National directives and community empowerment

Public health in Sleman Regency, Indonesia

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Abstract

Although public health in Indonesia is regulated at the national level, district-level government health authorities are often responsible for shaping and executing specific public health programs. While cooperating with national efforts, Sleman Regency, Indonesia, has improved upon these recommendations to design innovative solutions to public health crises. Through community empowerment, Sleman has implemented voluntary AIDS commissions, women-led non-profit organizations and neighborhood health coalitions, volunteer-based home inspections and green initiatives. This paper draws on firsthand observations from my recent trip to Yogyakarta, Indonesia, including interviews with public health administrators, site visits and primary source material from education campaigns and local health clinics.

Part I of this paper provides a broad overview of the decentralized structure of the Indonesian public health system; it examines how Sleman operates under the federalized system and focuses on the district's method of expanding upon national health directives to create novel local initiatives. Part II of this paper evaluates how instrumental community empowerment has been in reducing disease incidence and promoting healthy behaviors. Part III assesses whether this community engagement can be replicated on the national level.

Introduction

Dr. Nurulhayah, Head of Medical Services at Sleman Health Office in Sleman Regency, Indonesia, describes Sleman as a "preferred district, with the best model for public health in the nation" (D. Nurulhayah, personal communication, August 3, 2011). Sleman Regency's unique model of public health bolsters national health directives with local innovations; a particularly noteworthy instigation is community empowerment, which the World Health Organization (WHO) defines as "the process of enabling communities to increase control over their lives" (2009b). Community empowerment measures include voluntary AIDS commissions, women-led non-profit organizations and neighborhood health coalitions, volunteer-based home inspections and local green initiatives—all of which likely have contributed to Sleman's above-average health indicators, improved health statistics and sustained institutional and volunteer support. Though Sleman boasts a number of medical and social advantages, similar projects are plausibly replicable throughout all of Indonesia.

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Part I: Overview of the Indonesian public health system

In Indonesia, healthcare is overseen at the national, provincial, district or regency, sub-district and village levels. The Ministry of Health establishes national health policy, develops the standards of care for district and sub-district health care providers, formulates national health insurance plans and determines accreditation standards for healthcare facilities and professionals (Ministry of Health Republic of Indonesia). Under the decentralization policies of Act No. 22/1999 and Act No. 25/1999, however, most administrative functions are left to the provincial, district, sub-district and village levels (Library of Congress, 2004). At the provincial level, the Provincial Health Office supports the work of the district, sub-district and village public health administrators and coordinates health resources throughout the province (Dinas Kesehatan Provinsi Jawa Barat, 2006). Indonesia has 30 provinces (provinsi), two regions with a special status and one special capital region (Central Intelligence Agency, 2011).

After a January 1, 2001, agreement to further decentralize policymaking, most healthcare decision-making was left to the districts or regencies and their sub-districts (Library of Congress, 2004). The District-Level Health Office carries out provincial guidelines, directs local public health programs such as immunization and infectious disease control and regulates the food, drug and drink industries (Dinas Kesehatan Sleman, 2011). The primary feature of the sub-district level of government is the community health center (Puskesmas) that directly administers medical care to patients (World Health Organization, 2006). Village-level provision of care includes small community health centers, mobile health clinics, midwife clinics or maternity huts and integrated health posts (Posyandu) (World Health Organization, 2006).

Under this structure, patients throughout Indonesia receive care primarily through four mechanisms: government-funded village-level health centers (such as Posyandu), public sub-district level community health centers (Puskesmas), private physicians and private and public hospitals (Eko Relawati, personal communication, August 4, 2011). The most common village-level health center is the Posyandu. Unlike other forms of clinics in Indonesia, which are staffed by government-paid or privately-paid physicians, Posyandu, which are only open once a month, rely completely on community volunteers (Renosari). Puskesmas provide most primary health services including immunization, pre- and postnatal care, dentistry and laboratory services. On average, each Puskesmas serves 30,000 inhabitants (Airlangga University, 2002). Though each district follows the same health model, the capacity and quality of Puskesmas and Posyandu can vary.

Community empowerment has been linked to better health outcomes and unified support for local health initiatives.

Many public physicians employed at Puskesmas also maintain private practices or positions at local hospitals as secondary forms of employment. Patients who require primary care services after the Puskesmas close can still seek care from these private physicians, who often accept various forms of health insurance such as Jamkesmas for the poor, Jamsostek for private employees and Askes for government employees and civil servants (Export Victoria, 2010). For specialty services, patients rely on district, provincial and central hospitals (World Health Organization, 2005). According to the National Ministry of Health, hospitals are divided into four classes—A, B, C and D—based on the number of specialty services provided (Sutiono, 2009). Half of all hospitals in Indonesia are privately owned by non-profit organizations, while the remaining half are owned by the Ministry of Health, local government or the national armed forces (World Health Organization, 2005).

Sleman health office (Dinas Kesehatan Kabupaten Sleman)

Sleman Regency is located in the northern section of Yogyakarta Province, and its boundaries range from Yogyakarta City in the south to Mount Merapi in the north. With a population of over 1 million, Sleman is made up of 17 sub-districts, 86 villages and 1212 hamlets (United Nations Centre for Regional Development, 2005). Although Sleman is urbanizing due to pressure from Yogyakarta City, agriculture remains one of the largest economic sectors in the region, making up over 14% of the Gross Regional Domestic Product (Sleman Regency, 2005). In addition, Sleman is home to 29 universities, a consequent large student population and a rich intellectual history (United Nations Centre for Regional Development, 2005).

Sleman's primary body for overseeing public health is the Sleman Health Office (SHO), which oversees immunization, infectious disease control through surveillance and education campaigns and food, drug and drink registration and certification (Cahyo Purnama, personal communication, August 3, 2011). Under the guidance of the National Ministry of Health, SHO operates a broad program of developing clean and healthy behaviors at five locations: home, school, public places, workplaces and healthcare facilities (Dinas Kesehatan Kabupaten Sleman, 2009). Projects are not exclusively beneficial to the locals; for example, "Health in Tourism" provides mobile health services for tourists. Other initiatives include a sand-mining occupational health service and a "Healthy Market Program," which both divides traditional markets into separate sections for fruit, meat and other food products and makes available a mobile primary health station (D. Nurulhayah, personal communication, August 3, 2011).

Expanding upon national directives

Although it receives guidance from the Ministry of Health, the Sleman Health Office often amplifies national recommendations for public health. Five expanded upon national directives are: augmented health indicators, public health education, maternal health interventions, infectious disease control and environmental programs.

The National Ministry of Health has ten indicators for evaluating the health status of households: 1) deliveries assisted by a health professional, 2) babies breastfed, 3) infants weighed every month, 4) using clean water, 5) washing hands with soap and clean water, 6) using healthy latrines, 7) eradicating larvae at home, 8) eating fruits and vegetables daily, 9) performing daily physical activities and 10) abstaining from smoking inside. Twice a year, each household is scored based on these indicators and given a ranking of deficient, average, good and very good. SHO added ten indicators for evaluation: 1) balanced nutrition, 2) examination during pregnancy according to appropriate standards, 3) health insurance status, 4) complete infant immunization, 5) family planning methods, 6) floor of the house lifted off the ground, 7) utilization of health services, 8) waste management, 9) presence of a medicinal garden and 10) tooth brushing habits (Dinas Kesehatan Kabupaten Sleman, 2009). Each household's score is then recorded on a sticker placed on the front window of the household and in a large logbook kept at the Health Office. Village volunteers regularly perform checkups, and if a household continues to score poorly on a certain item, Sleman authorities will connect the family with a Family Health Empowerment Volunteer (D. Nurulhayah, personal communication, August 3, 2011).

SHO designs its own educational programs to inform the community about communicable diseases and their prevention. Booklets are distributed to Puskesmas throughout the district that describe and depict proper health behavior and suggest ways (hand-washing and proper waste disposal) to improve health conditions at work and at healthcare centers (Dinas Kesehatan Kabupaten Sleman, 2009). Graphs and images emphasize the dangers of an unhealthy lifestyle. Informational disease posters are similarly designed and distributed throughout the Puskesmas and Posyandu. One poster featured at Puskesmas Kalasan warns of dengue fever, using large red letters before going on to illustrate how residents can protect themselves from the fever by keeping communal work areas clean, draining water once a week and closing water reservoirs very tightly (Dinas Kesehatan Kabupaten Sleman, 2005). Through these poster campaigns, SHO hopes to educate residents about the environmental and behavioral risk factors for infectious diseases.

In an effort to reduce maternal and infant mortality, SHO created an extension of the national initiatives "Mother Friendly Movement" and "Love Mother Movement." The "Mother Friendly Movement" sought to promote education, ensure access to midwives, form blood donor groups within each village and organize referral programs for women with complicated pregnancies. Under the "Love Mother Movement," every pregnant woman is given a sticker to place on the front window of her home that alert emergency teams, midwives and physicians in case of an emergency. The sticker lists the name of the mother, due date, delivery assistant, desired place of delivery, delivery companion, mode of transportation and prospective blood donor in case of complications during delivery (Eko Relawati, personal communication, August 4, 2011).

To bolster this national approach targeting maternal and infant

health, Sleman Regency mandates that midwives at each Puskesmas must not only maintain a logbook of all women in the sub-district who have recently given birth but also track areas of high-risk pregnancy on large color-coded maps. Puskesmas staff relies on educational tools, such as booklets on proper prenatal care, to encourage expecting women to continue with prenatal care and to avoid harmful behavior during pregnancy. Women are expected to meet with a midwife at least once every trimester, but midwives advocate for more checkups—once a month during the first trimester, twice a week in the second trimester and weekly during the third trimester (Eko Relawati, personal communication, August 4, 2011).

SHO has developed other unique models for improving health in the community. To combat mosquito-borne diseases, health officials promote using mosquito repellant and nets and placing mosquito larvae-eating fish in drinking water. To target leptospirosis, a bacterial infection that spreads through rat urine, which is a major health problem in Yogyakarta Province, SHO releases owls and snakes to reduce rat populations in rice fields (United Nations Office for the Coordination of Humanitarian Affairs, 2011). In 2006, Ngaglik Village authorities launched the "Green and Clean Program," which filters drinking water, discourages smoking outside designated areas and provides composting and recycling services. For example, to improve drinking water quality, waste from homes in Ngaglik village is filtered through wood, coal from coconut skins, sand and small stones. Goldfish are then placed in the filtered water. "If they survive," one employee of the Program explained, "that means the wastewater management is working" (personal communication, August 4, 2011). The filtered water is finally released into the local river.

> Indonesia, unlike other developing countries, rarely experiences "brain drain," a phenomenon in which educated physicians leave the country in search of higher-paying jobs overseas.

Part II: Programs of "community empowerment"

Sleman Regency's most notable expansion upon national health directives is what Sleman Health Office Head of Medical Services Dr. Nurulhayah terms "community empowerment" (D. Nurulhayah, personal communication, August 3, 2011). Community empowerment—a "process by which communities gain control over the factors and decisions that shape their lives" (World Health Organization, 2009b)—has been linked to better health outcomes and unified support for local health initiatives by encouraging individuals to be more aware of their surroundings, their community involvement, their health and their personal lives. These programs seek to engage members of the community in a decision-making process that all too often neglects local input (Kahssay & Oakley, 1999). Also significant is that Sleman's public health successes have come even when financial resources were scarce.

Strong leadership has appeared from individuals associated with both SHO and the communities being served. Prominent women, often the spouses of local health practitioners, were approached by SHO officials to initiate a number of volunteer-led health programs. Dr. Tunggul Birowo, a family physician and employee of the Sleman Health Office, believes that because of these community-based programs "we can accomplish a lot without much money" (Tunggul Birowow, personal communication, August 4, 2011).

Five programs of community empowerment

Voluntary AIDS commission

One project in Sleman Regency that embodies this community empowerment approach to public health is the Regency's voluntary AIDS committee, a small non-profit group promoting HIV/AIDS screening among high-risk groups. The commission, made up of community members, encourages Sleman residents to obtain "Voluntary Consultation and Training" (VCT), an HIV screening made available at Puskesmas. Injection drug users and commercial sex workers are especially advised for screening (D. Nurulhayah, personal communication, August 3, 2011). Community empowerment arises from the fact that local residents are taught public health education techniques; for it is they, rather than external public health officials, who promote HIV/AIDS awareness in their neighborhoods. Moreover, by personally visiting at-risk individuals and neighborhoods, they can engage members of the community that might normally not otherwise pursue a screening.

Posyandu volunteers

Nearly all Sleman Health Office programs rely on volunteers; Posyandu, as an example, depend on over 8,000 volunteer community members (D. Nurulhayah, personal communication, August 3, 2011). Their responsibilities range from assisting midwives with deliveries to serving as Psychiatric Health Volunteers who provide Post-Traumatic Stress Disorder counseling, a skill which was especially necessary after a 2010 Mount Merapi eruption (Novita Krisnaini, personal communication, August 3, 2011). As in the voluntary AIDS commission, volunteers are chosen directly from the lay community, a move that fosters greater community participation in public health efforts. Through their involvement at Posyandu, these volunteers are able to informally transmit their public health knowledge to the community.

Home inspections

In addition, volunteers play a critical role in Sleman Health Office's programs for infectious disease control. Every week, Health Office volunteers conduct a district-wide survey of local Posyandu and Puskesmas for rates of measles, food poisoning, leptospirosis, tuberculosis, dengue fever and malaria. Volunteers also regularly check the sanitary condition of homes and neighborhoods and evaluate how well these environments are protected from mosquito larvae. Through this weekly surveillance project, communicable diseases can be detected at earlier stages and public health efforts can be shifted from treatment to prevention and eradication (Cahyo Purnama, personal communication, August 3, 2011). In relying on community members to execute home inspections, the Sleman Health Office may achieve higher rates of compliance, as residents are more likely to trust familiar faces from the community. Although employing lay people to perform home inspections could conceivably create a problem with quality control, the indicators being measured are likely simple enough for even non-health professionals to evaluate.

Female-led neighborhood coalitions

Women are important public health leaders. One female-led community program is Dasa Wisma, a collection of female representatives for every 10-20 homes in each village in the district who are responsible for evaluating and promoting healthy behavior. Initiatives include recording pregnancy and infant mortality statistics in each village, educating families about proper nutrition and sanitation, weighing infants at local Posyandu and reducing family poverty (Harmayani, 2009). Dr. Cahyo Purnama, a physician at Sleman Health Office who supervises primary health care and hospital compliance, calls Dasa Wisma volunteers "key figures in maintaining community health" (Cahyo Purnama, personal communication, August 3, 2011). Dasa Wisma also shares its collected data with local government officials and Puskesmas in order to direct more appropriate public health interventions (Harmayani, 2009).

Female-led non-profit organizations

Other female-led community organizations have found ways to encourage routine medical screenings through group office visits. Ikatan Isteri Dokter, an organization of physician wives formed in 1954, arranges group mammograms for its members. According to Dr. Lina Choridah, a radiologist and breast cancer specialist

at Dr. Sardjito Hospital in Yogyakarta (Rumah Sakit Dr. Sardjito), many women "feel more comfortable when their friends are also getting breast exams. It helps reduce emotional stress and encourages women to get screened who might otherwise be afraid to" (Lina Choridah, personal communication, August 4, 2011). These informal community coalitions that encourage group participation in health—in this case, screening for breast cancer—could result in more successful public health initiatives in the long term. Community members may feel more empowered in their health choices and more comfortable undergoing potentially frightening medical procedures. In a society in which women's participation in the public sphere can be limited by prevailing cultural or religious mores, female-led health organizations provide women with the opportunity to develop leadership skills and influence local conditions.

Measuring the outcomes of Sleman's community empowerment program

To evaluate the success of Sleman Regency's programs of community empowerment, one can examine quantitative aspects, such as changes in health statistics, as well as more qualitative measures, such as community satisfaction (Glanz et al., 2008, p. 295). Although this paper does not purport to identify a statistical link between Sleman's community empowerment programs and the district's successes with public health, it does suggest that these programs have had a potentially large impact on health indicators. For example, the female-led neighborhood health coalitions are Sleman's primary initiative to address maternal-infant health, meaning that they likely substantially influence maternal and infant mortality statistics. Moreover, since all provinces in Indonesia share Sleman's other public health programs, it is more likely that regional disparities in basic health statistics—or at least in their change over time—are likely attributable to the Regency's community empowerment programs. Certainly, differences in income and education levels also contribute to these regional differences, but I argue that the primary factor responsible for Sleman's above-average status is its community health programs, and the fact that the rate of improvement is higher in Sleman substantiates this thesis. Unfortunately there are not as many statistics available on community satisfaction, since this requires a more qualitative assessment. Sleman's continued high volunteer participation rates within community empowerment programs, however, speak to a broad base of support among those who have experienced and benefited from the programs.

Compared to Indonesia as a whole, Sleman has a well-developed healthcare system. In 2009, Sleman Regency recorded an average life expectancy of 72.46 years for men and 76.79 years for women, compared to a national average of 66 years for men and 71 years for women. The infant mortality rate for Sleman was 4.09 per 1000 live births (versus a national average of 30 per 1000 live births), and the maternal mortality rate was 69.31 per 100,000 live births (compared to a reported national average of 230 per 100,000 live births) (UNICEF, 2010). Similarly, Sleman Regency typically demonstrates better health statistics than the entirety of Yogyakarta Province. In 2001, the infant mortality rate in Sleman was 11.3 per 1000 live births (compared to 15.5 in Yogyakarta Province), the maternal mortality rate was 84.6 per 100,000 births (versus 110.0 in Yogyakarta Province), and the gross mortality rate was 5.1 per 1000 people (versus 7.7 in Yogyakarta Province) (Sleman Regency, 2005).

Sleman Regency itself has shown improvements in health statistics. Between 2004 and 2009, infant mortality dropped from 7.67 to 4.09 per 1000 live births; maternal mortality per 100,000 live births declined from 78.70 to 69.31; and the proportion of low birth weight infants was reduced from 2.38% to 0.82%. The number of health care providers also increased in the period from 2003 to 2009. Dentists rose in number from 503 to 1338, and government-employed general practitioners rose from 28 to 76 (Pemerintah Kabupaten Sleman, 2011). This 271% increase is remarkable, especially when compared to the highly-developed European health system. On average, the number of physicians in European Union countries increased by 10% over the same time period, with Ireland increasing at the highest rate of 50%. France and Italy had almost zero growth in its physician population, coupled with a decline in medical school entrants. Moreover, almost all European Union countries have seen a much more rapid increase in the number of specialist physicians than in general practitioners; Indonesia, in comparison, has had the most rapid growth in the general practice (OECD, 2010). Indonesia, unlike other developing countries (including Lebenom, Syria, the United Arab Emirates and Albania), rarely experiences "brain drain," a phenomenon in which educated physicians leave the country in search of higher-paying jobs overseas (Mullan, 2005).

Sleman Regency is likely retaining greater numbers of healthcare workers because physicians want to be a part of the district's superior system of preventative care. Physicians in Sleman widely support the community empowerment initiatives, perhaps because they are designed and run by physicians. In addition to Dr. Nurulhayah's glowing remarks about Sleman Regency's public health reputation, Dr. Tunggul Birowo, former director of Puskesmas Kalasan and private general practitioner, called Sleman "the best health district nationally" (personal communication, August 4, 2011). Employees of Sleman Health Office and several Puskesmas employees, most of whom were physicians, boasted about their strong program of community empowerment, repeatedly emphasizing how proud they were of their public health initiatives.

Volunteer support for Sleman Regency's health initiatives also indicates that the district's program of community empowerment has been a success. Sleman's strong base of over 8,000 health volunteers at Posyandu alone suggests that community members value their health programs and recognize the importance of local participation in promoting healthy behaviors and reducing disease (Tunggul Birowow, personal communication, August 4, 2011). Of course, these positive perspectives must be viewed with caution because they do not entirely represent the opinions of local community members impacted most by community empowerment and because Sleman Regency continues to face challenges with infectious diseases.

Sleman still confronts problems with dengue hemorrhagic fever (DHF); the number of DHF cases in Sleman District from 2002-2006 represented nearly 30% of total infections in Yogyakarta Province, with Bantul, Kulonprogo and Gunungkidul districts numbering only 19.1%, 6.9%, and 8.7% of cases, respectively. Researchers have criticized Sleman Regency's response to DHF, arguing that even though "the general patterns of DHF spatial and temporal distribution in Sleman District were known, public health practitioners and the community failed to make effective action to prevent DHF epidemics" (Kusnanto, 2006). Sleman has also faced a recent influx of leptospirosis cases, with 35 cases over a four-month span in 2011 (Concord Consulting, 2011). Although Sleman Regency continues to encounter public health challenges and may not excel in all areas of health, the district's program of community empowerment must still be considered an overall success. Given that the district has improved critical health indicators over time and demonstrates significant community satisfaction with public health, Sleman Regency's community empowerment initiative has likely resulted in improved health outcomes and reduced disease incidence.

Part III: Exporting Sleman Regency's program of "community empowerment"

Since Sleman Regency's programs of community empowerment have largely been successful, policymakers wonder if this model of public health is replicable in other Indonesian districts. Although Sleman does hold several notable advantages in its strong educational system, top-tier hospitals and prominent community leaders, this paper argues that Sleman's programs can be duplicated in other areas.

Education in Sleman Regency

Sleman Regency's public health office undoubtedly benefits from its local connection to a variety of medical and graduate schools. Home to Gadhah Mada University, the oldest and most prestigious national university, Sleman has such a large student population that it is informally known as "Student City." Three of Sleman's twenty-nine universities—Gadjah Mada University, Islamic University of Indonesia, and Muhammadiyah University—have medical schools which place students into internships toward benefiting the community (D. Nurulhayah, personal communication, August 3, 2011). Puskesmas Kalasan, for example, often has two to three midwifery students who help deliver babies and receive training for special cases (Tunggul Birowow, personal communication,

August 4, 2011). Psychiatry students from Gadjah Mada University volunteer at Puskesmas Ngaglik I twice a week to provide basic mental health consultations as well as reproductive health and domestic violence counseling (Eko Relawati, personal communication, August 4, 2011). SHO also relies on its university connections to provide technical training for food preparation in the Department of Pharmacy, Food and Drink (Seksi Farmasi, Makanan, dan Minum). Gadjah Mada University collaborates with SHO to instruct applicants for food certification on basic food preparation and safety procedures (Gunanto, personal communication, August 3, 2011).

Even though most other districts in Indonesia do not have access to these academic resources, the key components of Sleman Regency's community empowerment initiative are nevertheless achievable. Although the presence of strong research programs and talented students can certainly improve the quality of care at local health centers, the key features (female-led non-profit organizations, neighborhood health coalitions, volunteer-based home inspections and Posyandu services) can induce success in areas deficient of academic advantages. Community empowerment, after all, is not premised on technical training; instead, it strives to harness the power of neighbors to help other neighbors.

Teaching hospitals

Sleman Regency has sixteen hospitals, with one class-A Gahjah Mada University-affiliated teaching hospital, Dr. Sardjito Hospital, or RS Dr. Sardjito (Cahyo Purnama, personal communication, August 3, 2011). RS Dr. Sardjito has a total of 750 beds and a large number of employees including resident physicians, nurses, medical technicians, nutritionists, pharmacists and physical therapists. It offers an extensive number of services, from nursing and home care services for the elderly to osteoporosis, diabetes mellitus and hypertension specialty clinics (Kementrian Kesehatan RSUP Dr. Sardjito Yogyakarta, 2010). RS Dr. Sardjito has several renowned and highly advanced medical clinics. Klinik Infertilitas Permata Hati, one of fourteen such clinics in Indonesia, is RS Dr. Sardjito's infertility treatment center. Permata Hati offers artificial insemination (IUI), simple IVF and intracytoplasmic sperm injection (ICSI) (Klinik Infertilitas Permata Hati, 2011). RS Dr. Sardjito also has a breast cancer clinic located in the radiology department. Dr. Lina Choridah describes the "integrated clinic" as one that comprises a pathologist, operating room, laboratory equipment and radiology staff. In addition, the clinic conducts breast cancer-related research; Dr. Lina Choridah's current research project involves comparing digital and analog mammograms (personal communication, August 4, 2011).

However, while top-tier teaching hospitals are essential for providing advanced medical care for rare conditions, most patients at teaching hospitals receive care for common health conditions such as stroke, pneumonia and heart disease. One article in the Milbank Quarterly suggests that for these routine health problems, "teaching hospitals may offer a lower quality of care than do nonteaching hospitals, particularly if the substantial involvement of inexperienced trainees and the attenuated role of senior physicians in teaching hospitals results in more fragmented and less appropriate care" (Ayanian, J. & Weissmann, J., 2001). Moreover, since the primary point of contact for patients in the Indonesian healthcare system is the government-run Puskesmas, the most critically used public health services will be accessible in all districts. As with academic institutions, a lack of university-affiliated hospitals should not significantly impact the core programs of community empowerment, which rely on low-tech home inspections and the support of lay volunteers. Programs like Ikatan Isteri Dokter, which mobilizes groups of women to receive yearly mammograms at RS Dr. Sardjito, would of course not be technically feasible in areas without advanced medical equipment. However, similar programs could be formed in other districts that utilize less expensive alternatives, such as group breast self-examinations or ultrasounds (Gonzaga, 2010).

Local community leaders

Sleman Regency benefits from prominent local community figures who promote public health goals. Dr. Nurulhayah, Dr. Cahyo Purnama, Dr. Novita Krisnaini and Dr. Tunggul Birowo are part of a talented staff that has been an essential force in developing Sleman Regency's unique public health programs that involve volunteers and the broader community in health activities. Dr. Novita Krisnaini credits the current Sultan of Yogyakarta Province, Hamengkubuwono X, for encouraging local Muslims to embrace immunization; he further explained that health officials "rely on the community leaders of individual religious groups to encourage people to get immunized" (Cahyo Purnama, personal communication, August 3, 2011). In addition to politicians and health officials, Sleman Regency's community empowerment initiatives depend on women who play a critical role in urging their neighbors and friends to value public health (D. Nurulhayah, personal communication, August 3, 2011).

These aspects of the program ensure that community empowerment is more transferable to other districts. Cities that are considering implementing Sleman Regency's program of community empowerment can use politicians, clergy and celebrities to cultivate local support for healthy behaviors and disease eradication campaigns. Female-led groups run the gamut from Flower Aceh, a Banda Aceh organization that runs a human rights crisis center and economic empowerment group, to GERTAK, a program that utilizes art to raise awareness of intimate partner violence in East Nusa Tenggara. These remarkable women-led programs have demonstrated success across Indonesia, even in areas of extreme poverty and deep religious and political conflict (UNIFEM, 2001). Community-based public health initiatives led by women would likely achieve the same results.

> With the appropriate leaders and volunteer base, these inequalities will not prevent Sleman Regency's community empowerment programs from being successful in other districts.

Health disparities

A final challenge that could affect that transportability of Sleman Regency's community empowerment program is the incredible baseline disparities in health across Indonesia. As a UNICEF report notes, the infant mortality rate in East Nusa Tenggara is 57 per 1,000 live births, nearly 14 times that of Sleman Regency. Less than 10% of poor families in Papua have access to clean water, compared to two-thirds of poor families in Bali and Java (UNICEF, 2009). Disparities between rural and urban areas pervade other aspects of health care, including births attended by health personnel (63% versus 88%), measles immunizations in 1-year-old children (73% versus 82%), under-5 mortality rate (6% versus 3.8%), and healthy sanitation facilities (approximately 37% versus 62%) (World Health Organization, 2009a).

However, with the appropriate leaders and volunteer base, these inequalities will not prevent Sleman Regency's community empowerment programs from being successful in other districts. Because they rely on very little technology and can be implemented across a wide range of cultural, religious and socioeconomic backgrounds, Sleman Regency's program of community empowerment may actually be the most suitable program for addressing these vast inequalities in health across Indonesia.

Conclusion

Sleman Regency has developed innovative ways to expand upon national health directives by creating additional health indicators, forming health education campaigns, providing additional maternal health services and supporting local green initiatives. Sleman Regency's most impactful expansion, however, is its program of com-

munity empowerment, which relies on local leaders, female volunteers and community participation to promote healthy behaviors and increase disease control. These local initiatives encompass a wide range of duties: voluntary AIDS commissions, Posyandu volunteers, home inspections, women-led neighborhood leagues and non-profit health organizations. Although Sleman Regency enjoys a rich academic environment, advanced hospitals, strong community leaders and a relatively healthy population, its program of community empowerment is still likely transferable to other parts of Indonesia. Given that most of these programs rely on female volunteers and willing community leaders without the need for advanced technology, pharmaceuticals, or complex public health planning, community empowerment could be a viable option for improving health throughout Indonesia.

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