Public Safety Center in Batang Regency, Indonesia: Study of an Emergency Care System in a Developing Country

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Abstract: Indonesia is one of the developing countries that are prone to not only disasters, including earthquakes and tsunamis, which recently happened, but also accidents, such as traffic injuries. This study is conducted to review and introduce the emergency care system that affects health outcomes, such as morbidity, and even death. We evaluate the health mitigating system for health care named Public Safety Center (PSC) 119 that was implemented in Batang Regency, Central Java Province, Indonesia. The Si Slamet PSC 119 service innovation increased the number of emergency incident reports by 2.5 in 2015–2016, from 4.6 cases (2015) to 6.1 cases (2016), and by 22.5 in 2016–2017, from 6.1 cases (2016) to 28.6 cases (2017). Batang Regency is one of the districts in Indonesia that has a vision to become harmonious, energetic, competitive, religious, quiet, and prosperous by 2022. With this integrated emergency management system, Batang's local government has set its position, duties, and functions in not only achieving the vision of the district but also becoming the emergency health care for its citizens. Further development is needed to interconnect this system to all stakeholders and foster its implementation for not only in other regions of Indonesia, but also in other developing countries properly.

1 INTRODUCTION

Indonesia has a high risk of various natural disasters, including earthquakes and volcanic eruptions, because it is located in the Ring of Fire (Blair et al., 2010; Pambudi NA et al., 2018). Indonesia is home to four zones of active volcanoes, namely, the Sunda, Minahasa, Halmahera, and Banda Zones (Tupper A et al., 2004) Thus, the risk of tsunamis, as well as other types of disasters, is significantly high (Indonesian Ministry of Health. Peraturan Menteri Kesehatan Republik Indonesia Nomor 19 Tahun 2016 tentang Sistem Penanggulangan Gawat Darurat Terpadu. Jakarta.,2016). Indonesia's vast area that is composed of thousands of islands results in difficulties in accessing other regions, differences in geographical conditions between regions, and inadequate facilities and medical personnel, thereby constraining the distribution of proper health services.

Batang Regency is located between lines 6 º 51 '46" to 7 ° 11' 47" south latitude and 109 ° 40 '19 "to 110º 03' 06" east longitude on the northern coast of Central Java (Figure 1). Batang Regency is on the main route that connects Jakarta–Surabaya. With an area of 78,864.16 ha, the Regency's territory is bordered north by the Java Sea, east by Kendal Regency, south by Wonosobo Regency and Banjarnegara Regency, and west by the City and Pekalongan Regency (Batang regency Government., 2018)

With the location of the Batang region, the capital that boosts of economic activities is located north of the island of Java. (Mulyono et al., 2009). Transportation flows and high mobility in the north coast of the Java Island (Pantura) line provide opportunities for Batang Regency to develop quite prospectively in the transit and transportation services sector.

Based on the Batang Regency District Regulation No. 7 of 2004 concerning the Establishment of Batang District Subdistricts, the number of subdistricts in Batang Regency that was originally 12 increased to 15. The division of this region was carried out by the District Government of

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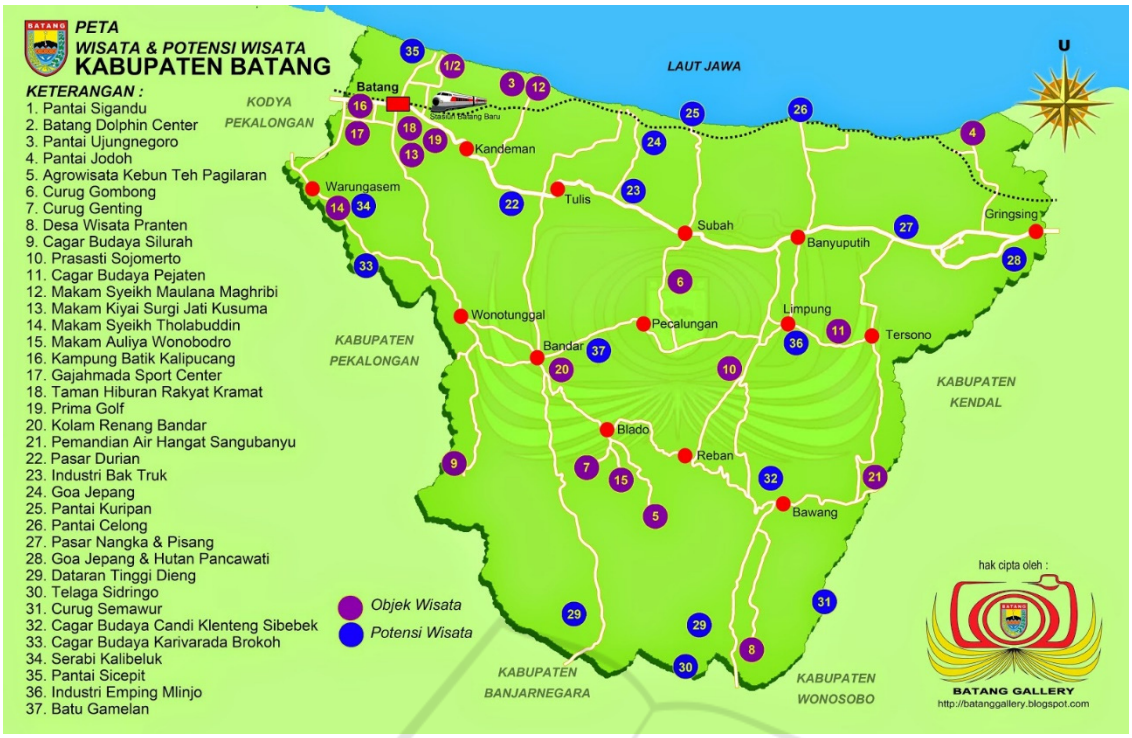

Figure 1. The map of Batang Regency

Batang as an effort to face the challenges and problems in the administration, development, and services to the community, especially at the subdistrict and village levels.

2 MATERIALS AND METHODS

This review was conducted with secondary data collection. We examined documents that correspond to research variables and process data found and translated in the form of tables and/or images. The document review includes the following:

1. Standard Operating Procedures (SOP) PSC Service Procedures 119
2. Minister of Health Regulation No. 19 of 2016 concerning Emergency Management System
3. Presidential Instruction No. 4 of 2013 concerning Program Decade Action Safety Road
4. Central Java Governor Regulation No. 15 of 2017 concerning Integrated Emergency Management System (SPGDT)

This study has passed the ethical review from the Ethic Commission of the Public Health Faculty, Universitas Indonesia, No. 496/UN2.F10/PPM. 00.02/2018. With this ethics document, the study has also passed the internal institution approval, which is the formal requirement for conducting the secondary analysis review to each of the institution document mentioned above.

3 RESULTS AND DISCUSSIONS

Demographic

The population of Batang Regency, Central Java, continues to increase, from 708,088 (2010) to 743,090 (2016) (7). The number of male and female populations in the subdistrict is shown in Figure 2 and Figure 3.

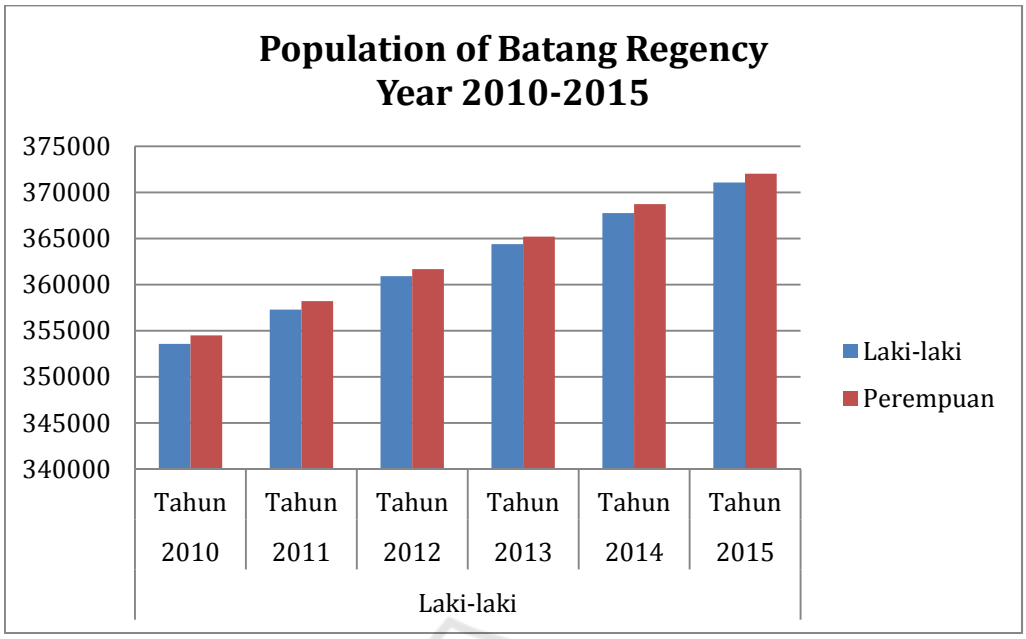

Figure 2. Population of Batang Regency

Table 1. Male Population per Subdistrict in Batang Regency in 2010–2015(7)

District Area	Male population per subdistrict in Batang Regency					
	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014	Year 2015
Wonotunggal	15529	15692	15850	16002	16152	16297
Bandar	31861	32203	32520	32842	33146	33444
Blado	21270	21493	21710	21920	22124	22322
Reban	17668	17856	18037	18210	18379	18544
Onion	25533	25809	26073	26323	26567	26806
Tersono	17844	18031	18216	18389	18560	18727
Gringsing	28212	28509	28798	29073	29344	29607
Overflowing	19312	19518	19716	19906	20091	20270
Banyuputih	16346	16519	16687	16845	17003	17156
Change	24003	24256	24501	24737	24966	25191
Pecalungan	14782	14937	15091	15234	15376	15513
Write	16622	16796	16964	17129	17287	17443
Kandeman	22497	22734	22964	23185	23399	23610
Stem	59151	59752	60361	60936	61500	62054
Warungasem	22952	23192	23425	23653	23872	24087
amount	**353582**	**357297**	**360913**	**364384**	**367766**	**371071**

Table 2. Female Population per Subdistrict in Batang Regency in 2010–2015(7)

District Area	Female population per subdistrict in Batang Regency					
	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014	Year 2015
Wonotunggal	15444	15607	15758	15910	16063	16207
Bandar	31566	31890	32199	32512	32827	33120
Blado	20939	21159	21364	21572	21779	21974
Reban	17749	17935	18109	18285	18462	18626
Onion	25258	25519	25768	26019	26271	26505
Tersono	17808	17995	18168	18345	18522	18687
Gringsing	27751	28041	28315	28589	28865	29122
Overflowing	19441	19644	19835	20028	20221	20401
Banyuputih	16496	16668	16830	16994	17158	17310
Change	24606	24863	25105	25349	25594	25822
Pecalungan	15232	15393	15542	15694	15843	15986
Write	16865	17042	17209	17376	17544	17700
Kandeman	22893	23131	23356	23583	23811	24024
Stem	59628	60253	60823	61432	62024	62578
Warungasem	22830	23069	23302	23519	23747	23957

Based on the table 1 and table 2, the population in 2010 to 2015 is the largest in Batang Regency at 19,067. (Batang Statistics Agency., 2016). This is because most of the government and trade activities are concentrated in the Batang region. Thus, residents prefer to live in the region.

Vision and Mission

The mission of Batang Regency is to be harmonious, energetic, competitive, religious, quiet, and prosperous by 2022. The Batang District Mission consists of the following:

1. Improve the quality of public services with governance based on *eGovernment* that supports the development of cooperation.
2. Improve the quality of human resources fully through optimizing community empowerment movements in various fields in an integrated manner.
3. Increase the development of regional economies on an ongoing basis supported by quality infrastructure and areas based on information and communication technology.
4. Increase security, peace, and harmony (regional conduciveness) for the implementation of development through the support of the practice of religious teachings and noble cultural values.

Public Safety Center (PSC) 119

The Public Safety Center (PSC) 119, which was formed based on the Presidential Instruction 4 of 2013 on Program Decade Action Safety Road, stated that all districts/cities in Indonesia must establish a PSC (Nasution CR,2016;Indonesian Ministry of Health, 2016). This general emergency life support has well-practiced on Poland in providing medical services to patient with minor injuries as the structure of the Hospital Emergency Ward Szwamel K et al., 2015). In Indonesia, this system is having special concern, particularly to potential area of disaster (Qiantori A et al.,2012;Sangkala et al., 2018;Amri A et al., 2016). The Health Minister Regulation No. 19 of 2016 concerning Emergency Management System and the Central Java Governor Regulation No. 15 of 2017 concerning Integrated

Emergency Management System (SPGDT) also stated that in the implementation of SPGDT in Central Java Province, a PSC was formed through 119 call centers in each regency/city in the area (The governor of central java province Peraturan daerah, 2017). The position, duties, and functions of the PSC are as follows:

a. Position
   - The PSC is a work unit that acts as a coordination forum to provide emergency services quickly, accurately, and carefully for the community.
   - The PSC is open 24 hours for 7 days continuously.
   - PSC is carried out jointly with other agencies outside the health sector that can support the implementation of SPGDT.
   - The PSC is a major part of the pre-SPGDT activity series of health care facilities that function to perform emergency services using emergency algorithms that are in the 119 call center application system.

b. Function
   - Provide services to victims/emergency patients and/or reporters through a triage process (sorting out the conditions of the victim/emergency patient).
   - Provide a first aid guide (first aid).
   - Evacuate victims/emergency patients.
   - Coordinate with health care facilities.

c. Task

In fulfilling its functions, the PSC carries out the following tasks:
   - Serve canal *(dispatch)* of the emergency call center National Command *(National Command Center)*.
   - Provide emergency service by using emergency algorithms.
   - Provide ambulance service.
   - Serve information about health care facilities.
   - Serve information about the availability of beds in the hospital.

The results of the study showed that the data on the number of emergency incident reports received by the Si Slamet PSC 119 increased from 2015 to 2017 (Batang Health Office, 2017). The number of consecutive events reported was 55 in 2015, 74 in 2016, and 343 in 2017 (Batang Health Office, 2017). An overview of the number of reported emergency cases can be seen in Figure 3.

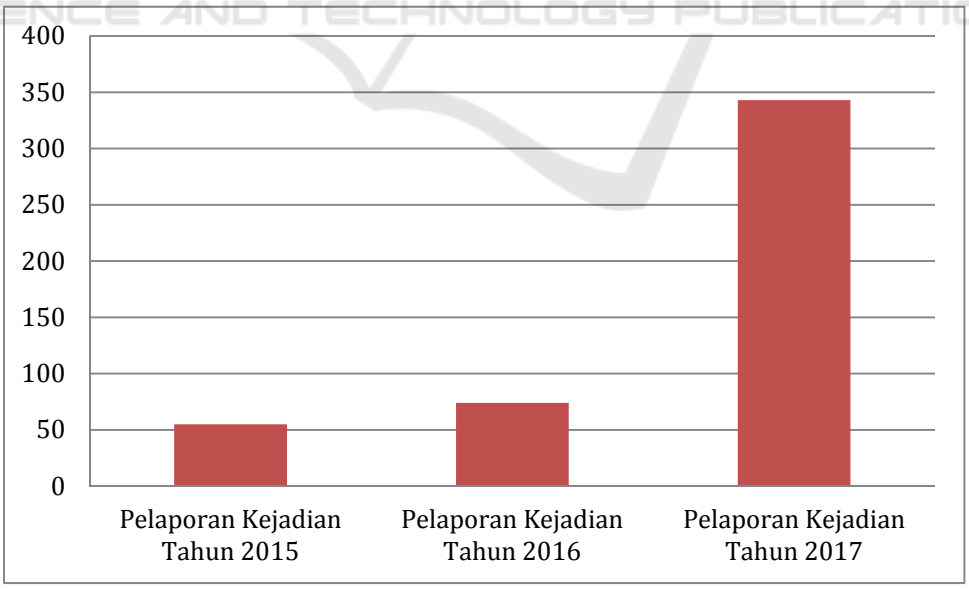

Figure 3. The number of emergency incident reports

The document review conducted at the time of the study obtained data related to the number of reports received by the Si Slamet PSC 119 from 2015 to May 2018. The event data received by the Si Slamet PSC 119 from 2015 to May 2018 were used by the researchers to differentiate the number of occurrences before and after the Si Slamet PSC 119 with a dependent T-test. The T-test was used to measure the difference in the number of events before and after the Si Slamet PSC 119 because the data obtained were numeric, the data distribution was normal, and both groups could be paired.

Table 3. Effect of the Si Slamet PSC 119 Service Innovation on the Number of Incident Reports in Batang Regency in 2018(15)

Event Report	Mean	Elementary school	P-Value
In 2015	4,6	4.3	0.4
In 2016	6.1	3.9	
In 2016	6.1	3.9	0.002
In 2017	28.6	18.5	

The table 3 shows that the Si Slamet PSC 119 service innovation increased the number of emergency incident reports by 2.5 in 2015–2016, from 4.6 cases (2015) to 6.1 cases (2016), and by 22.5 in 2016–2017, from 6.1 cases (2016) to 28.6 cases (2017). The T-test results on the number of reports in 2015 to 2016 obtained a p-value of 0.4, which means that there is no significant difference in the number of emergency incident reports between 2015 and 2016. By contrast, the T-test results on the number of reports in 2016 to 2017 obtained a p-value of 0.002, which means that there is a significant difference between the number of reports of emergency cases in 2015 to 2016.

4 CONCLUSION

The implementation of this program is in accordance with the Presidential Instruction No. 4 of 2013, namely, all districts/cities in Indonesia must establish an public service center. This innovation uses the motto “Saving life and limb”, which involves the community, medical officers, and ambulances in its implementation. This innovation also involves other sectors related to the smooth running of the PSC, such as firefighters, Indonesian Cross Red (*PMI*), police, BPBD, health universities, corporations, BPJS, and hospitals. However, this program still does not have a memorandum of understanding and SOP implementation procedures, which are the complaints of the stakeholders. Further development is needed to interconnect this system to all stakeholders and foster its implementation for not only in other regions of Indonesia, but also in other developing countries properly.

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CONFLICT OF INTEREST

The authors declare no potential conflict of interests.

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