is cheaper than calling, the user does not need to download separate application—texting comes as a basic application with the mobile phone, and because texting does not require the women to respond immediately. During the first year, *mandri* sent SMS mostly to
remind his patients about *posyandu* activities and free monthly blood sugar check sessions. When I came to *mantri*’s house to talk to him about this texting activity, he had just sent an SMS to his patient to remind her to have blood sugar check in the coming week,

Please don’t think too hard, *Bu* [Mrs] Sih. Calm your mind. Don’t forget the free blood sugar check on Thursday.

A few minutes later, he received a phone call. *Mantri* told me, smiling, “I texted my patient and she asked her son to call me and asked if she needs to do a test this month because her glucose was 250 last month and she feels fine.” Although this woman did not reply to *mantri*’s SMS in person, the call shows that she engages with the message and the communication activity. Erna, one of the posyandu volunteers and *arisan* coordinator who joined us that afternoon told me:

Now, I can use my phone to send health information to my friends. I don’t use it for casual chatting with friends, I use it when there’s important issue we can help each other, by reminding each other.

When I asked Erna what kind of information she and the other women discussed, she said

Usually about…mmm…free blood sugar check session, or if there’s an information session at *Pak mantri*’s house. I myself have diabetes for 5 years, and my two kids are still very small. I’m stupid and poor, but giving information to my friends and getting advice on keeping my physical condition fresh (*seger* = *sehat* = healthy) is good.

*Tuti*, the other volunteer, confirmed what Erna said about “reminding each other.” In fact, *arisan* and *pengajian*, as well as *posyandu*, are forms of rural women’s self-help that provide assistance in emergencies such as accidents, deaths, and illnesses. Texting opens up opportunities for these rural women to communicate about their condition, like text that *mantri* received after we broke the fast one evening: *Niki kula kok awake adem kabe ndrodog, pripun pak?* (I feel cold and trembly, what should I do?). Without further due, *mantri* took his motorcycle and went to this woman’s house. I rode with Dwi. It turned out that this woman did not take her early breakfast properly and experience a hypoglycemic condition—low blood sugar.

**Negotiating Knowledge:** Advice, as Erna said, is a form of “knowledge negotiation” which refers to women’s active participation and involvement in knowledge production via texting. Rather than acting as users, *mantri* and these rural women act as the cocreators of knowledge in their texting. Diabetes knowledge, as promoted by doctors, focused on three things: Food intake management, regular consumption of medication, and exercise. This model of self-management detached these women from their everyday values. As a top-down form of intervention, this knowledge does not take into account the sociocultural, religious, and economic aspects that framed these rural women’s concept of health, the dynamic of interactions between the villagers, and Javanese traditional concept of gender roles.
Health, in these women’s perceptions lies within their heart and mind. Marni explains that:

As long as your mind is calm, you’ll feel that you’re healthier. Fasting, attending Qur’an recitation, helps ease your mind.

I had a chance to observe the daily activity of one of the older participants, Prapti, who told me:

I asked pak mantri if people with sugar disease can fast or not?

She continued

He said I can, as long I don’t forget to take my medicines. I just texted my friend: you should fast. I don’t feel weak and I can recite Qur’an till late at night.

On another occasion, I went to meet a mother and daughter who both had diabetes. When I came to Lis’s (the mother’s) house, she told me that her daughter Nani’s blood sugar level is constantly high and she was certain that her daughter’s heavy thoughts triggered this condition. During the interview, Lis told me that she just asked her youngest daughter to text Nani using her mobile phone: Ora kejeron mir. Ayem, sumelah gusti kaya Ibuk, ben gulomu medhun (don’t think too much. Stay calm and surrender to God and, like me, your glucose level will go down). With her eye condition, Lis could not read small letters clearly.

Managing food intake/diet is a concept that some of these rural women find hard to negotiate. With limited income, these women do not have many choices. For them, food should sustain their physical strength in order to work all day. In addition, because earning money is difficult, these women never throw away leftover rice. Mantri’s wife told me that she received a text from one woman who said that since she consumed sega wadhang (cold leftover rice), her glucose level becomes stable. I asked mantri’s wife, “Is it true?” and Dwi said, “Most women here believed that cold leftover rice cures diabetes, but I always tell them that they can eat sega wadhang, but don’t forget to have some vegetables in their meal for nutrition.”

Alternative medicine is another topic that these women talk about when texting. Traditional home remedies known as jamu are very popular among rural people. They perceived jamu as the first solution to illness and jamu is widely consumed to maintain physical fitness. Abundant resources of herbal plantations are available across the villages, such as ginger, turmeric, betel leaf, etc. I noted that one of the reasons why some rural women choose to incorporate alternative medicines such as traditional herbal drinks or jamu in their diabetes management was to find a treatment that is appropriate (cocok) to their financial condition (Pitaloka, 2014). During one arisan meeting, these women discussed jamu and Erna told me that she received many texts about diabetes jamu recipes, such as soursop leaf drink, bitter gourd drink, and turmeric drinks.

**Fostering Women’s Consciousness about Health:** A restless heart and heavy thoughts are believed to be the cause of diabetes. While managing inner peace becomes the women’s main attention, mantri’s role is to inform the women about
the importance of maintaining their blood sugar level. Texting encourages these women to become more conscious about their health. In one of the recitation meetings that I attended, the women discussed why the Qur’an had to say with respect to health. Preaching in Javanese, the leader of the recitation wrapped up the session that night with this message:

Nothing is worse than someone who is overeating – filling her stomach with food that exceeds its capacity. If you eat, do eat to make your body strong and straight (tegak). But remember, you should allow 1/3 of your stomach for food, 1/3 for drinks, and 1/3 for breath.

This closing provoked the women to discuss their eating habits. After the recitation, Warni invited me to her house to break the fast. She came to the recitation with her daughter who lives in a different village. That night her daughter went back straight away since her infant had a slight fever. While preparing the food, Warni talked about the reason she keeps working and about her daughter who is always concerned about Warni’s health condition. Since she lives in a different village, Warni’s daughter used a mobile phone to check on her mother’s condition. She told me, “Niki, nembe mawon nyambel kok anake malah sms, ngeten niki to…” (see, I just finished making sambal and my daughter had already texted me): Mak, maeme dijogo (watch your meal mom). Laughing, Warni said, “Kula niki mung wong ra nduwe, mangan sega sambel. Saka pasar ngelih….eh, ora entuk mangan akeh” (I’m poor and I only eat sambal and rice. I feel hungry coming home from the market and I can’t eat a bigger portion).

The concept of eating for Warni was not about the variety of food on the plate, the price, or how healthy the food is. Eating was about the ability to enjoy food no matter how simple it is. For her, the simple dish of warm rice and sambal (Javanese chili with shrimp paste aroma) brings a joyful feeling. She could have finished two plates of rice for herself, especially when she comes home from work tired and hungry. A glass of sweet hot tea would accompany her meal. Of course, this diet does not fit the concept of healthy eating for diabetes management but rice and sambal are a source of happiness for Marni—an emotional condition that eases other burdens in life. However, that night Marni only had a half plate of rice, sambal, and three deep-fried tempe (soya bean cake).

The sermon also promoted mantri’s wife to send texts to two posyandu women volunteers who had been working with her for years and had diabetes, highlighting how the circulation of health information, texting and attendance, and discussions at recitation meetings are all interrelated parts of a whole way of life.

Don’t forget to do your [noon] prayer. Eat properly, don’t eat too much to stay healthy. Amiin.

The other topic that the women discussed was personal hygiene. After the posyandu session, one woman told mantri that she prefers to go barefoot because wearing shoes made her feel uncomfortable. She believed herself not to be at risk of developing infection from a wound, stating that she only suffered dry diabetes. Mantri responded, “It’s better to be careful. Wearing footwear is good for your
cleanliness and health.” In an interview with Sri, who grows turmeric and other herbs, I asked “Why don’t you wear footwear?” Sri responded:

We’re just villagers, I myself also love walking around barefoot, but I feel bad now because Bu mantri said in her text: kebersihan niku bagian dari iman (cleanliness is part of faith).

Wearing footwear outside the house to prevent any cuts or wounds is a key tenet of maintaining diabetic health because diabetics are at a high risk of cuts or wounds becoming infected. Indeed, when one of the women’s family members had to undergo amputation due to infection, mantri sent a text message to the two volunteers Erna and Tuti so they could share the news with others:

Ampun lali ngagem sandal nek medhal ben mboten keno beling nopo sing saged damel infeksi (don’t forget to wear footwear if you’re doing activities outside the house, so your feet won’t get slashed and wounded in ways that may cause infection).

The other topic that engaged these rural women in texting was managing their food intake at community social events. One text that mantri received was:

What should I eat if I have to attend a wedding or slametan (Javanese ritual meal)?

For rural Javanese, everyday life from birth to death revolves around ceremonies and social celebrations and these events always involve feasting. Participating in social events like slametan is very important for the rural people. Moreover, women are responsible for preparing food for such events and this presents a challenge for diabetics. One woman who used to help with cooking sent a message to Tuti: Nek ora diicipi wedi ra enak, ning meh kabei legi. Piye yo? (if I don’t taste the food, I’m afraid that the taste is not quite right, but almost all are sweet, what should I do?). Bu mantri who listened to this story from Tuti sent a text message: Ngicipi nek sakjumput/saksesepan mboten nopo2, ampun sak enthong (tasting, if it’s a pinch/a sip is ok, but don’t take a large soup spoon).

In my travels to the local market, I came across a drink called tetes—a thick red sugary syrup that is popular among the locals because of its refreshing taste, electric pink color, and cheap price. People usually mix tetes with water and ice to make es tetes—an irresistibly refreshing drink for a hot day at the market. When I met mantri later that evening, he told me that some of the women had been enquiring about the health effects of the food they consume daily, including tetes. For example, one of his patients texted him to ask: Nopo tetes saged nginggilaken gendis? (Could tetes drink increase my blood sugar?). When I interviewed this woman, Darni, she explained that her glucose level was constantly high and she wanted to know whether her love for tetes caused this problem, “If you’re poor, it’s a refreshing drink that poor people can afford, because it’s cheap. I can drink two glasses especially during a long hot day at the market.” Mantri responded to Darni’s text with simple suggestion:

Please try to drink water. It’s better not to overconsume anything. Please try to reduce your tetes consumption.
Knowing that these women may not be aware of the dangers of overconsuming sugar, **mantri** raised issue at the monthly health information session. At that time, there were at least 15 women with diabetes who joined both **arisan** and **pengajian** group and five others who only joined **pengajian**. Tuti told me, “Mboten gampang le ngandani, wong kula mawon remen tetes kok” (It’s not easy to tell the women what to do, I personally also like **tetes**). If someone asked her about it, she forwarded **mantri**’s SMS:

> Water is good for your health. It’s refreshing and cheap.

It seems that “cheap” is the key word in this SMS because **mantri** received a good response to it including short texts such as “leres” (true), “sae njih?” (oh, it’s good?!), to longer questions: “is just ordinary boiled water OK or bottled water?” “I can’t quit drinking coffee, is it bad?”

### 4.6 Conclusion

This study highlights the value of organic texting activity among the rural women participants as a form of continuous reflection upon their health. The positive effects of using SMS cannot just be attributed to technological affordance, which is where the emphasis of mHealth discourse can often lie. It can also be attributed to the dynamic interplay of culture—the shared values, practices, and meanings that are negotiated in communities—and structure, understood as the system that enables or constrains these women’s access to resources.

On one hand, texting provides an alternative communication space for these women to discuss possible solutions to their health problems while reflecting their cultural beliefs. The advice that these women receive from each other and from **mantri** can be seen as a form of “knowledge negotiation”—which refers to women’s active participation and involvement in knowledge production via texting. Contrary to the dominant mHealth approach in which app providers act as knowledge generators and mobile phone subscribers as users, **mantri** and these rural women act as cocreators of knowledge related to their health. On the other hand, texting provides a communicative space for these women to develop peer support and the capacity for agency and autonomy. In the process of cocreating knowledge, women and **mantri** negotiate living with diabetes in the context of everyday life. Despite their poverty, these women still hold considerable power in the management of both domestic and public affairs in the villages. Thus, the SMS exchanges that occur between them and **mantri** reflect their need to balance these roles and maintain harmonious social interactions.

Global discourses around diabetes management frame the failure of patients’ diabetes management as related to individual action or inaction (Aikins, Boyton, & Atanga, 2010; McKee, Clarke, Kmetic, & Reading, 2009; Parry, Peel, Douglas, & Lawton, 2006). This suggests that poor health occurs because individuals are unable or unwilling to heed preventive messages or recommended treatment actions.
(Airhihenbuwa, Ford, & Iwelunmor, 2014). Being poor and having diabetes, the women in this study constantly negotiated their personal needs (including their health needs) with those of their family and community. As a result, their health-seeking behaviors must be compatible with the other elements of life, i.e., a good “fit” (cocok) (Pitaloka, 2014).

From a culture-centered approach, texting is woven into these women’s experience of diabetes and how they negotiate their health-seeking behaviors. The messages are not centralized or controlled by one person. Instead, messages flow from SMS to discussion during arisan and pengajian, to health information sessions during the posyandu meeting. Texting creates a self-empowerment process that helps these women develop a strategy to maintain their multiple roles and sense of self-reliance (Chib & Chen, 2011) while dealing with hardships at the same time. Using common language, these women access the information they need and negotiate it with mantri—their main health supporter—and with other diabetics. At the same time, texting allowed these women to maintain their sense of self-reliance and ability to tackle hardships.

The practice of texting among the rural village women in this study shows us that health behaviors are rendered meaningful within cultural contexts, being anchored in cultural values and beliefs (Dutta, 2008). This study provides an insight into how a mobile phone can be used to help poor rural villagers or marginalized community members participate in the knowledge production related to health and illness. Recognition of local practices and traditions allowed these women’s voices to be heard by mantri whom later elaborates on the health issues in his monthly health meeting or with the help of women volunteers in arisan and pengajian sessions. Culture, in the context of low-cost mobile texting, “emerges as the strongest determinant of the context of life that shapes knowledge creation, sharing of meanings, and behavior changes” (Dutta & Basu, 2007, p. 561).

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