

Neglected Pregnant Women in Surabaya: A System Analysis to Provide Necessary Support

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Abstract

Responding to the Regulation of the Minister of Health Republic of Indonesia no. 3/2019 and no. 86/2019, Surabaya City Health Office must evaluate the need for providing maternity waiting homes in Surabaya. Conscientious analysis has led to a conclusion that maternity waiting homes is not needed in Surabaya. Instead, the need of shelter and health support to support many neglected pregnant women found in Surabaya as a metropolitan and the second biggest city in Indonesia is required. This paper presents the results of a need analysis of maternity waiting homes in Surabaya and a system analysis to develop a new support for neglected pregnant women in Surabaya. Data gathering has been done through a questionnaire and Focus Group Discussion (FGD) involving Non-Profit Organizations (NGOs) and social foundations. The cost modelling calculation results show that Surabaya City Health Office should allocate budget at least IDR 138,105,000 to help neglected pregnant women in Surabaya. The development of a Management Information System (MIS) is recommended to better capture the number and the condition of needy pregnant women and to manage the information more accurately. The paper would be useful for other cities to conduct a similar evaluation and analysis.

Keywords

Maternal Mortality Rate (MMR), Neglected Pregnant Women, System Analysis, and Management Information System (MIS)

1. Introduction

Indonesian government strives to enhance the quality of life of Indonesian people, particularly in the health sector. Decreasing the number of maternal death (women die before, during, and after childbirth) and the number of infant mortalities become one of the targets to be achieved at all areas in Indonesia.

Maternal death is measured by maternal mortality rate (MMR), which is defined as “the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes” (World Health Organization). It becomes the key indicator to measure the efforts to improve the health and safety of mothers per country worldwide (World Health Organization 2004).

WHO reported that 75% of maternal deaths caused by high blood pressure during pregnancy, complication from delivery, and situation after childbirth including severe bleeding and infection (World Health Organization 2004). A research report reported that in Indonesia, maternal mortality can be caused by maternal health conditions, maternal age preparedness for pregnancy, antenatal check-ups during pregnancy, assistance during childbirth, postpartum care, and other social factors that affect the ability of mothers to access quality health facilities (Susiana 2019). Another factor included in the causes of death is unsafe abortion. When a woman experiences one of those conditions, it is a must that she gets a proper care at a qualified health facility. Health research reported that the main factors preventing women from receiving or seeking proper care during pregnancy and childbirth includes poverty, distance to good health facilities, lack of information, inadequate services or facilities in existence health facilities, and cultural barriers (Nabieva and Souares 2019).

Moreover, infant mortality is measured by Infant Mortality Rate (IMR), which is defined as “the death of young children under the age of 1” (Say et al. 2014). To sharpen this measurement, WHO has developed a measure named Neonatal Mortality Rate (NMR) as part of IMR. NMR is defined as “a death during the first 28 days of life (0-27

days)” (Say et al. 2014). It is divided into 2 categories, i.e. Early Neonatal Mortality Rate (INMR) for the first 7 days after birth, and Late Neonatal Mortality Rate (LNMR) to measure the death between 8-28 days after birth. Theory and facts show that IMR and NMR have very strong relation with the health of mother and the situation of the childbirth.

In Indonesia, unfortunately, MMR and IMR are still high. Data shows that the MMR ratio in Indonesia in 2017 is 177 per 1,000,000 live births, while the Infant Mortality Rate (IMR) in 2017 is 18,311 per 1,000 baby births (World Health Organization 2019; Statistic Indonesia 2019). MMR in Indonesia is still one of the highest in Southeast Asia (Ahmed and Fullerton 2019). This is a serious challenge for Indonesian government, particularly because based on Sustainable Development Goals (SDGs), by 2030 Indonesia targets to reduce MMR to 70 per 100,000 live births.

Considering that one of the causes of high MMR and IMR, as well as NMR, is due to limited access of pregnant women to quality reproductive health services, especially for pregnant women in poor economic conditions and living in disadvantaged, remote, border and island areas, in 2019 the Minister of Health Republic of Indonesia enforced Regulation no. 3/2019 and Regulation no. 86/2019 to reduce the risk of maternal deaths by providing a maternity waiting home or shelter in each city in Indonesia (Susiana 2019).

Maternity waiting homes or mothers’ shelters or Rumah Tunggu Kelahiran (RTK) in Bahasa are accommodation provided by City or Regency or District Government, usually near a good quality medical facility, i.e. hospital or maternity clinic, where high risk pregnant women can stay while waiting for the childbirth. This is an effort to minimize transportation time or transfer time between pregnant women’ house to the medical facility. By providing such a service, the risk of fatality caused by transfer time, distance, and road transportation difficulties can be reduced.

As regulated in the Minister of Health Regulation, every City or Regency Government must response immediately to the Regulation by building or renting a residential facility and use it as a maternity waiting home. Not only regulating, the Indonesian National Government also provides funding to establish and manage the service. Every City or Regency Government must report in 2020 about the undertaken effort in their region and its impact in reducing the maternal and infant mortality.

In response to these regulations, Surabaya City Government through Surabaya City Health Office had observed the possibility to rent a house near hospital to provide a maternity waiting homes for Surabaya people. The observation resulted that the renting cost is much higher than the allocated budget given by the Ministry of Health. Consequently, if Surabaya City Government provides the accommodation, Surabaya City Government must allocate additional budget to cover the shortage. Before making decision to rent a house, the main question to answer is whether Surabaya really needs to have maternity waiting home, considering that distance between residences to medical facilities is not far, such as in rural or remote areas. Surabaya City Health Office had also run an informal survey asking pregnant women who visited Puskesmas, or Community Health Centers, whether they are willing to stay in a maternity waiting home if indicated that their pregnancy have complication or particular conditions. All asked women said that they prefer to stay in their own house and not in the maternity waiting homes. They are confident that they can seek proper medical treatment at the childbirth time.

Considering the observation and the informal survey results, Surabaya City Health Office would like to thoroughly evaluate the need of providing maternity waiting homes in Surabaya, and to evaluate the idea to replace the maternity waiting homes with a shelter to support neglected pregnant women in Surabaya. Surabaya City Health Office has received information from several Non-Governmental-Organisations (NGOs) in Surabaya and other City Offices that there are neglected pregnant women in Surabaya that need to be supported.

This paper describes the result of a study conducted in early 2020 on the issue in four parts. The first part is a thorough evaluation of Surabaya situation related to the need of maternity waiting homes. The second part is a financial evaluation of providing shelters for neglected pregnant women. This part includes micro and macro influencing factors identification, system analysis, problem modelling, and data gathering. The third part describes cost calculation and estimated yearly cost needed. In the last part, recommendation for establishing integrated and real time information system is described to capture accurate data for future decision.

2. Need Analysis of Maternity Waiting Homes in Surabaya

The author conducted this evaluation through data collection, distance calculation, interview, and discussion with the representatives of Surabaya City Health Office. The only maternal death case found during the interview due to a delay

in transportation to health facilities happened in 2018, when a pregnant woman was experiencing complications and must be immediately taken to the hospital. At that time there was no ambulance available to bring the patient to the hospital. Since 2018, Surabaya City Government encourages medical facilities at certain level to provide ambulance services. Surabaya Government itself provides an emergency response service through Command Centre 112.

The summary of the evaluation was compiled in the following points. The evaluation results reinforce the previous results obtained from the informal surveys by Surabaya City Health Office that a maternity waiting home is not needed in Surabaya.

Surabaya city has adequate health facilities in terms of quantity and quality.

Various health facilities are available in Surabaya including Regional General Hospital (RSUD), Mother and Child Hospital (RSIA), General Hospital (RS), Maternity Hospital (RSB), Community Health Centre (Puskesmas), and Maternity Clinic. The quantity and quality of health facilities are sufficient and spread evenly to all areas of the city (Central, East, West, South, and North). Table 1 shows the number of health facilities in Surabaya, while Figure 1 maps the distribution of health facilities in various regions in Surabaya. From those data, it is evident that Surabaya City already has sufficient health facilities in terms of quantity and quality. Based on our internet survey, the average distance from residences to the closest health facilities is averagely 2 km, thus average travel time is not long.

Not only having enough number and good quality of health facilities, Surabaya City has guaranteed equitable access to health facilities for all people in Surabaya. For public health facilities, Surabaya Government provides access through e-health and e-kiosk.

Table 1. Health facilities in Surabaya (Surabaya City Council for Health).

Health Facility	Number
Various Types of Hospital (RS, RSU, RSB, RSIA)	59
Community Health Center (Puskesmas)	74
Maternity Clinic	28
Total Number	161

Surabaya city has variety of affordable transportation modes to health facilities.

To access health facilities, there are various means of transportation that can be used by residents, including public transportation (microbuses, buses, taxis), online transportation modes (Go car, Grab car), and private vehicle. The travel costs using online transportation is between IDR 15,000 to IDR 50,000. This price is the maximum price compared to public transportation and private vehicle. It is quite affordable, and services can be obtained quickly.

There is ambulance service provided by the health facilities.

Many health facilities provide ambulance pick up for Surabaya residents in need. Surabaya City Government even rules the health facilities at certain levels to provide ambulance services.

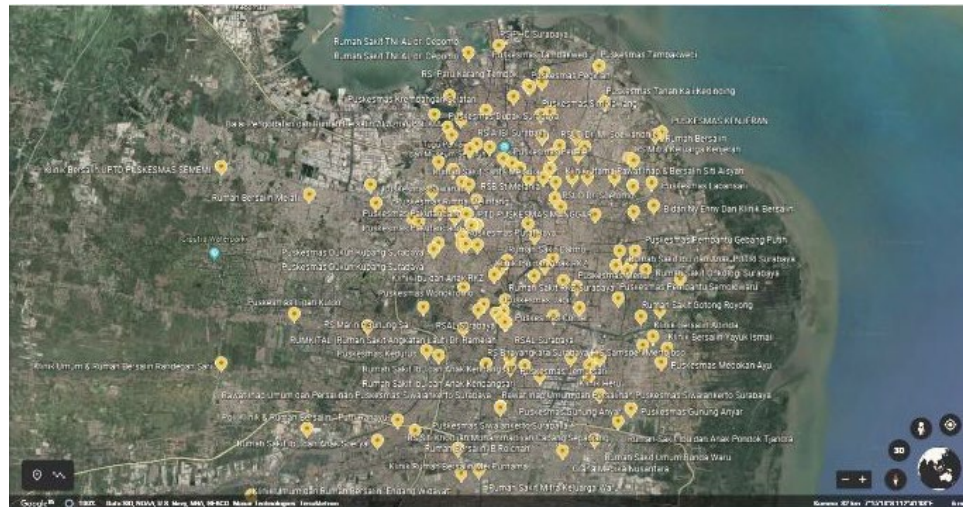


Figure 1. Map of health facilities in Surabaya.

There are many Non-Governmental Organizations (NGOs) or foundations provide ambulance service.

In addition to ambulance service provided by health facilities, many NGOs, foundations, and even community cooperation provide ambulance service that can be utilized by their members and public.

There is a command centre 112 (emergency services) managed by Surabaya city government.

Since a few years ago Surabaya City Government has provided emergency response services that can be accessed by public 24 hours a day, 7 days a week. The service can be accessed via telephone, Twitter, Instagram (IG), what's app (WA), Facebook, and website. The response time for each call is 7 minutes (Hakim 2019). Therefore, if there is a report from residents in any form, the joint officers will arrive at the location within 7 minutes complete with all needed equipment. This response time is considered very fast compared to other cities in Indonesia that have 10-15 minutes for emergency response services.

For a report related to childbirth difficulties, adequate childbirth equipment will be sent within 7 minutes, so that the childbirth problem can be handled by the health team immediately. In addition to the Command Centre 112, there are also integrated posts scattered in several areas in Surabaya City to ensure and to accelerate emergency response services if needed.

Surabaya people have a high concern to help one another.

Surabaya people are caring and willing to help each other. This value had been nurturing through many years of community development. In the health sector only, there are many initiatives conducted by Surabaya City Government together with Surabaya people, for instance Alert Village Program (Kelsi), cadre to support pregnant women, Posyandu cadre for babies and toddlers, Posbindu cadre (integrated health post), and so on. The number of health cadres in Surabaya is 22,400 people. One of the tasks of these cadre is to take care pregnant women in the neighbourhood.

The above summary convincingly justifies that maternity waiting homes that aiming to provide accommodation for pregnant women while waiting for the child delivery is not suitable for Surabaya. Instead, the evaluation found new facts that there is a need to provide shelter to many neglected pregnant mothers in Surabaya who need help and housing during the pregnancy, childbirth, and puerperal.

This fact was initially discovered in the interview with NGOs. As a big city with dynamic life, it is understandable that the social condition in Surabaya City is very dynamic and full of challenges. Cases of unexpected pregnancy outside marriage, underage pregnant women, cases of pregnant women who experience family violence, cases of pregnant women due to rape, incest, pregnant women who involve in drugs, or infected by HIV are to name a few. Most of those women tried to abort their baby, thus without proper support, death of mother and baby during the abortion and the

childbirth is likely to happen. This is a need of Surabaya City that can be funded using allocated national budget, as a different implementation form of Health Minister Regulations to reduce MMR and IMR that is more in line with the conditions of Surabaya.

3. System Analysis to Provide Support for Neglected Pregnant Women in Surabaya

Before this study was conducted, there is no statistics at all on the number of neglected pregnant women in Surabaya. The information is somehow scattered at each NGOs, Foundations, and community shelters. Therefore, this study was needed to gather the scattered data, model them to evaluate whether the national allocated budget is adequate or not to help neglected pregnant women in Surabaya City.

After interviewing few officers of Surabaya City Health Office and few stakeholders involved in helping neglected pregnant women, this study identified the required information to be collected include: (1) cost components of required monthly support per person; (2) estimated number of neglected pregnant women per year; and (3) estimated duration of support per person. The cost components are differentiated into two, i.e. the needs of neglected pregnant women and the needs of neglected postpartum or puerperal mothers.

For data collection, a Focus Group Discussion (FGD) was conducted by inviting NGOs and Foundations in Surabaya that commonly known in providing help for disadvantages people. Fourteen institutions were selected to involve in the FGD, including Pondok Hayat, Pondok Kasih, Matahari Terbit, etc. To capture information from the FGD systematically, the author developed and distributed a questionnaire.

From the FGD it was revealed that to accurately capture the number of displaced women in Surabaya, big data analysis was needed. Data from Surabaya City Social Welfare Office, Surabaya City for Population Control, Women Empowerment, and Children Protection Office, orphanages, and foundations in Surabaya need to be integrated through an information system. This condition clearly requires a lot of effort. Therefore, as a start, in 2020 the author used a simplified approach to model the required budget, which is using minimum, average, and maximum values obtained in the FGD as the scenarios. This approach would provide a temporary but applicable result for 2020. After more comprehensive data can be obtained, more accurate forecasting can be made. The scheme of model and needed data is depicted in Figure 2.

Considering that the cost as well as the management to run government owned maternity waiting homes is expensive and not easy, Surabaya Health Office decided not to rent a house and run a shelter by its own. Instead Surabaya Health Office prefers to work together with NGOs, foundations, and orphanages who have been providing support for neglected pregnant women so far. The support provided by Surabaya Health Office would be in a form of monthly allowance that can be claimed by the NGOs, foundations, and orphanages based on the number and the support period given to neglected pregnant women.

From the FGD, the cost components of monthly budget needed to support neglected pregnant and puerperal women are identified. Money allocation is also needed to address physical and non-physical complexities that usually suffered by neglected pregnant women. Physical complexities include Chronic Energy Deficiency (KEK), anaemia, malnutrition, high blood pressure, eclampsia, drugs, HIV, etc. Non-physical conditions include depression, psychiatric disorders, the effects of violence / rape, etc. For postpartum mothers, there are two additional cost components i.e. sanitary pads and additional supplement to increase milk production for her baby.

Data processing shows that the minimum, average, and maximum monthly costs spent by NGOs for neglected pregnant women per month are IDR 1,500,000, IDR 1,677,857, and IDR 2,000,000 respectively. These values include special care assistance for physical and non-physical conditions. Across 2017 to the first quarter of 2020, it was found that 63% of neglected pregnant women suffered depression. For physical problems, malnutrition and bleeding caused by abortion trials are the major problems found. As per puerperal women, there is additional IDR 150,000,000 for minimum, average, and maximum pregnancy's monthly values.

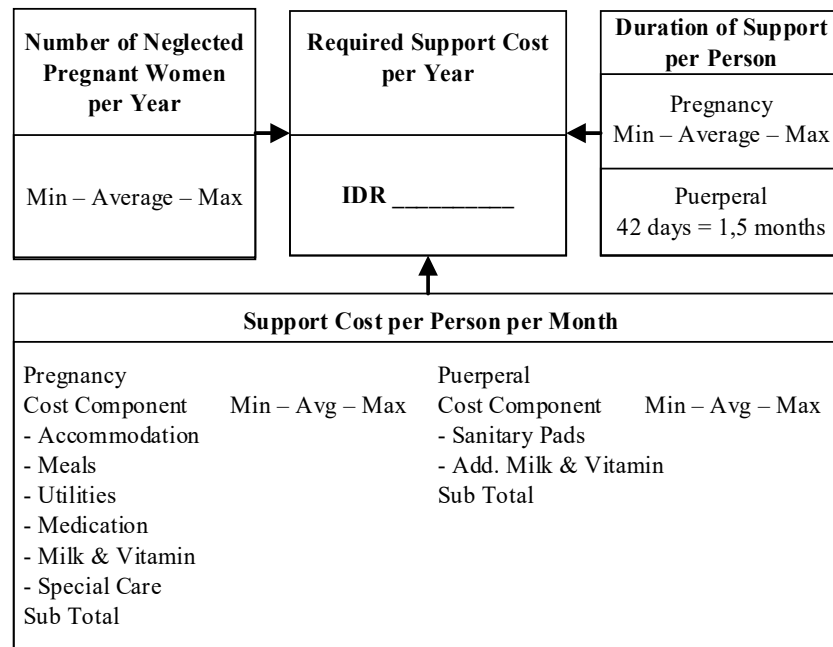


Figure 2. Model and needed data.

Gathered data through the questionnaire revealed that during 2017 to 2020 (the first quarter), the number of neglected pregnant women per year is fluctuated and shown in Figure 2. Apparently not all neglected pregnant women assisted by NGOs are originally from Surabaya or owning Surabaya resident ID. Only 46% of them have Surabaya resident ID (shown in Figure 3), thus entitled to be supported by Surabaya Health Office. Further, based on the collected data, minimum, average, and maximum annual number of needy pregnant women found in Surabaya with Surabaya Residential ID (KTP) are 20, 26, and 32, respectively. Figure 4 shows the status of neglected women.

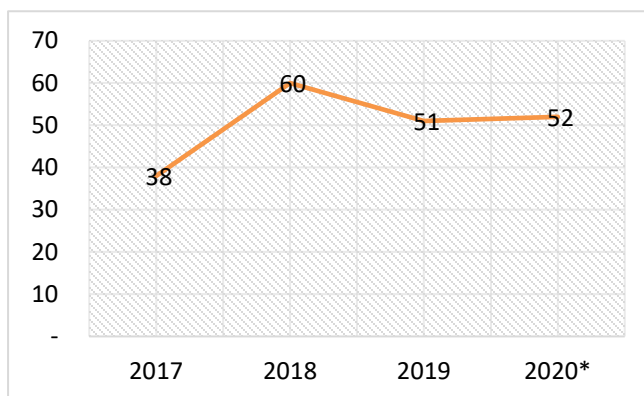


Figure 3. Number of neglected women in Surabaya

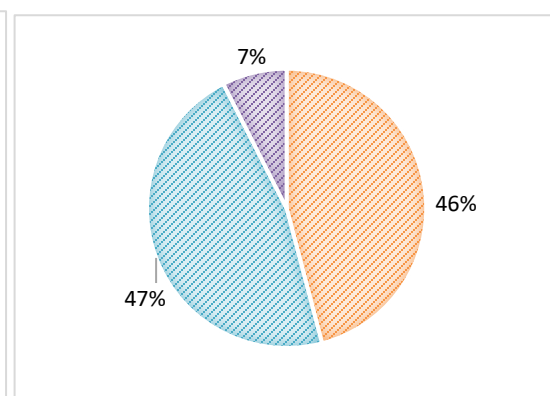


Figure 4. Status of neglected women

In terms of support duration, there are various situations causing neglected pregnant women to start seeking help. Some NGOs informed that after three months, women who realized their unexpected pregnancy started coming out and seeking help. Some cases showed that women sought for help at the seventh month of their pregnancy, some others sought help very close to the delivery. Because none of the institutions have a good recording system, again in this factor, the author could not come up with probability or distribution. Instead the author developed three to seven months scenarios for the support duration in the cost calculation.

4. Cost Calculation and Discussion

In order to calculate total annual cost (TAC) needed to help neglected pregnant women, several equations have been developed. Equation (1) represents the main components of TAC , which are AC_{PW} , the annual cost needed for supporting pregnancy up to child delivery of all neglected pregnant women, and AC_{PuW} , the annual required budget needed to support puerperal period of neglected women. Naturally, as shown in equation (2) and (3), AC_{PW} and AC_{PuW} are the summation of cost spent to support each neglected pregnant woman, PW_i , and puerperal woman, PuW_i . While the value of PW_i is a multiplication of monthly supporting cost, SC_{PW} , with the duration of given support, t_{PWj} , the value of PuW_i is composed by SC_{PuW} for 42 days or 1.5 months. Equations (4), (5), (7), and (8) represent the cost calculation for the whole year.

However, as the exact number of neglected pregnant women and the duration of support determined by emergence of the case are unknown, the annual cost of PW and PuW are written in equation (6) and (9) as expected cost. Further, to estimate the annual required cost, an excel model consists of three elements, i.e. (1) monthly cost of support per person, (2) estimated number of neglected women per year, (3) estimated duration of support per person, has been developed. The model is run with three scenarios (minimum, average, and maximum) for the first and the second element, and 5 scenarios between 3 to 7 months for the third element. For puerperal time, the support duration is fixed, which is 42 days or 1.5 months.

$$TAC = AC_{PW} + AC_{PuW} \quad (1)$$

$$AC_{PW} = PW_1 + PW_2 + PW_3 + \dots + PW_n \quad (2)$$

$$AC_{PuW} = PuW_1 + PuW_2 + PuW_3 + \dots + PuW_n \quad (3)$$

$$PW_i = SC_{PW} \times \sum_j^m t_{PWj} \quad (4)$$

$$AC_{PW} = \sum_i^n \left(SC_{PW} \times \sum_j^m t_{PWj} \right)_i \quad (5)$$

$$E[AC_{PW}] = (SC_{PW} \times E[t_{PW}]) \times E[PW] \quad (6)$$

$$PuW_i = SC_{PuW} \times 1.5 \quad (7)$$

$$AC_{PuW} = \sum_i^n (1.5 \times SC_{PuW})_i \quad (8)$$

$$E[AC_{PuW}] = (1.5 \times SC_{PuW}) \times E[PuW] \quad (9)$$

Table 2, Table 3 and Figure 5 show the calculation results of all scenarios. Range of total annual cost is between IDR 138,105,000 to IDR 551,200,000. The estimated minimum required cost turns out to be far exceeding the fund allocation from the Ministry of Health, which is only IDR 48,000,000 per year. With the current allocated budget, only 5-6 neglected pregnant women can be supported for 3 months each at IDR 1,500,000 per month.

Therefore, if Surabaya Government would like to shift the implementation of the Ministry of Health's Regulation to a program that is more suitable with the need of Surabaya City, the budget is not sufficient. Thus, to implement a new program to support neglected pregnant women, Surabaya City Health Office needs to propose additional budget. To ensure that the additional budget will be adequate and utilized effectively, it is necessary to improve the current recording and monitoring system to capture more accurate data.

Table 2. Cost calculation for all scenarios.

Number of Neglected Pregnant Women	Support Duration (month)	Annual Support Cost for Neglected Pregnant Women			Annual Support Cost for Neglected Puerperal Women		
		Minimum Monthly Cost (IDR)	Average Monthly Cost (IDR)	Maximum Monthly Cost (IDR)	Minimum Monthly Cost (IDR)	Average Monthly Cost (IDR)	Maximum Monthly Cost (IDR)
Optimistic Minimum	3	89,100,000	99,664,714	118,800,000	49,005,000	54,287,357	63,855,000
	4	118,800,000	132,886,286	158,400,000			
	5	148,500,000	166,107,857	198,000,000			
	6	178,200,000	199,329,429	237,600,000			
	7	207,900,000	232,551,000	277,200,000			
Moderate Average	3	115,650,000	129,362,786	154,200,000	63,607,500	70,463,893	82,882,500
	4	154,200,000	172,483,714	205,600,000			
	5	192,750,000	215,604,643	257,000,000			
	6	231,300,000	258,725,571	308,400,000			
	7	269,850,000	301,846,500	359,800,000			
Pesimistic Maximum	3	144,000,000	161,074,286	192,000,000	79,200,000	87,737,143	103,200,000
	4	192,000,000	214,765,714	256,000,000			
	5	240,000,000	268,457,143	320,000,000			
	6	288,000,000	322,148,571	384,000,000			
	7	336,000,000	375,840,000	448,000,000			

Table 3. Annual total cost calculation.

Number of Neglected Pregnant Women	Support Duration (month)	Annual Total Required Cost		
		Minimum Monthly Cost (IDR)	Average Monthly Cost (IDR)	Maximum Monthly Cost (IDR)
Optimistic Minimum	3	138,105,000	153,952,071	182,655,000
	4	167,805,000	187,173,643	222,255,000
	5	197,505,000	220,395,214	261,855,000
	6	227,205,000	253,616,786	301,455,000
	7	256,905,000	286,838,357	341,055,000
Moderate Average	3	179,257,500	199,826,679	237,082,500
	4	217,807,500	242,947,607	288,482,500
	5	256,357,500	286,068,536	339,882,500
	6	294,907,500	329,189,464	391,282,500
	7	333,457,500	372,310,393	442,682,500
Pesimistic Maximum	3	223,200,000	248,811,429	295,200,000
	4	271,200,000	302,502,857	359,200,000
	5	319,200,000	356,194,286	423,200,000
	6	367,200,000	409,885,714	487,200,000
	7	415,200,000	463,577,143	551,200,000

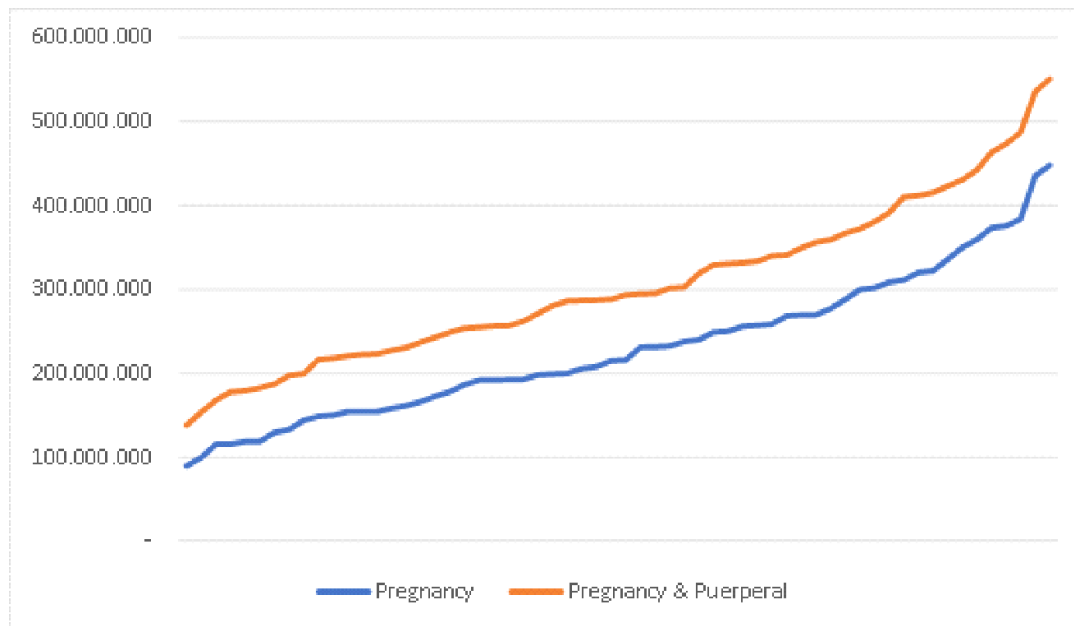


Figure 5. Results of the cost simulation.

5. Proposed Management Information System (MIS) to Capture More Accurate Data

Through all the processes, the author concluded that there is no system in place to record the case and the situation of neglected pregnant women in Surabaya. This was confirmed by Surabaya City Health Office and all the NGOs and foundations involved in the FGD. Therefore, to support better decision, this study proposes a MIS design (Rainer *et al.* 2014).

The MIS design is depicted in a Data Flow Diagram (DFD) as shown in Figure 6-8. DFD shows the flow of information from one entity to other entity, processes, and data storing (White 2015). Handling social cases like neglected pregnant women requires the involvement of all Councils or Offices in Surabaya City Government to work hand in hand (Rainer *et al.* 2014). Thus, the entity drawn in Figure 6 is not only Surabaya City Health Office, but Surabaya City Government as a whole.

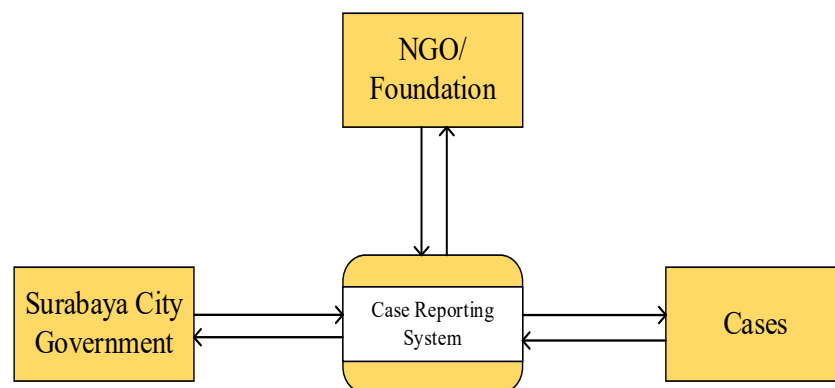


Figure 6. DFD level 0 of the proposed MIS.

In the second layer of DFD, two situations happening in the community are depicted. The first situation is when the neglected pregnant women directly found or brought to NGO/ foundation (shown by arrow 1a in Figure 7). Because currently there is no support from the City Government to look after the found pregnant women, there is no record at all about those cases at City Government. However, if funding calculated in this study to assist neglected pregnant women becomes available, there is a means to encourage NGOs/foundations to report the cases to the City Government. Figure 8 shows that the granting of fund will be based on the completeness of reported data. In the

technical detailed of the MIS, Citizen Identification Number (NIK in Bahasa), which is a single and unique number attached to each registered Indonesian citizen, will be the unique identifier used in the system.

The second situation happens when found cases reported by neighbourhood to the District or Sub-District officers. District and Sub-Districts are part of the City Government. Those cases are then reported to Surabaya City Office for Population Control, Women Empowerment, and Children Protection. This office will check whether the neglected pregnant women found have mental illness or not. Neglected pregnant women with mental illness will be transferred to Surabaya Social Welfare Office, that has Liponsos, special shelters for mental illness people. If the neglected pregnant women have no mental illness, they will be transferred to shelters managed by NGOs/foundations. This process will be requested by DP5A to Surabaya City Health Office, who then contact NGOs/ foundations to look after the neglected pregnant women. The transfer should automatically trigger the fund granting and data recording process.

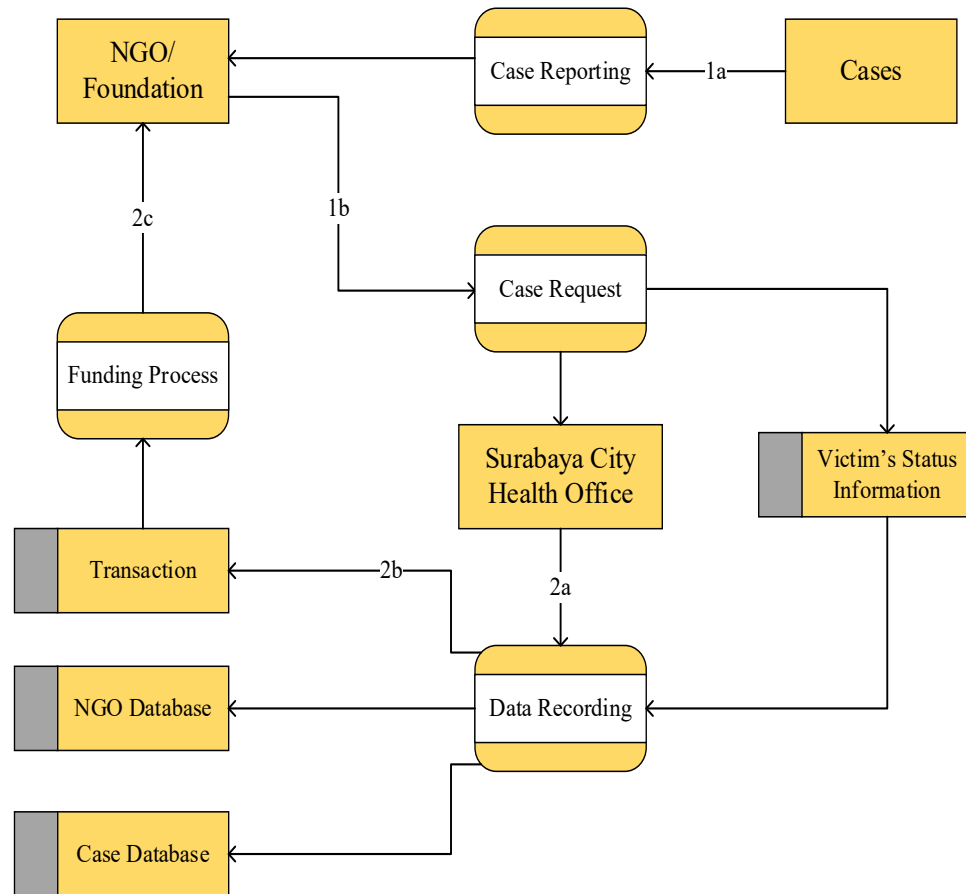


Figure 7. DFD level 1A of the proposed MIS.

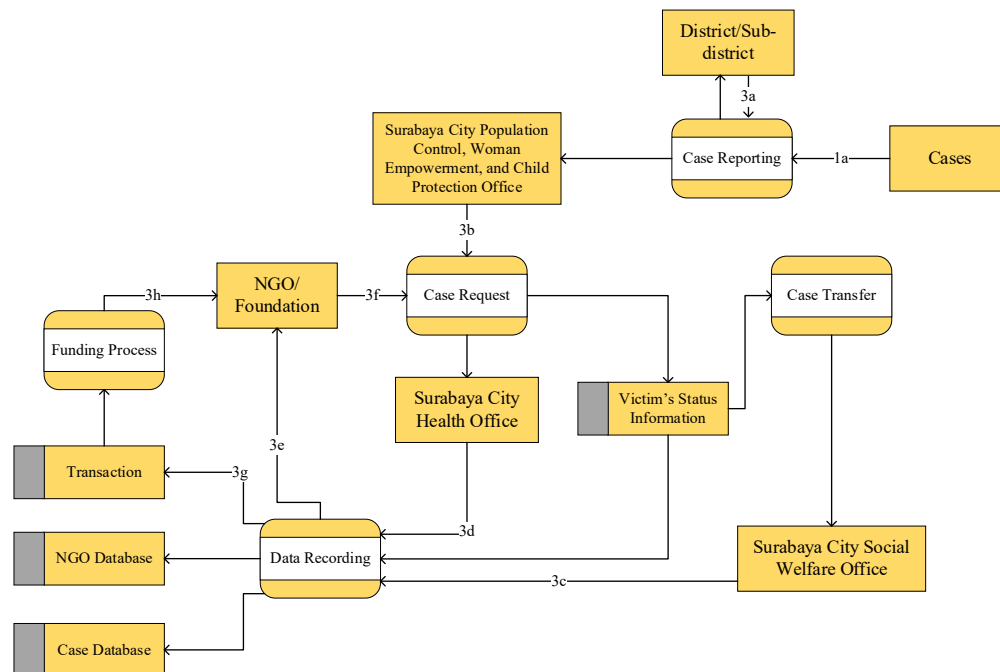


Figure 8. DFD level 1B of the proposed MIS.

This MIS is expected to capture accurate data on the number of neglected pregnant women, the duration of support, and the physical/non-physical complexities that need special treatment. The availability of those data will help updating of this study for better decision. Moreover, those data can be used to investigate root of the problems causing the cases of neglected pregnant women. In long run, the understanding on the root problems can form a better strategy to prevent the cases from happening.

6. Conclusion and Future Work

The study presented in this paper has evaluated the suitability of maternity waiting homes in Surabaya and recommended that it is not the need of Surabaya people. Instead, the study revealed that there is a need to help neglected pregnant women found in Surabaya. The analysis has identified factors that influence the estimated total annual cost for supporting neglected pregnant and puerperal women. The cost simulation found that the minimum required budget is exceeding the allocated budget from the national government.

As now Surabaya City Health Office has no record at all about the neglected pregnant women found in Surabaya, there is a need to develop a MIS to record every single information from various resources. The proposed system would be able to capture accurate data and remaining balance of the budget, as the number of neglected pregnant women is predicted to be stochastic. This MIS development is recommended as the future work of this study.

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