



QANUN MEDIKA

JURNAL KEDOKTERAN FKUM SURABAYA

<http://journal.um-surabaya.ac.id/index.php/qanunmedika>



Research Article

Zero maternal death with KECUBUNG featured in SATE Krembung application (integrated queue system) in Krembung Community Health Center in 2017 until 2018

Arif Rahman Nurdianto^{1*}

Public Health Center of Trosobo, Sidoarjo, East Java, Indonesia

ARTICLE INFO

Submitted : April 2019
Accepted : October 2019
Published : January 2020

Keywords:

SATE Krembung, KECUBUNG, maternal death

***Correspondence:**

didins99@gmail.com

ABSTRACT

There are some special programs in Maternal and Child Health that have not yet been reached and have a bad trend like the number of Low Birth Weight (LBW), cases of stillbirth, and babies died. There was a congenital defect in babies, increased obstetric complications, and there is one case of maternal death. There were neo-complications in infants and babies. The problem that often results in the death of pregnant women is the lack of early detection at first-level facilities in the Krembung Health center. Early detection and treatment or planning in cases of high-risk pregnant women is lacking, and then we created a SATE Krembung application in 2017. Making SATE Krembung application, socializing to the community, socializing the features of KECUBUNG to report mothers at high risk, and bringing services closer to the community and to evaluate reports from residents. Activities are collected, analyzed, and processed into mature data. The number of people activities collected during the collection of data during this research from 500 users of application from 2017 until 2018. There was a decrease in maternal mortality rates to zero patients in 2017 and 2018. The use of SATE Krembung is quite effective in reducing maternal mortality to zero patients in the Krembung health center work area, but this must be improved with the development of applications. The application of SATE Krembung with KECUBUNG feature can reduce maternal mortality by empowering health cadres and the community to be aware of the environmental conditions surrounding them.



QANUN MEDIKA

JURNAL KEDOKTERAN FKUM SURABAYA

<http://journal.um-surabaya.ac.id/index.php/qanunmedika>



INTRODUCTION

The background of this innovation is because there are some special programs in Mother-Child Health (Kesehatan Ibu dan Anak or KIA and nutrition that have not yet been reached and have a bad trend, namely the number of LBW in 2015 as many as six babies, 2016 LBW as many as 13 babies. Cases of stillbirth in 2015 as many as two babies and babies died in 2016 as many as one baby. 2015 congenital defects of 5 babies and birth defects in 2016 were four babies. Obstetric complications in 2015 were 91 mothers (35.71%), while 2016 increased to 168 mothers (65.73%). In 2015 maternal deaths of 1 person and 2016 2 people. Neo-complications in 2015 were 27 infants (2.41%), and in 2016 64 infants (5.71%), these incidents of total births in 2015 were 1158, and in 2016 was 1186 (Puskesmas Krembung, 2018). Based on the above data, the Krembung community health center must make an innovation program to save the mother and the baby she is carrying.

The existing solutions have been emphasized more on educating pregnant women and health workers only while husbands and communities still have not received enough education regarding the handling of danger signs for pregnant women. Community factors and husbands also influence the number of maternal deaths due to environmental factors that are less careful and care about the condition of the mother. The health culture of the Indonesian people themselves is still very minimal, as evidenced by data from the Indonesian Health Office that only 1 out of 5 husbands in Indonesia is categorized as SIAGA (Siap Antar Jaga or Ready-Deliver-Take care). Also, public attention to the health of pregnant women is still low in Indonesia, especially in the Krembung health center area (Kementerian Kesehatan RI, 2014)

According to UNICEF, there are five ways to reduce maternal mortality, which means : 1. Educate, means to educate pregnant women husbands and the community. 2. Respect means increasing awareness of the surrounding community to pregnant women. 3. Empower means empowering the community, family, and husband, in particular, to pay more attention to pregnant women. 4. Invest, means preparing health services for pregnant women including preparation for childbirth. 5. Protect is to protect pregnant women from violence and abuse. (Kementerian Kesehatan RI, 2018)

Therefore, a new breakthrough is needed to provide education about the health of pregnant women to the community more communicatively and innovatively. The community and family can receive information well, and facilitate the provision of assistance in emergencies. The application can be used by residents to report high-risk pregnant women. One of them is using the SATE Krembung application that was triggered by one of the best health workers in Sidoarjo Regency (Jawapos, 2018)

The advancement of information technology as part of inseparable globalization from modern society brings a huge demand for society to the government as a service provider to be more open, more effective and efficient in carrying out their government duties and provide access to information, especially information about government. The government must be encouraged to implement a good governance concept. The government must adapt to technological developments so as not to be left behind. Hage and Powers mentioned that one feature that stands out in this era of advancement in communication and information technology is the use of computer technology. E-government, to create communication between the government, the community, the business world, and other interested parties to provide services quickly and precisely. In 2003, the government issued Presidential



QANUN MEDIKA

JURNAL KEDOKTERAN FKUM SURABAYA

<http://journal.um-surabaya.ac.id/index.php/qanunmedika>



Instruction Number 3 of 2003 as a further effort to support the implementation of e-government to improve the quality of services to the community, especially information services, and create good governance. Because of this basis, the formation of the SATE Krembung application is very much needed as an effort to help the government in reducing mortality by involving the wider community. (Watulingas and Tangkuman, 2018) (Atthahara, 2018) (Reformasi and Republik, 2014) (Hardiansyah, 2018)

Methods:

Making applications with BLUD (Badan Layanan Umum Daerah / regional public service agency) funds and submitting permits to the Occupation and Civil Registry Service (Dinas Kependudukan dan Catatan Sipil), as well as managing NIK (Nomor Induk Kependudukan / Citizen number) usage permits to the Ministry of Home Affairs (Kementrian Dalam Negeri / Kemendagri) to be able to use the NIK on the application. The next step is to launch the application to the Google Play Store.



Unduh aplikasi Sate Krembung di Google Play Store

Figure 1. Display of the application on the google apps store

Patients who are in the Krembung community health center, smartphone users, are given information about the SATE Krembung application along with its features and the application usage process or how to operate it.

The process of dissemination is carried out through many media, including promotional videos and promotional videos via television for promotions in the waiting room, website of the public health center Youtube, Instagram, Facebook, and WA groups in each village and



Klik Pesan Jadwal lalu isi data diri anda

Figure 2. Display of Krembung SATE application

After the patient downloads, the display will appear as above. After that, the officers routinely socialized at the mother’s meeting and the activities of the P4K activists in the village regarding the KECUBUNG program and the features found in the SATEKrembung application.



Figure 3. Display of KECUBUNG Features

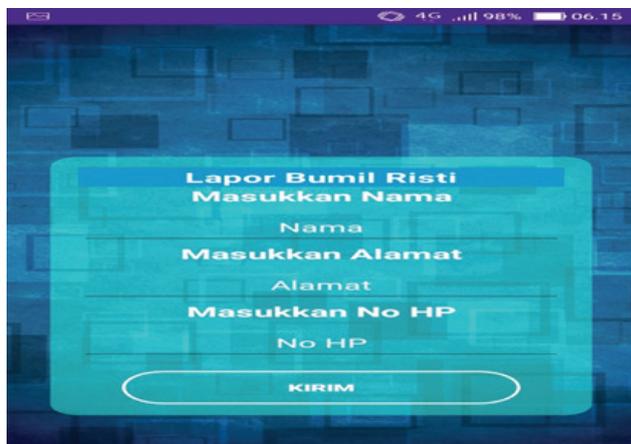


Figure 4. Display menu report pregnant women with high risk

After the patient downloads the SATE Krembung application in Google Play Store, the patient can use or click the KECUBUNG feature. After clicking on the KECUBUNG feature, there will be an explanation of the dangers of pregnancy. In the KECUBUNG feature, there will be a LAPOR BUMIL RISTI (High-risk pregnancy report) facility that can be clicked on, and the display will appear as shown below.

After that, the patient can report the name of the pregnant woman with high risk, complete address, and cellphone number of the patient or family that can be contacted. There will be a notification to the officers at the Krembung community health center, and the next day, a home visit and examination of the patient will be carried out as a follow-up to the residents’

report. Patients who have this risk will be monitored for disease and educate their families and their environment and pay more attention to giving birth.

All of the data according to SATE Krembung (KECUBUNG feature) is collected, such as low birth weight, Maternal death, infant death, obstetric complication, and neonatal complication. All data will be compared during the implementation of the application.

RESULTS

The following is a graph obtained after the launch and implementation of the SATE Krembung application with the KECUBUNG program. With the use of this application, 500 users, there has been a decrease in maternal mortality in the Krembung community health center in Sidoarjo Regency since 2017 and 2018. However, the number of cases such as low birth weight, obstetric complications, infant mortality, and neonatal complication increased from the year before the SATE Krembung application; the KECUBUNG feature was formed.

Table 1. The success of the SATE Krembung Program through the KECUBUNG program

	2015	2016	2017	2018
Low Birth Weight	6	13	20	17
Maternal Death	1	2	0	0
Infant Death	2	1	7	4
Obstetric Complication	91	168	210	207
Neonatal Complication	27	64	77	85



QANUN MEDIKA

JURNAL KEDOKTERAN FKUM SURABAYA

<http://journal.um-surabaya.ac.id/index.php/qanunmedika>

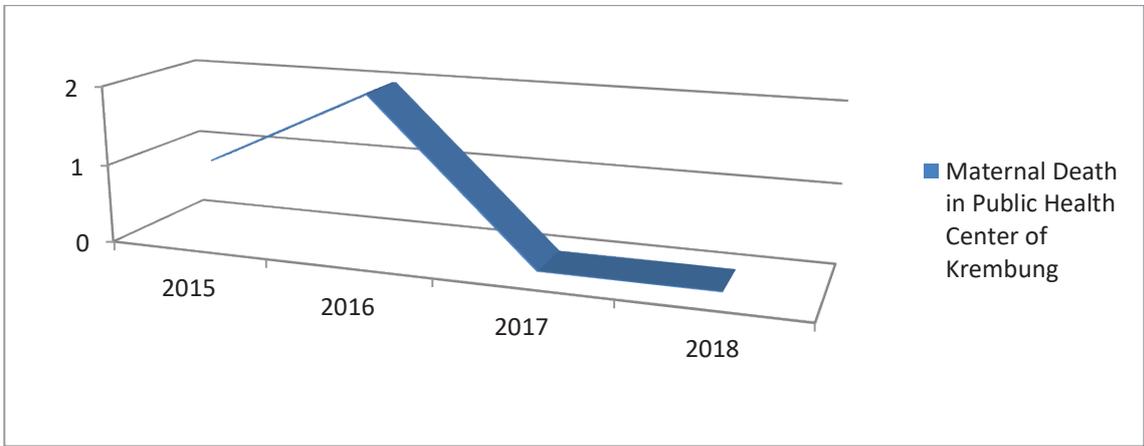


Figure 5. The decrease in Maternal Death in Krembung community health center

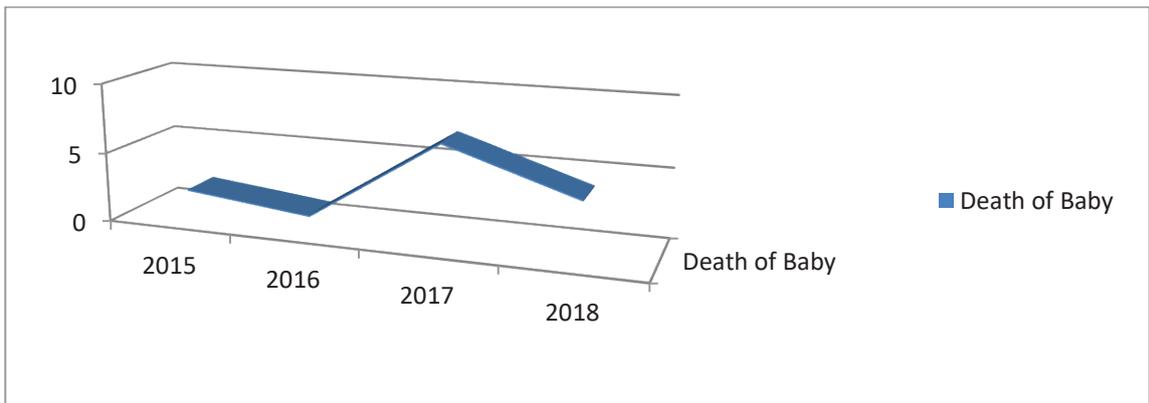


Figure 6. Death of Baby in Krembung

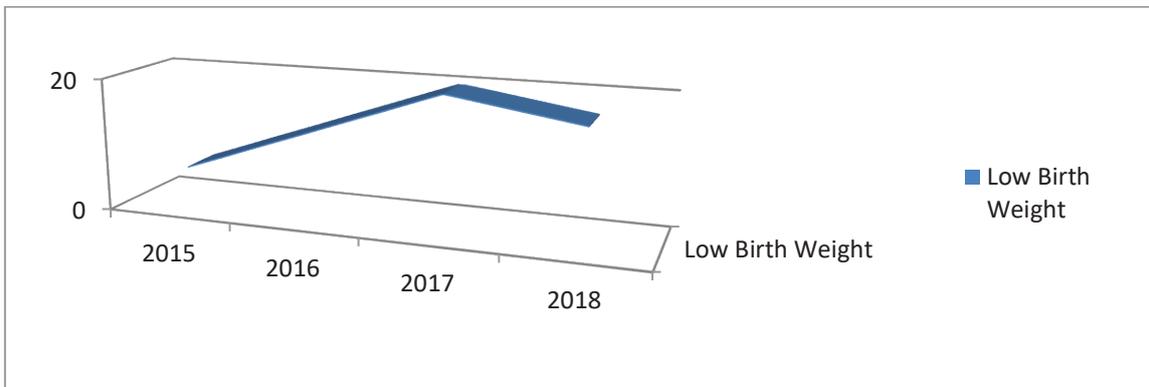


Figure 7. Low Birth Weight in Krembung

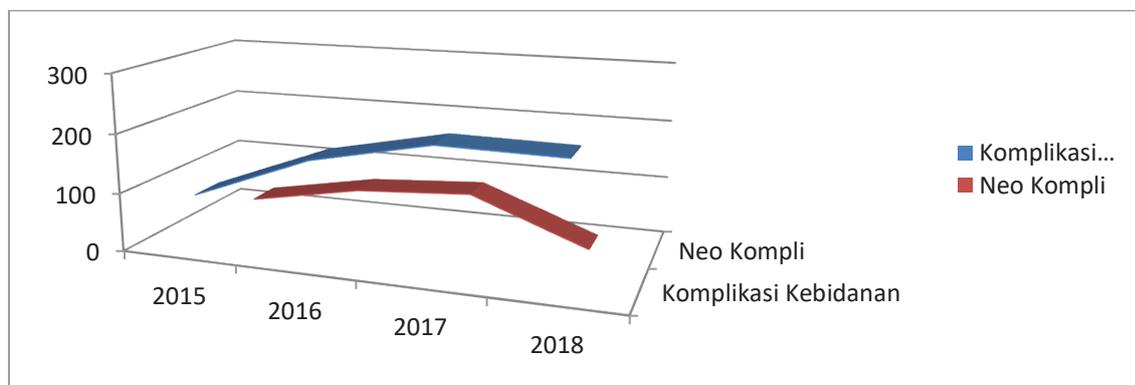


Figure 8. Obstetric and Gynecology Complication and Neonatal complication

From the table above, there are 20 low birth weight babies because there are 4 Gemelli births, and in 2018 there are 6 Gemelli births and the other low birth weight due to preeclampsia. From the graph above, it was found that the maternal mortality rate decreased compared to 2015 and 2016, where cases of death were high in Sidoarjo. With this case being zero, the Krembung community health center does not contribute to the maternal mortality rate in the Sidoarjo Regency. The infant mortality rate in the Krembung community health center area in 2017 had risen during the implementation of the SATE Krembung application, but after evaluating the implementation of the SATE Krembung application, in 2018, the infant mortality rate decreased compared to 2017.

There is an increase in the low birth weight case in the Krembung community health center area since the implementation of the SATE Krembung application with the KECUBUNG feature. However, this increase has several justifiable causes.

From the graph above, it was found that the incidence of obstetric complications was found with increasing numbers each year, while the cases of neo complications were found to decrease with the implementation of the application and socialization to the community.

DISCUSSION

The mobile health apps industry growth had greatly changed the care services model. (Lu et al., 2018) (Ernsting et al., 2017) Health mobile applications have a function to offer people to access medical service easily (Lamprinos et al., 2014)

The purpose of making the SATE Krembung application is to help reduce the mortality rate of pregnant women in the work area of Krembung community health center, Sidoarjo. By using smartphone applications that can provide education about pregnancy, and how to recognize danger signs for pregnant women. SATE Krembung is also can use to report high-risk pregnancy cases; the community cares more and can help pregnant women in an emergency in their surroundings.

Based on the data above, the use of SATE Krembung with the KECUBUNG feature can be used to increase the number of case finding from high-risk cases in pregnancy. This can be done by socializing and increasing understanding of the problem of any complications and symptoms that can arise in pregnant women in their families, husbands, neighbors, cadres, and all residents in the Krembung community health center area.

After that, all residents in the Krembung community health center area were asked to download and can use the application in a



QANUN MEDIKA

JURNAL KEDOKTERAN FKUM SURABAYA

<http://journal.um-surabaya.ac.id/index.php/qanunmedika>



responsible manner, such as reporting cases of high-risk pregnant women. All residents can report someone who is suspected of having a high risk of pregnancy by disseminating a Program Perencanaan Persalinan dan Pencegahan Komplikasi (P4K) card or Childbirth Planning Program and Complication Prevention that is attached to the home of a pregnant woman (Permenkes No 97 Tahun 2014). With this, it is expected that reports of patients with high-risk pregnant women will be obtained early and quickly intervened. After receiving a report, the village midwife will visit, and the next day the patient will be advised to go to the health center to get further medical treatment and be given education to the husband and family about the dangers that can occur along with symptoms or signs.

With the use of this application, there has been a decrease in maternal mortality in the Krembung community health center in Sidoarjo Regency since 2017 and 2018. However, the number of cases such as low birth weight, obstetric complications, infant mortality, and neonatal complication increased from the year before the SATE krembung application was formed (KECUBUNG feature).

This application can help reduce the number of maternal mortality in Sidoarjo regency. In 2017 the number of deaths in the Sidoarjo Regency was 30 pregnant women, while in 2018, it fell to 23 pregnant women. Even so, Sidoarjo Regency is still included in the top 10 city districts in East Java, with the highest number of maternal deaths. In 2017, 90% of deaths occurred in hospitals and 40% of mothers who have passed twice the referral relay (Dinas Kesehatan Kabupaten Sidoarjo, 2018). Therefore, it is expected that the sustainability of this application will be able to reduce the incidence.

Maternal mortality in Sidoarjo 2017 is caused by bleeding (40%), severe preeclampsia/eclampsia (33%), infection (7%) and other causes (20%).

The coverage of ANC K1 in 2017 reached 100% and K4 at 99.63%, and postpartum visits had reached 97.66 percent, but the number of maternal deaths was still in the high range (Dinas Kesehatan Kabupaten Sidoarjo, 2018). Therefore, researchers feel the importance of applications with a reporting model like this can be developed and carried out a merger with several other applications owned by Sidoarjo regency so that the handling of critical cases above will be faster and more comprehensive with obey to patients satisfaction. (Anderson, Barbara, and Feldman, 2007) (Yu, Xiaohui, 2014).

With the use of this application, there is an increase in the number of obstetric complication cases in 2017 as much as 210, and in 2018 by 207, the increase is not only through reports from the SATE Krembung application, but some patients can also report by Whats Apps, Short Message Services (SMS). This increase in numbers through application reporting can be considered a good achievement because it can reveal the phenomenon of the iceberg that has been hidden and appears only when there is a maternal death. (Iribarren et al., 2016)

The neonatal complication in 2017 is 77, and in 2018 is 85. Low birth weight in 2017 increased by 20 and 2018 by 17 patients. From the explanation above, there are 20 low birth weight babies because there are 4 Gemelli births and in 2018, there are 6 Gemelli births and the other low birth weight due to preeclampsia. This shows that using the application can reduce infant mortality due to cases of Preeclampsia/eclampsia by 30%. With this result, we can use this application to reduce maternal mortality (Hasan et al., 2017)

With the use of this application, the reduction in maternal mortality in 2017 and 2018 to zero death, this could indicate that involving all residents to detect high-risk pregnancies would reduce maternal mortality from 2015 and 2016 by 6 and 13 maternal deaths.



Also, it is expected that the community will better understand preventive measures (prevention) so that pregnancy complications do not occur, but when pregnancy complications occur, the community and husband can provide help as soon as possible. Therefore the support from the government is expected for the development of applications and the sustainability of this application to help the government in reducing maternal and infant mortality.

CONCLUSION

The reduction in maternal mortality in the Krembung Subdistrict area can be reduced by early detection of emergency cases in pregnancy by using the KECUBUNG feature on the SATE Krembung Application. SATE Krembung application can be used as a tool to improve community empowerment in reducing maternal mortality by media reporting of emergency cases by address. The number of downloaders must be increased to all residents in the Krembung community health center area so that the application can run effectively and more reports so that early treatment can be given to high-risk pregnant women.

REFERENCES

- Anderson, R., Barbara, A. and Feldman, S. (2007) 'What patients want: A content analysis of key qualities that influence patient satisfaction,' *Journal of Medical Practice Management*, 22(5), pp. 255–261.
- Atthahara, H. (2018) 'Inovasi Pelayanan Publik Berbasis E-Government : Studi Kasus Aplikasi Ogan Lopian Dinas', *Jurnal Politikom Indonesiana*, 3(1), pp. 66–77.
- Dinas Kesehatan Kabupaten Sidoarjo. 2018. Profil Dinas Kesehatan Kabupaten Sidoarjo.
- Ernsting, C. *et al.* (2017) 'Using smartphones and health apps to change and manage health behaviors: A population-based survey,' *Journal of Medical Internet Research*, 19(4). DOI: 10.2196/jmir.6838.
- Hardiansyah (2018) 'Kualitas Pelayanan Publik: Konsep, Dimensi, Indikator, dan Implementasinya', *Gava Media*, p. 250. doi: 10.1163/15718085-12341263.
- Hasan, M. J. *et al.* (2017) 'Mobile Application Can Be an Effective Tool for Reduction of Maternal Mortality,' *International Journal of Perceptions in Public Health*, 1(2), pp. 92–94.
- Iribarren, S. J. *et al.* (2016) 'Smartphone Applications to Support Tuberculosis Prevention and Treatment: Review and Evaluation,' *JMIR mHealth and uHealth*, 4(2), p. e25. DOI: 10.2196/mhealth.5022.
- Jawa Pos. 2018. Hebat, Dokter Arif Rahman Berhasil Pangkas Waktu Berobat. Accessed from <https://www.jpnn.com/news/hebat-dokter-arif-rahman-berhasil-pangkas-waktu-berobat>
- Kementerian Kesehatan RI (2014) 'Pelayanan Kesehatan Masa Sebelum Hamil, Masa Hamil, Persalinan dan Masa sesudah melahirkan', *Mentri kesehatan*, p. 32. Available at: [http://kesga.kemkes.go.id/images/pedoman/PMK No. 97 ttg Pelayanan Kesehatan Kehamilan.pdf](http://kesga.kemkes.go.id/images/pedoman/PMK%20No.%2097%20ttg%20Pelayanan%20Kesehatan%20Kehamilan.pdf).
- Kementerian Kesehatan RI (2018) 'Stunting report', *Kementerian Kesehatan RI*, 1, p. 2.
- Lamprinos, E. I. *et al.* (2014) 'MOBILE PERSONAL HEALTH APPLICATION FOR EMPOWERING DIABETIC PATIENTS Ilias Lamprinos', *J Int Soc Telemed eHealth*, 2(1)(April), pp. 3–11.



QANUN MEDIKA

JURNAL KEDOKTERAN FKUM SURABAYA

<http://journal.um-surabaya.ac.id/index.php/qanunmedika>



- Lu, C. *et al.* (2018) ‘The use of mobile health applications to improve patient experience: cross-sectional study in Chinese public hospitals,’ *JMIR mHealth and uHealth*, 6(5), pp. 1–9. DOI: 10.2196/mhealth.9145.
- PuskesmasKrembung. 2018. ProfilPuskesmasKrembung.
- Reformasi, D. A. N. and Republik, B. (2014) ‘Peraturan Menteri PAN RB Nomor 30 Tahun 2014 Tentang Pedoman Inovasi Pelayanan Publik’.
- Watulingas, P. and Tangkuman, S. (2018) ‘Ipteks Aplikasi Sistem Informasi Manajemen Daerah (Simda) Keuangan Pada Badan Perencanaan Dan Pembangunan Daerah Provinsi Sulawesi Utara’, *Jurnal Ipteks Akuntansi Bagi Masyarakat*, 2(02), pp. 434–436. doi: 10.32400/jiam.2.02.2018.21797.
- Yu, Xiaohui, et al. (2014) ‘mHealth in China and the United States: How Mobile Technology is Transforming Healthcare’, pp. 1–36. Available at: https://www.brookings.edu/wp-content/uploads/2016/06/mHealth_finalx.pdf.