

# Preventing Non-Communicable Diseases In Tourist Sites Through Healthy Canteen Management

**Mahendro Prasetyo Kusumo<sup>1,2</sup>, Kusbaryanto<sup>2</sup>, Muhammad Eko Atmojo<sup>3</sup>**

<sup>1</sup>Departement of Public Health, Faculty of Medicine and Health Sciences Universitas Muhammadiyah Yogyakarta, Indonesia, Bantul, Indonesia

<sup>2</sup>Masters of Hospital Administration postgraduate program Universitas Muhammadiyah Yogyakarta, Indonesia, Bantul, Indonesia

<sup>3</sup>Government Affairs and Administration, Universitas Muhammadiyah Yogyakarta, Bantul, Indonesia

Corresponding: Mahendro Prasetyo Kusumo, Universitas Muhammadiyah Yogyakarta. Email:

[mahendro\\_prasetyo@umy.ac.id](mailto:mahendro_prasetyo@umy.ac.id)

DOI: 10.18196/ppm.43.608

## Abstract

*Background: Cadre involvement is important to increase public knowledge and awareness of diet control. Dietary control contributes to the reduction in the prevalence of NCDs.*

*Objective: To explore the involvement of cadres in improving dietary control behavior to control NCDs. Methods: This community service was carried out in Sendangtirto Village, Berbah District, Sleman Regency Yogyakarta. Qualitative method with action research design used to explore the involvement of cadres in implementing diet. The selection of participants was purposive sampling. Data was collected using interview, FGD, and observation techniques. Triangulation and member checking are carried out to validate the resulting data. The data processing process begins with transcription, open coding, axial coding and the preparation of themes. Data were analyzed using NVivo software.*

*Results and implication: The qualitative data analysis concluded that there were five themes, namely: 1) the purpose of implementing a diet, 2) a model of implementing a diet based on cadre empowerment, 3) obstacles to implementing a diet, 4) efforts to improve the implementation of a diet, and 5) efforts in NCDs control. Implications: Empowerment of cadres is one form of activity that can increase the active role of the community in healthy behavior. This active role encourages people to be more active in conveying their personal experiences in controlling their eating patterns.*

*Conclusion: Empowerment of cadres increases the active role of the community in controlling diet to control*

*Keywords: Cadre, Diet Control, NCDs*

## Introduction

The World Health Organization (WHO) reported that NCD caused 64% of deaths globally (WHO, 2011), (Nakamura et al., 2017). In 2016, NCD was also the primary cause of death in Indonesia (World Health Organization, 2018). Unhealthy diet control behavior is one of the risk factors for NCD (WHO, 2018; The National Institute of Diabetes and Digestive and Kidney Diseases, 2016; World Health Organization, 2017). Consuming high-calorie food, high in fat, sugar, and salt are risk factors for PTM (The National Institute of Diabetes and Digestive and Kidney Diseases, 2016; World Health Organization, 2017). By providing proper health education, healthy living behaviors can catch the community's attention (Dobe, 2012). Education increases knowledge and awareness to implement healthy living behaviors. Efforts to promote dietary control behavior have lately been through healthy food and food labels (Ministry of Health, 2018b).

Data from the Ministry of Health of the Republic of Indonesia explained that NCD cases in Indonesia have increased (Kim & Oh, 2013). Limited healthy food and the growth of fast-food restaurants prevent people from controlling their diet. Non-communicable diseases (NCD) whose prevalence continues to increase are cardiovascular disease, cancer, chronic respiratory disease, and diabetes mellitus (WHO, 2018). However, various efforts to prevent NCD have not provided maximum results seen by the high cases each year. The Special Region of Yogyakarta (DIY) is the second-highest prevalence of NCD among other provinces in Indonesia. The prevalence of NCD has increased from previous years (Ministry of Health, 2018; Kementrian Kesehatan RI, 2013).

As a center of education, the Special Region of Yogyakarta (DIY) is also known for its rich nature and cultural charm. The atmosphere is relatively safe and comfortable with a welcoming community, attracting many tourists. In 2019, Yogyakarta had various types of tourism objects, such as nature and eco-tourism, artificial tourism, and tourism villages (DIY Tourism Office, 2019). Sleman Regency, as one of the regencies in DIY Province, has many tourist attractions that utilize the agricultural sector (agro-tourism). Agro-tourism is an alternative to exploring the economic potential and increasing income (Sleman Regency Tourism Office, 2017). The Bangunkerto agro-tourism area is a government program to protect plants or vegetation around the Sleman Regency, one of which is salak pondoh (*Salacca zalacca Gaertner Voss*). The Sleman Regency Government continues to improve the quality of society through the integration of policies and program implementation in the health sector. This integration is expected to control NCD in Sleman Regency.

Besides lack of physical activities, low diet control behavior causes the high prevalence of NCD. The interview with Argowisata Bangunkerto's manager revealed that knowledge and skills are needed to establish and manage a canteen to fulfill the tourists' needs. However, most people are not aware of how to select, process, and serve healthy food.

A healthy canteen at tourist sites is one supporting facility to control the increasing prevalence of NCD. In its development, it is necessary to monitor the food sold in the canteen to protect tourists from low-standard food. In managing the canteen, food safety principles must ensure the quality food served. The canteen needs to provide healthy and nutritious food and beverages, including hygienic processing and good sanitation. A healthy canteen can prevent an unhealthy diet in the Sleman Regency (Ministry of Health of the Republic of Indonesia, 2017).

Community empowerment programs are a strategy to improve community welfare. Through Community Family Welfare Association and tourist sites' managers, community empowerment helps and manages healthy canteens. The purpose of community service is to explore community knowledge regarding healthy canteen management to control NCD in tourist sites.

## Method

The method used to conduct community service was a qualitative method with an action research design. The informants were selected using a purposive technique and represented the information needed and fit the community service's purpose. Community service was carried out in Berbah Village, Sleman Regency, from January to May 2021. The measuring instrument used to evaluate the implementation of community service was a questionnaire. The questionnaire used was compiled based on the Ministry of Health recommendations regarding the processing of healthy canteens. The questionnaire contained how to select and process healthy food and serve appealing foods to control NCD. The questionnaire was distributed before and after training on diet control and demonstrations (Kusumo, Hendartini, Sufro, & Tetra, 2020).

Observation, interview, and focused group discussion (FGD) techniques explored the tourism site managers' knowledge about healthy canteens. All participants were voluntary, read the guidelines, and informed consent. Furthermore, participants who agreed voluntarily took part in interviews and FGDs. All information submitted by each participant was guaranteed and confidential.

The activities conducted included: 1) Presentation of material on diet control, 2) Demonstration of food selection and food storage, 3) Demonstration of food processing, and 4) Demonstration of serving food. The technique used during the program socialization was a lecture-discussion, meaning that the head of the community service delivered material on the control of a healthy and balanced diet using power points and discussion groups. This training and demonstration invited agro-tourism canteen managers from both technical and managerial fields.

## Result and Discussion

Based on the qualitative data analysis, five main themes can design a healthy canteen at Turi Agro-tourism object, including the impact of a healthy canteen in agro-tourism area, challenges on managing a healthy canteen, steps to enhance a healthy canteen, the role of local governments in managing healthy canteens and a healthy canteen management system.

### 1. The Impact of a Healthy Canteen in The Agro-Tourism Area

A healthy canteen can control NCD in the tourist sites and a superior product of the Salak Pondoh Agro-tourism because not all tourist attractions have a healthy canteen. The following is a statement from the participant.

*"..... ya kalo harapan saya ada rumah makan itu bagus, nanti apa disertai apa, teman-teman apa itu sangat menunjang kemajuan agrowisata" (Pak Suwardi). "I hope that proper restaurants can support the agro-tourism." (Pak Suwardi)*

Also, a healthy canteen can increase the community's income, as supported by the participant's statement below.

*"kalo rumah makan menurut saya bagus ( bapak Mahe ada bilang Mmmm) he'e karna nantikan pihak argo kan dapat pemasukan ( pak mahe ada bilang mmm betulmmm) iya berapa persen kan dapat (pak mahe ada bilang he'e ) mungkin ya tidakusah apa terlalu yang gede kan yang kecil itu kan bisa pak ( ada suwara dari luarorang berbicara )" (Pak Suwardi).*

*"In my opinion, the canteens are good because the site will receive income. It is not much, but enough." (Pak Suwardi)*

A healthy canteen maintains public health by providing healthy and nutritious food as supported by the following statement.

*"misalnya saya buat nasi pecel toh ( pak mahe berkata "ooo iya iya") itu bisa tohaa iya iyaa atau nasi pecel bisa jadi terus juga apa itu hemm ya ayam ayam gorenggitu tapi tidak pakai itu apa penyedap rasa" (Ibu Ida).*

*"For example, I make nasi pecel with fried chicken without msg." (Ibu Ida)*

*"Macam itu kalo bisa dari dari olahan pertanian langsung gitu, aa tidak ni jadi hasil apa sendiri gitu terus kalo bia yang organik gitu kalo missal buah-buahan gitu ha'a, bahan kalo*

*sayuran itu e , missal kalo makan itu lebih ke makanan desaya orang bilang ya kaya misal hidangan gitu” (Ibu Ida).*

“The ingredients can come from direct agricultural processing. Fruits and vegetables are organic. We serve traditional food here.”(Ibu Ida)

## 2.Challenges in Managing a Healthy Canteen

A healthy canteen is a new idea at Salak Pondoh Agro-tourism so that in its implementation, various obstacles arise. One of them is financial availability (budget), as revealed by the following statement.

*“kalo itu kan jelas biaya ya pak ya”. (Bapak Suwardi).*

“The budget, of course” (Pak Suwardi)

Also, a healthy canteen lacks supporting facilities and infrastructure as supported by the following statement.

*“pedagang itu perlu ditata pak untuk manajemen, biar tidak ada persaingan antar pedagang” (Pak Dukuh).*

“The vendors need to be managed to avoid competition between them.” (Pak Dukuh)

*”khusus untuk kantin tentu kita nanti pendekatan dengan ibu-ibu atau pendekatandengan yang punya basic ini, basic memasak. Nanti coba kita tawarkan, iki loo kitamenyediakan fasilitas bangunan untuk kantiin eee kita ajak untuk berjualan disini”(Pak Dukuh).*

“Especially for the canteen, of course, we will approach women or those who can cook. We will try to offer that we will provide facilities for them to have a business here.” (Pak Dukuh)

Another obstacle is the lack of knowledge and insight into healthy food preparation, asrevealed below.

*“mboten, lha mung salak buah. Lha nek salak kripik nek om santi enten. Trus nikusek ndamel.” (Ibu Rukmiati)*

“Salak can only be processed to chips.” (Bu Rukmiati)

Lack of coordination is also an obstacle to managing a healthy canteen as supported by the following statement.

*“istilahnya tidak di ikutkan cawe – cawe gitu ( pak mahe ada bilang ooooo) tau tau udah ( pak mahe ada bilang dimasukin gitu )di masukin ikan gitu. (ada suara orang berbicara dari luar)” (Pak Suwardi).*

“We are not always involved in the whole process. One time, I was not aware when

the fish arrived.” (Pak Suwardi)

### 3. Steps to Enhance a Healthy Canteen

A healthy canteen in the Salak Pondoh Agro-tourism area can be promoted using massmedia, as supported by the following statement.

“Oo bisan heem (melakukan promosi dengan memfoto makanan)” (Ibu Ida).

“I can promote the food by posting the pictures.” (Bu Ida)

Also, training on healthy food preparation and balanced nutrition is necessary, as stated below.

“Masarakat itu masih apa ya, belum paham tentang makanan sehat itu seperti apa... Mereka juga tidak paham betul dengan gizi seimbang” (ketua Agrowisata) “People are still unaware of healthy food and balanced nutrition.” (Head of Agro-tourism)

### 4. The Role of Local Government in Managing The Healthy Canteen

The provincial government has an essential role in managing the healthy canteen by providing financial support, as stated by the participant below.

“Dan nanti dalam perkembangannya pasti pemerintah desa pun akan memberikan apa nggiih, menanam modal disini karena wis tak gawekke bangunan, Misalkaaan” (Pak Dukuh).

“The local government will give something in return. For example, they will do an investment.” (Pak Dukuh)

Besides sub-district government, the district government has a stake by providing grants, as revealed by the following statement.

“Kabupaten ituu da bantuan keuangan khusus misal nya yang bisa kita raih dengan dasar bahwa kita sebagai desa wisata agro, kita akna mengembangkanya, boleh itu pak . ini kan beginii, yaa saya sampaikan sekalian, akhir tahuun 2020 inidapat dana hibah wisata dari kabupaten ituu, jalan paving ini baru ini psk” (Pak Dukuh).

“The regency has special financial assistance, for example, what we can achieve as an agro-tourism village, we will develop it. At the end of 2020, we will get grants from the district.” (Pak Dukuh)

### 5. Healthy Canteen Management System

The management of a healthy canteen involves all communities in the Salak Pondoh Agro-tourism, as revealed below.

*“kita memanfaatkan potensi yang ada di warga sini sekitaar, yang penting kan kita bersosial dengan masyarakat ini penting, karena dengan, masyarakat ikut mengelola maka akan ikut merasa memiliki. Nek agro ne rame aku yo entok hasile*

*itu satu. Maka satu yang perlu diperhatikan adalah mengembangkan potensi masyarakat sekitarnyaa, misalnya yang seneng masak masyarakat dusun gadung sinten? Di ambil saja, yoh kowe melu dodolan disini” (Pak Dukuh).*

“We take advantage of the potential from the residents. What is important is that we socialize with the community. We want the community is involved. If many tourists come, they will earn money too. So, we should be aware of the surrounding community. For example, those who love cooking are allowed to have business here.” (Pak Dukuh)

*“berkenan heem (untuk dilakukan secara bersama-sama)”( Ibu Ida).*

“I would love to do it together.” (Ibu Ida)

## Discussion

### Healthy Canteen as a Tourist Attraction

The development of facilities and infrastructure needs to fulfill the facilities for tourists to increase the comfort and interest as one strategy to ensure the sustainability of a tourist attraction. These strategies consist of strategies for promoting and advancing society, providing health services, cleanliness of tourist areas, and accessible transportation. A healthy canteen can increase the tourism economy and contribute to community welfare (Dobe, 2012; Escoto, Boza, & Madrigal, 2019)

The management of a canteen located on a tourist site needs to comply with food safety principles: safe, hygienic, quality, and nutritious. It also does not conflict with the religious norms, beliefs, and culture of the community. The food ingredients do not contain harmful ingredients such as excessive coloring, preservatives, and flavorings. Implementing a healthy canteen prevents NCD from an inappropriate diet (Kementrian Kesehatan Republik Indonesia, 2017).

A healthy canteen can protect visitors from poisoning, allergies, or uncontrolled eating patterns and reduce health problems because they often ignore tourist areas' cleanliness and food (Khaing, Ameen, & Isaac, 2019).

#### 1. Healthy Canteen to Control Ncd

A healthy canteen is the Ministry of Health's effort of Healthy Living Community Movement (GERMAS). The program emphasizes improving healthy living habits, providing nutritious food, and accelerating nutrition improvement. A healthy canteen at tourist sites encourages tourists to maintain a healthy diet, and the prevalence of NCD in the Sleman Regency can be controlled (Kementrian Kesehatan Republik Indonesia, 2017). A training about food preparation can educate canteen managers and support the healthy canteen. Food management in tourist sites

generally uses the conventional type, which consists of several stages, as shown in Figure 4 (Kementrian Kesehatan RI, 2018).



Source: Ministry of Health, 2018

Figure 1. The stages of food preparation

The Healthy Living Community Movement (GERMAS) is an alternative to encourage each canteen manager to provide healthy food. GERMAS supports a good diet with healthy

food and nutrition improvement. The program's implementation is the responsibility of all parties, including activists of the healthy canteen business in tourist sites. By establishing a healthy canteen, the tourists keep maintaining a healthy diet and behaviors. Through a healthy diet and balanced nutrition, the Sleman Regency Government can control the prevalence of NCD and its complications (Kementrian Kesehatan Republik Indonesia, 2017).

Food management in a tourist environment needs to control and maintain food quality standards and comply with existing recommendations. Healthy food must meet the recommended nutritional adequacy, use balanced and nutritious food ingredients, use a suitable container to serve the food, and have the appropriate temperature (Kementrian Kesehatan RI, 2017). The training can increase the community's knowledge and skills to manage food served following predetermined nutritional principles.

## 2. The Role of Government and Society in Implementing a Healthy Canteen

The government, as the policymaker, should sustain a healthy canteen. The policies will regulate and manage the community's interests. The government can encourage people by providing financial support, facilities, or infrastructure (Minister of Home Affairs Regulation, 2007).

As healthy canteens are not solely the responsibility of the local government, the government should consider the existing policies. However, both parties must cooperate to boost a successful implementation. The community also has a stake in this issue. As business actors (direct managers of healthy canteens), the community can ensure that the canteen is healthy and hygienic (Tabaszewski, 2020).

The community's involvement in managing a healthy canteen is community empowerment in the health sector. The community as healthy canteen managers can ensure that the food served is healthy, hygienic, and nutritionally balanced. Besides, community involvement is also community-based health services (UKBM). UKBM is based and managed by the community from across sectors and other relevant stakeholders (Ministry

of Health of the Republic of Indonesia, 2019).

### 3. Controlling Ncd in The Tourism Sector Through a Healthy Canteen

The high prevalence of NCD patients in Indonesia requires unique solution and control strategies and innovation to reduce the increased cases. The tourism sector has vast potential but is rarely used to control NCD (Davronov, Ruziev, Ergasheva, Kadirova, & Nurov, 2020; International Federation of Medical Student Associations Statement policy, 2019).

Through healthy canteens in tourist sites, the government is expected to control the NCD as uncontrolled eating patterns cause most cases. Diet control is effective management of NCD. A healthy canteen in the tourist sites can control the visitor's diet. Also, it can be an advantage or a positive selling point for tourism (Davronov et al., 2020; Shim, Oh, Jung, & Kim, 2020).

## Conclusion

Non-communicable diseases (NCD) are still a significant health problem in Indonesia. The tourism sector can control NCD through a healthy canteen to manage the tourists' eating patterns in the tourist sites. A healthy canteen can control NCD through community empowerment and become a tourist attraction.

## Acknowledgment

The author would like to thank the funding provider from the Lembaga Penelitian, Publikasi dan pengabdian Masyarakat (LP3M) Universitas Muhammadiyah Yogyakarta. The funds are based on the Decree of the Chancellor of the University of Muhammadiyah Yogyakarta No: 011/KEP-UMY/I/2021.

## REFERENCES

- Davronov, I. O., Ruziev, S. S., Ergasheva, A. F., Kadirova, S. K., & Nurov, Z. S. (2020). The economic impact of innovations in tourism and hospitality. *Journal of Critical Reviews*, 7(9), 258–262. <https://doi.org/10.31838/jcr.07.09.55>
- Dinas Pariwisata DIY. (2019). Statistik Kepariwisata Yogyakarta 2019. In *Pemerintah Provinsi Daerah Istimewa Yogyakarta (DIY)*. Yogyakarta: Dinas Pariwisata Daerah Istimewa Yogyakarta.
- Dinas Pariwisata Kabupaten Sleman. (2017). *Buku Statistik Pariwisata Kabupaten Sleman*. Kabupaten Sleman: Dinas Pariwisata Kabupaten Sleman.
- Dobe, M. (2012). Health promotion for prevention and control of non-communicable diseases: unfinished agenda. *Indian Journal of Public Health*, 56(3), 180–186. <https://doi.org/10.4103/0019-557X.104199>
- Escoto, B. E. B., Boza, M. P., & Madrigal, D. F. (2019). Sustainable tourism: A competitiveness strategy perspective in Baja California. *Sustainability (Switzerland)*, 11(24). <https://doi.org/10.3390/SU11246934>



- International Federation of Medical Student Associations Statement policy. (2019). *IFMSA Policy Document Non-communicable diseases*.
- Kemenkes. (2018a). *Prevalensi Diabetes Mellitus di Indonesia*. Jakarta, Indonesia.
- Kemenkes. (2018b). *Riset Kesehatan Dasar 2018*. <https://doi.org/10.24127/RSKD.V1I1.1311> Desember 2013
- Kementerian Kesehatan Republik Indonesia. (2017a). Buku Panduan GERMAS (Gerakan Masyarakat Hidup Sehat). *Warta Kesmas*, 1(kesehatan masyarakat), 27 halaman. Retrieved from [http://www.kesmas.kemkes.go.id/assets/upload/dir\\_519d41d8cd98f00/files/Warta-Kesmas-Edisi-01-2017\\_752.pdf](http://www.kesmas.kemkes.go.id/assets/upload/dir_519d41d8cd98f00/files/Warta-Kesmas-Edisi-01-2017_752.pdf)
- Kementerian Kesehatan Republik Indonesia. (2017b). *Implementasi gerakan masyarakat hidup sehat (germas) dalam rangka mewujudkan asn sehat*. (November), 16.
- Kementerian Kesehatan Republik Indonesia. (2019). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 8 Tahun 2019 Tentang Pemberdayaan Masyarakat Bidang Kesehatan*. Indonesia.
- Kementerian Kesehatan RI. (2013). *Riset Kesehatan Dasar 2013*. In *Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI*. <https://doi.org/10.1517/13543784.7.5.803>
- Kementerian Kesehatan RI. (2017). *Menu Katering Sehat*. Jakarta: Direktorat Jenderal Pencegahan dan Pengendalian Penyakit.
- Kementerian Kesehatan RI. (2018). *Bahan Ajar Gizi Sistem Penyelenggaraan Makanan Institusi*. Jakarta: Pusat Pendidikan Sumber Daya Manusia Kesehatan Badan Pengembangan dan Pemberdayaan Sumber Daya Manusia Kesehatan.
- Khaing, A. M., Ameen, A., & Isaac, O. (2019). Analysis of Consumption Habit on Safety and Healthy Foods At School' Canteens of Basic Education Schools: a Qualitative Study on Factors that Influence Students' Food Choice. *International Journal Of ...*, (August). Retrieved from [https://www.researchgate.net/profile/Aung\\_Myat\\_Khaing2/publication/335219936\\_Analysis\\_of\\_Consumption\\_Habit\\_on\\_Safety\\_and\\_Healthy\\_Foods\\_at\\_School'\\_Canteens\\_of\\_Basic\\_Education\\_Schools\\_A\\_Qualitative\\_Study\\_on\\_Factors\\_that\\_Influence\\_Students'\\_Food\\_Choice/links](https://www.researchgate.net/profile/Aung_Myat_Khaing2/publication/335219936_Analysis_of_Consumption_Habit_on_Safety_and_Healthy_Foods_at_School'_Canteens_of_Basic_Education_Schools_A_Qualitative_Study_on_Factors_that_Influence_Students'_Food_Choice/links)
- Kim, H. C., & Oh, S. M. (2013). Non-communicable diseases: Current status of major modifiable risk factors in Korea. *Journal of Preventive Medicine and Public Health*, 46(4), 165-172. <https://doi.org/10.3961/jpmph.2013.46.4.165>
- Kusumo, M. P., Hendrartini, J., Sufro, Z. M., & Tetra, F. S. (2020). *Theater Performing Arts (TPA): Community Empowerment to Improve Blood Glucose Control Behavior in Yogyakarta*. 18(4). <https://doi.org/10.5812/ijem.103106>.Research
- Nakamura, J., Kamiya, H., Haneda, M., Inagaki, N., Tanizawa, Y., Araki, E., ... Nakayama, T. (2017). Causes of death in Japanese patients with diabetes based on the results of a survey of 45,708 cases during 2001-2010: report of Committee on Causes of Death in Diabetes Mellitus. *Diabetology International*, 8(2), 117-136. <https://doi.org/10.1007/s13340-017-0313-3>

- Peraturan Menteri dalam Negeri, P. M. dalam N. (2007). *Peraturan Menteri Dalam Negeri No. 19 Tahun 2007 Tentang Pelatihan Pemberdayaan Masyarakat dan Desa/Kelurahan*. 1–21. Retrieved from <http://dx.doi.org/10.1016/j.tws.2012.02.007>
- Shim, J. S., Oh, K., Jung, S. J., & Kim, H. C. (2020). Self-reported diet management and adherence to dietary guidelines in Korean adults with hypertension. *Korean Circulation Journal*, 50(5), 432–440. <https://doi.org/10.4070/kcj.2019.0230>
- Tabaszewski, R. (2020). The role of local and regional authorities in prevention and control of NCDs: The case of Poland. *BMC International Health and Human Rights*, 20(1), 1–9. <https://doi.org/10.1186/s12914-020-00238-8>
- The National Institute of Diabetes and Digestive and Kidney Diseases. (2016). Risk Factors for Type 2 Diabetes.
- WHO. (2011). *Global status report on non-communicable diseases 2010*.
- WHO. (2018). Noncommunicable Disease Country Profiles 2018. In *Heart of Africa: Clinical Profile of an Evolving Burden of Heart Disease in Africa*. <https://doi.org/10.1002/9781119097136.part5>
- World Health Organization. (2017). Non-communicable diseases.
- World Health Organization. (2018). Indonesia. *Diabetes Country Profiles*. Retrieved from [https://www.who.int/diabetes/country-profiles/bra\\_en.pdf](https://www.who.int/diabetes/country-profiles/bra_en.pdf)