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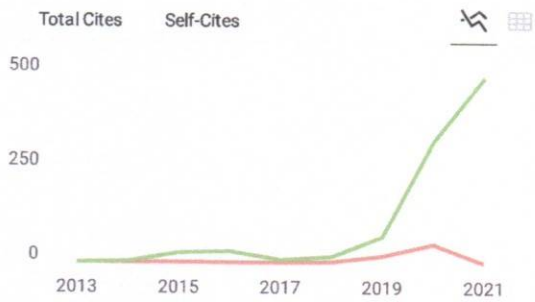
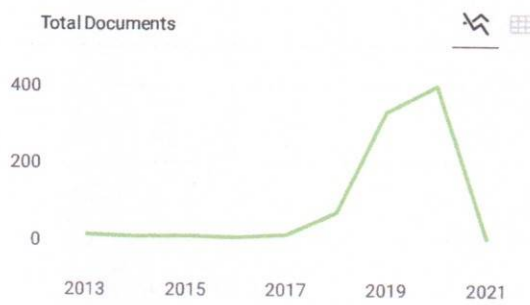
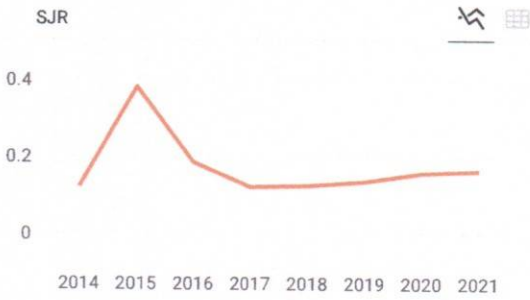
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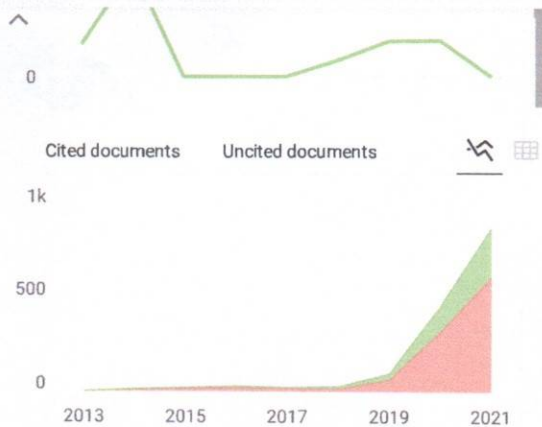
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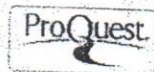
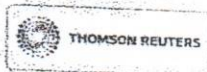
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The impact intervention of handling obstetric case using Oprocot model

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Abstract

OPROCOT (Out of the box, Proactive, Comprehensive, Top-Down) model developed by Task Force for MMR has been applied to Syarifah Ambami Rato Ebu (SARE) Hospital, Bangkalan, Indonesia since 2015. From 42 items intervention, mentoring and involvement as an affiliated hospital are the main interventions. We evaluated the interventions results and analyzed the impact of OPROCOT model to the performance of department of obstetrics and gynecology. Descriptive and observational study from medical records of SARE General Hospital was conducted from January 2014 to December 2016. There was an exponential increase in the number of obstetric patients as follows: 2014: 1024 cases, 2015: 1299 cases, and 2016: 1782 cases. More specifically, in eclampsia: 23 cases in 2014 increased to 60 cases in 2015 and 89 cases in 2016. Also, severe preeclampsia from 131 cases in 2014 increased to 191 cases in 2015 and 235 in 2016. For operative vaginal deliveries, in 2014 there were no cases, in 2015 there were 11 cases, in 2016 there were 25 cases. Referred cases decreased as follow, in 2014: 74 cases, 2015: 25 cases, and in 2016: 6 cases. Mentoring and involvement of affiliated hospital increased obstetric performance and reduced referred patients.

Keywords: obstetric performance, hypertensive disorders in pregnancy, number of referred patients

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INTRODUCTION

One measure of women's health degree is the maternal mortality rate (MMR). Maternal death is leading indicator of women health status, mainly the risk of death during pregnancy and childbirth (Palimbo et al. 2019). The maternal mortality rate is also one of the targets that have been determined in the Millennium Development Goal of the 5th goal to improve maternal health, in which the target to be achieved by 2015 is to reduce to $\frac{3}{4}$ the risk of the number of maternal deaths. Based on the Indonesian Demographic and Health Survey in 2007, Indonesia's MMR was 228 per 100,000 live births, although that number was still the highest in Asia. In 2009 the number decreased to 226/100,000 live births. In 2012 MMR increased by 359 per 100,000 live births. The data show that efforts to reduce MMR in Indonesia are still unsatisfactory. Following the global agreement, Indonesia's target to be achieved in reducing maternal mortality was 102/100,000 live births in 2015 (Badan Pusat Statistik et al. 2013).

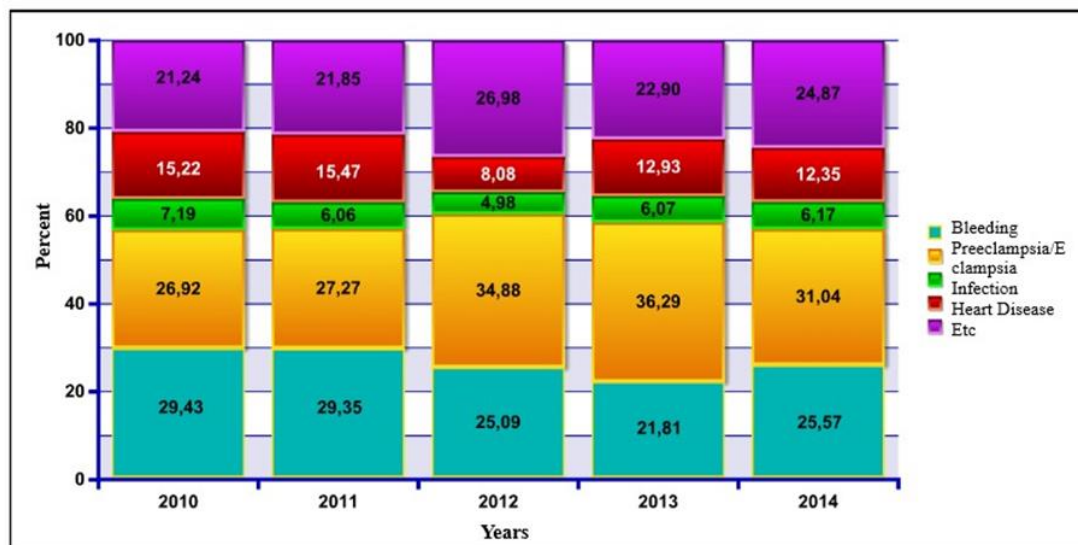
Indonesia has struggled to reduce its Maternal Mortality Rate from 359/100,000 live births in 2012 to

102/100,000 live births of the Millennium Development Goal in 2015, gaining only 305/100,000 live births. Many causes of maternal death in Indonesia can be prevented or controlled by evidence-based health services available (Limato et al. 2019). Although several criteria and guidelines for diagnosing and managing preeclampsia in pregnant women have been established in recent years (Lumbanraja 2013). As for the causes of maternal death in East Java, from 2013-2014, there was an increase in bleeding and infection factors, while the factors of preeclampsia and eclampsia decreased. There are a syndrome in pregnant women, can result in complication for maternal and fetal lives (Royani et al. 2019). Preeclampsia and eclampsia are still the dominant factors (31.04%) of causes of maternal death in East Java as illustrated in **Fig. 1**. The World Health Organization (WHO) estimates that 10 percent of all maternal deaths in Asia are directly caused by

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Fig. 1. Proportion of Causes of Death in East Java Province in 2010 to 2014

preeclampsia.4 Asian women with preeclampsia have worse pregnancy outcomes than others (Kharaghani et al. 2016).

Strategy for achieving the Millennium Development Goals, a Making Pregnancy Safer (MPS) movement is needed as part of the Safe Motherhood program. MPS is a health sector strategy that focuses on a systematic and integrated planning approach in implementing clinical interventions and health services that require partnerships between the government sector, development agencies, the family sector, and community members. The strategy used is one of them with clinical interventions that can reduce the incidence and severity of complications related to pregnancy and childbirth in mothers and newborns, consisting of the availability of skilled birth attendants, obstetric services and basic and comprehensive emergency emergencies, prevention of unwanted pregnancy, and management of miscarriage complications (Cameron et al. 2019).

From the Indonesian Demographic and Health Survey (IDHS) in 2008, 4,692 women died during pregnancy, childbirth, and the puerperium, and the main causes of maternal death related to pregnancy and childbirth were bleeding (28%), eclampsia (24%), infections (24%) 11%), prolonged labor (5%), and abortion (5%). Fifty-two percent (52%) of the total number of mothers who die due to childbirth is caused by bleeding and eclampsia. Whereas, bleeding and eclampsia are medical problems that can be warded off and overcome if the mother giving birth is assisted by qualified birth attendants at the delivery place who have adequate equipment and medicines (Badan Pusat Statistik et al. 2013).

Syarifah Ambami Rato Ebu (SARE) Hospital or Syamrabu Regional Hospital before 2015 had a high incidence of preeclampsia, severe preeclampsia with its complications, and high eclampsia referred to type A Hospital in East Java, Dr. Soetomo Surabaya Hospital, Surabaya. Based on these problems in the context of increasing efforts to safe motherhood and making pregnancy safer in the Bangkalan Regency and surrounding areas and to realize the Millennium Development Goals, the Obstetrics and Gynecology Section of Universitas Airlangga, Surabaya developed an intervention model by making the Syamrabu Hospital as a network hospital since April 2015. The purpose of this study was to determine the profile of handling obstetric cases and the number of obstetric referral cases from Syamrabu Hospital to Dr. Soetomo Hospital, Surabaya.

MATERIAL AND METHODS

Syamrambu Hospital is a type B state hospital owned by Bangkalan Regency on the mainland of Madura Island, Indonesia. This hospital can provide specialist medical services and limited subspecialists. The hospital also accommodates referral services from district hospitals. In the field of obstetrics and gynecology, Syamrabu Hospital has maternity room facilities, Comprehensive Emerging Neonatal Obstetric Services (PONEK), and Intensive Care Unit (ICU) with sufficient facilities to handle obstetric cases with its complications. This was a retrospective analysis research with descriptive method of medical record data in obstetric patients at Syamrabu Hospital from January 2014 to December 2016.

Table 1. Distribution of the number of deliveries and ICU care and treatment at Syamrabu Bangkalan District Hospital

	2014	2015	2016
Obstetric Case	1024	1299	1782
Caesarean Section	440	557	684
Vaginal delivery	289	421	525
PPTO (vacuum and forceps)	0	11	29
ICU	3	40	59
Deaths	0	4	12

RESULTS

Syamrabu Hospital had total personnel in 2016 of 250 nurses, 141 midwives, 49 specialists, 12 general practitioners, and 3 dentists. The operating room staff consisted of 22 surgical nurses, 18 anesthesia nurses, 2 anesthesia specialists, and 3 obstetrics and gynecology specialists. Doctor in the Specialist Education in Dr. Soetomo Hospital has been serving at the Syamrabu Hospital since April 2015. The duty and authority during Syamrabu Hospital is to handle cases of obstetrics and gynecology under the guidance of the local obstetrics and gynecology specialists. If the case being handled is unable to be done at the local hospital, a referral will be made to Dr. Soetomo Hospital.

Dr. Soetomo Regional General Hospital Surabaya is a class A hospital that stands on land with an area of 163,875 m² and a building area of 98,121 m². Dr. Soetomo Regional General Hospital is not only serving medicine, but also as the highest teaching, research and referral center for the eastern region. In **Table 1**, during 2014 the number of obstetric cases handled was 1024 cases, increasing to 1299 cases (26.8%) in 2015, and 1782 cases (74%) in 2016. The number of vaginal delivery operative measures, i.e., vacuum and forceps extraction, in 2014 was 0, in 2015 there were 11 cases, and it increased to 25 cases in 2016. Whereas, the caesarean section increased from 440 in 2014 to 557 in 2015 or an increase of 26.6%. In 2016 it increased to 684 actions or increased by 55% compared to 2014. This is due to the presence of 3 residents, namely junior, middle, and senior levels at the Syamrabu Hospital on 24-hour standby, so many obstetric cases, especially cases emergencies that were previously referred to, could be handled. Besides, the anesthesiologist who was previously numbered 1 person, assisted by resident placement personnel from the Ministry of Health, program which amounted to 1 person and was willing to do 24-hour standby 24 at the Syamrabu Hospital, was very helpful in reducing morbidity and mortality due to energy readiness and alertness.

For ICU patient care, there was an increase from 2014 by 3 patients, to 40 patients or an increase of 13 times in 2015 and in 2016 increased to 59 patients or 20 times compared to 2014. During the anesthesia resident at the Syamrabu Hospital ICU, nurses were trained in

Table 2. Types of cases handled at Syamrabu Bangkalan District Hospital

Obstetric Case	2014	2015	2016
Eclampsia	23	60	89
Severe Preeclampsia	131	191	235
Heart Disorders	0	5	4
HPP	30	27	41
Referral Case	74	25	6

ICU and ventilator knowledge and care so that the handling of patients in the ICU increased.

There was an increase in cases handled including eclampsia cases in **Table 2** from 23 cases in 2014 to 60 cases (2.6 times) in 2015 and 89 cases (3.9 times) in 2016. PEB cases from 131 cases in 2014 increased to 191 cases (45.8%) in 2015 and 235 cases (79%) in 2016. Pregnancy with suspected heart abnormalities of 0 cases in 2014 became 5 cases in 2015 and decreased to 4 cases in 2016. Whereas, as cases of postpartum hemorrhage, 30 cases in 2014 decreased to 27 cases (10%) in 2015 and increased to 41 cases (36.7%) in 2016. For referral cases, there was an initial decline in 2014 of 74 cases, down to 25 cases (66%) in 2015 and decreased to 6 cases (91%) in 2016.

DISCUSSION

The number of deaths cases handled increased from initially no deaths in 2014, rose to 4 patients in 2015 and became 12 in 2016. Death cases in 2015 were found to be 2 with postpartum hemorrhage cases that came in severe hypovolemic shock and uterine atony which is severe and has died in preparation for laparotomy. Whereas, 2 other cases were pregnant with heart disease, pulmonary edema, and decreased consciousness. In 2016, 12 deaths occurred, including 4 cases with eclampsia and decreased consciousness, 2 cases with post Caeser Section (CS) referral from a local private hospital with 1 post CS patient with HPP and severe hypovolemic shock who died 1 hour of treatment, and 1 more patient with post CS with suspected pulmonary edema of heart disease who died 2 hours in treatment. Two patients died with a case of COGS referral from a midwife with severe hypovolemic shock. Two other patients died with a suspected amniotic embolism, 2 patients died with pregnancy, and a suspected heart disease was referred to Dr. Soetomo Regional Hospital. Most of the cases that died came under severe conditions and were referred by midwives and other local hospitals.

Heart disease was mostly detected during the 2nd and 3rd trimester of pregnancy in 62 patients (67.4%). As many as 28 patients (30.4%) had been detected suffering from heart disease since before pregnancy, especially those with congenital abnormalities, and 2 patients (2.2%) just detected suffering from heart disease during postpartum (Muninggar et al. 2019). Despite the fact that CS rates may increase in the interest of reducing maternal or fetal morbidity and

mortality, adverse outcomes may increase and significantly burden health services. The aim of the caesarean section delivery is to reduce maternal and fetal mortality and to reduce obstetrics and the high birth rates of Asian developing countries. Such knowledge are needed for policymakers and healthcare professionals, as well as the public on their prevalence and complications before any sensible recommendations can be established for the good clinical practice of CS (Chongsuvivatwong et al. 2010). Access to health services, particularly to doctors and hospitals, accounts for a significant portion of the difference in motherhood, which is in line with the previously identified help by a healthcare professionals to minimize maternal death risk (Cameron et al. 2019).

Although the average density of midwives in Java has been found to be a major driver of health care professionals' assistance during birth, and distance to the health center has been found to be a factor in mother's death (for women who have been assisted by a healthcare professional), we found that health services given at village level, including the number of midwives in village healthcare centers, etc. we're not major explanatory factors of the difference between high and low MMR provinces. This is possibly due, partially, to the village sweeping programs because the widespread access to these facilities across Indonesia (Cameron et al. 2019).

Consistent with results in another study, WHO estimates that 7 to 8 percent of women aged 14 to 59 years develop preeclampsia in the East Mediterranean Region Organization (EMRO), the region where Iran is located in.⁶⁵ The prevalence rate of preeclampsia in this study was lower than the cumulative incidence, which may be shown in the effective management of preeclampsia without prevention of it. Another reason may be the short duration of pregnancy and the disease. The overall prevalence of preeclampsia was 5% (Kharaghani et al. 2016).

Early identification and management of the risks associated with pregnancy is essential to providing appropriate treatment to pregnant women. Effective identification of maternal risk and its subsequent management are guided by nationally recognized evidence and best practice (e.g. National Institute for Health and Care Excellence NICE, Scottish Intercollegiate Guidelines Network SIGN). However, with so much evidence and practice guidelines available, health care staff can be overwhelmed by bureaucracy and can miss key clinical factors. Risk assessment is frequently carried out in an ad hoc manner, and is not always undertaken (Connolly et al. 2017). In 2010 the Joint Commission mandated the production of early warning signs suggesting a change in the health condition of the patient. If a provider is positive, additional assessment will be required. The National Partnership of Maternal Safety was formed in

2012 to develop a coordinated approach to identification of early warning signs and symptoms, comprised of leaders from organizations across the spectrum of women's health, among them hospital organizations, various states and regulatory bodies. A simplified early warning system, the Maternal Early Warning Criteria (MEWC), has been proposed in the National Partnership for Maternal Safety. In MEWC, a provider is asked to test the patient at bedside if the patient has a single, confirmed, and irregular parameter. The Safe Motherhood Initiative of District II of the American College of Obstetricians and Gynecologists (ACOG) endorsed the use of MEWC in all New York hospitals (Baptiste et al. 2019).

The decrease in the maternal mortality rate is even more remarkable considering the rising birth rate that often expands the maternity services and the increasingly older and less stable mother population (O'Herlihy 2011). Besides, late maternal age also increases risk in maternal mortality. The medical treatment delay included delay in identified pregnancy risk and dangerous sign and delay in accessibility to health facilities and taking good health services. The obstacles in access to health centers is caused by long distance to hospital, high transportation fees, limitation of public transportation availability and administrative requirement that burden the patient's family members (Syarifuddin et al. 2019). For another research, the idea of cultural health capital, which is formed by patients and clinicians, is combined with cultural abilities, communication skills, actions and interaction styles. If used successfully, good health relationships can be endorsed, but they could lead to unequal treatment if not. It is believed that the nature of the prenatal care system meant that women are properly capable and familiar with the NHS system and with procedures and procedures which are a regular part of the prenatal care. In order to know which health problems are important for pregnancy and to find out when and how to get details, patients should possess a cultural health capital (Phillimore 2015).

As far as the care of our patients is concerned, the well-appointed and well-personalized hospital provides 24 hours service, early hospital presentation of mothers, and early intervention which can help preventing mother's death. Acute renal failure in developed countries has fallen by approximately 1-2.8 percent. Whereas, both maternal and fetal morbidity and mortality are higher in developed countries. Some setups display an alarmingly high 36% value. The maternal and fetal outcomes of various studies are highly dependent on mother's socio-economic status, gestational age, and high blood pressure (Seyom et al. 2015).

The referral process and the complications to maternal mortality affect the occurrence of maternal mortality. Midwives need to conduct health education as

it should be given to women in their productive age, families, communities and cadres in the process of early detection of complications during pregnancy, childbirth and postpartum (Nasution et al. 2018). The quality of antenatal care (ANC) and the quality of referrals should be improved by creating a close referral system in a region associated with a high risk pregnant women who were detected to be inventoried, scheduled for visit/termination and monitored (follow-up) so that high risks are always monitored (Handriani et al. 2015). WHO in 2016 issued recommendations on antenatal care. The recommended number of ANCs is 8 visits. The first visit is carried out until 12 weeks of gestation, then continued

at 20, 26, 30, 34.36, 38 and 40 weeks gestation. Recommended antenatal visits are not only in quantity, but also quality with early detection efforts, monitoring maternal and infant health status, and providing interventions according to existing problems (Muninggar et al. 2019).

CONCLUSION

Mentoring and involvement of affiliated hospital increased obstetric performance and reduced referred patients.

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