Research Article

Cesarean delivery Characteristics during JKN Implementation

Karakteristik persalinan sesar selama Implementasi JKN

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Abstract

Objective: To compare the characteristics of cesarean before and during JKN, also analyzes the factors that influence these differences.

Methods: This was a quantitative study with a longitudinal retrospective design and qualitative research used design case studies. The population were delivery women at the Banyuwangi referral hospital before and during JKN. The quantitative data were analyzed firstly by univariable and then bivariable. The bivariable analysis was performed by comparing the prevalence ratio (PR) between two variables.

Results: The proportion of cesarean delivery had increased significantly during the implementation of JKN. 50% of maternal deaths before JKN gave birth using cesarean delivery, this proportion increased significantly to 60% during JKN. Indications of fraud committed by health workers to be a factor in increasing the proportion of cesarean delivery. Other contributing factors were repeated cesarean delivery, delayed referral, and the number of obstetric complications.

Conclusion: There was an increase in the proportion of cesarean deliveries during the implementation of JKN. BPJS Kesehatan needed to re-evaluate the system they had created so far. The quality of service must be emphasized so that the negative impact on women could be minimized.

Keywords: cesarean section, health insurance, maternal mortality.

Abstrak

Tujuan: *Membandingkan karakteristik persalinan sesar sebelum dan selama implementasi JKN, selain itu juga menganalisis faktor-faktor yang berpengaruh.*

Metode: *Studi kuantitatif dengan desain longitudinal retrospective dan studi kualitatif dengan desain case studies. Populasi adalah ibu bersalin di rumah sakit rujukan Kabupaten Banyuwangi sebelum dan selama JKN. Data kuantitatif dianalisis secara univariabel dan bivariabel. Analisis bivariabel dengan membandingkan prevalensi rasio (PR) diantara dua variabel.*

Hasil: *Proporsi persalinan sesar meningkat secara signifikan selama implementasi JKN. 50% ibu yang meninggal bersalin dengan metode sesar, proporsi ini meningkat selama JKN menjadi 60%. Indikasi kecurangan oleh tenaga kesehatan menjadi salah satu faktor yang menyebabkan peningkatan ini. Faktor lain yang berkontribusi adalah persalinan sesar yang berulang, keterlambatan rujukan dan banyakanya komplikasi obstetrik.*

Kesimpulan: *Terdapat peningkatan proporsi persalinan sesar selama implementasi JKN. BPJS Kesehatan perlu mengkaji ulang sistem yang dibuat selama ini. Kualitas pelayanan harus tetap dipertahankan, agar tidak berdampak pada kesehatan ibu.*

Kata kunci: *jaminan kesehatan, kematian ibu, persalinan sesar.*

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INTRODUCTION

The outcome of cesarean delivery is still being debated today. According to the WHO, the impact of cesarean delivery on maternal and perinatal morbidity and psychological disorders is still being debated[1]. Several studies have shown that cesarean delivery can adversely affect maternal health. Cesarean delivery is associated with a higher risk of maternal death than vaginal delivery. Cesarean delivery can also result in postpartum complications such as postpartum infections[2,3]. The World Health Organization (WHO) recommends that national cesarean delivery rates not exceed 10-15%, as higher rates do not reduce maternal and neonatal mortality rates1. Recent evidence indicates that most countries have higher cesarean delivery rates than the WHO recommended rate, with Latin America and the Caribbean region having 40.5%, Northern America having 32.3%, Europe having 25%, and Asia having 19.2 %. In Indonesia, the trend is similar, with the cesarean delivery rate rising from 2% in 1986 to 16% in 2012[4]. In 2018, 17.6% of deliveries in Indonesia used the cesarean method[5].

Health insurance can be an indication of an increase in cesarean delivery, including health insurance initiated by the government[6]. The Indonesian Demographic and Health Survey data shows that women who have and use health insurance are 1.12 times more likely to give birth using the cesarean delivery compared to those without health insurance[7]. WHO states that cesarean delivery is effective in reducing the risk of maternal death, but if there are medical indications[1]. Cesarean surgery without medical indication can be a factor in increasing the number of cesarean delivery[8]. China is an example of a country that has seen an increase in cesarean deliveries since the implementation of national health insurance. National health insurance is one of the factors that contribute to high cesarean deliveries in China [9].

Indonesia implemented national health insurance (JKN) in 2014. JKN implementation is intended to realize universal health coverage so that inequality in getting health services can be reduced. Banyuwangi is an area that provides a reality that JKN does not positively impact maternal health. The number of maternal deaths in Banyuwangi District has stagnated during the implementation of JKN. Several years before the implementation of JKN, maternal mortality in Banyuwangi District was quite low. Maternal mortality in 2011 was 17, 2012 was 15 deaths, an increase in 2013 to 33. At the beginning of the implementation of JKN there was a decline to 22, it has stagnated in the following years. In 2015, there were 23 deaths and stagnant in 2016 with 21 deaths [10].

In this study, we want to analyze the comparison of cesarean delivery characteristics before and during implementation JKN in four referral hospital in Banyuwangi District, Indonesia.

METHODS

This study used mixed methods with a sequential explanatory design. Quantitative research was carried out first, then confirmed by qualitative research. Research design in quantitative research used longitudinal retrospective. Qualitative research used a case studies design.

Quantitative research used secondary data from medical records. This was collected from four referral hospitals in Banyuwangi District (Blambangan government hospital, Genteng government hospital, Muhammadiyah private hospital, Nahdlatul Ulama private hospital). Qualitative data were obtained from interviews with several parties related to the case.

The population in this study was 8676 deliveries before and during JKN implementation. The research sample was taken using a total sampling technique. Total deliveries were 4435 before JKN and 4242 during JKN. The research informants included midwives, obstetricians, Banyuwangi district health offices, traditional birth attendants and cadres. Researchers determine informants using snowball techniques.

Quantitative research used two analyzes. The quantitative data were analyzed firstly by univariable and then bivariable. The bivariable analysis was performed by comparing the prevalence ratio (PR) between two variables, by using the following guidelines: PR < 0.9 or PR > 1.1: There are differences between the two variables, 0.9 < PR < 1.1: There is no difference between the two variables.

The analysis in qualitative research used four stages. These stages included data collection, data reduction, data presentation with narrative text, and drawing temporary conclusions. The drawing of temporary conclusions was determined from

the results of data reduction and presentation. Temporary conclusions may change if other evidence was found.

RESULTS

Table 1. The Proportion of Cesarean Delivery before and during JKN

JKN Era	Cesarean Delivery		Total Deliveries
	∑	%	
before	2001	45.1	4435
during	2250	53.1	4242
	PR = 1.17		

From quantitative data, it was found that there was an increase in the proportion of cesarean delivery during the implementation of JKN in four referral hospitals in Banyuwangi significantly (PR = 1.17). The number of cesarean delivery before the implementation of JKN was 2001 from 4435 deliveries (45.1%). During JKN implementation, the number of cesarean deliveries was 2250 from 4241 deliveries (53.1%) (Table 1).

Table 2. The Proportion of Cesarean Delivery and Vaginal Delivery in Maternal Death before and during JKN

	Cesarean Delivery				Vaginal Delivery				
	Maternal Death								
JKN Era	∑		%		∑		%		Total Maternal Death
before	4		50		4		50		8
during	6		60		4		40		10
PR	1.2				0.8				
	Time of Death								
	Childbirth		Postpartum		Childbirth		Postpartum		Total Maternal Death
JKN Era	∑	%	∑	%	∑	%	∑	%	
before	2	25	2	25	1	12.5%	3	37.5	8
during	2	20	4	40	2	20	2	20	10
PR	0.8		1.20		0.2		0.5		

Table 2 showed that 50% of maternal deaths before JKN give birth using cesarean delivery, this proportion increased significantly to 60% during JKN (PR = 1.2). This was different from the proportion of vaginal deliveries, where 50% of women who died before JKN gave birth using the vaginal method. The proportion decreased significantly during the implementation of JKN. 40% of women who died gave birth using the vaginal method (PR=0.8).

Table 2 showed 25% of deaths occurred postpartum before JKN delivered using the cesarean delivery. 40% of women who died postpartum during JKN gave birth using cesarean delivery. An increase in this proportion occurred significantly (PR = 1.2). The proportion of vaginal deliveries at the time of delivery to death increased significantly during JKN (PR = 0.2). 12.5% of women who died during JKN delivery gave birth using the vaginal method. This was an increase during JKN, 20% of woman who died postpartum during JKN gave birth using the vaginal method.

Table 3. The Proportion of Causes of Death in Cesarean and Vaginal Delivery before and during JKN

	Cesarean Delivery								
	Postpartum Hemorrhage		Uterine Rupture		Puerperal Sepsis		Preeclampsia/ Eclampsia		Total Maternal Death
JKN Era	∑	%	∑	%	∑	%	∑	%	
before	2	25	1	12.5	0	0	1	12.5	8
during	3	30	0	0	1	10	2	20	10
PR	1.2		0		0		0.2		
	Cesarean Delivery								
	Postpartum Hemorrhage		Uterine Rupture		Puerperal Sepsis		Preeclampsia/ Eclampsia		Total Maternal Death
JKN Era	∑	%	∑	%	∑	%	∑		
before	2	25	1	12.5	1	12.5	0	0	8
during	1	10	3	30	0	0	0	0	10
PR	0.4		2.4		0		0		

Table 3 showed that 25% of women died due to postpartum hemorrhage before JKN gave birth by cesarean surgery. This increased significantly during JKN implementation to 30% (PR = 1.2). Deaths caused by preeclampsia/eclampsia also increased significantly during JKN. 12.5% of deaths caused by preeclampsia/eclampsia delivered with cesarean delivery before JKN, then increased significantly to 20% during JKN (PR = 0.2). There were no deaths caused by puerperal sepsis before the implementation of JKN. 10% of deaths due to puerperal sepsis during JKN delivery by the cesarean delivery method. This increase in the proportion of deaths did not occur significantly (PR = 0).

Table 3 showed that 12.5% of women delivered by vaginal method before JKN died of uterine rupture. There was an increase in the proportion of deaths in vaginal deliveries during JKN due to uterine rupture, the increase in this proportion was more than half of the proportion before JKN significantly (PR = 2.4). 30% of women who died due to uterine rupture during JKN gave birth using the vaginal method.

Reimbursement and Cesarean Delivery without Indication

Doctors felt that service reimbursement was minimal during JKN implementation, one of them was the reimbursement of vaginal delivery services. The operational standards made by the Social Security Administrator for Health (BPJS Kesehatan) as the implementer of JKN did not match the actual conditions. A delivery that was planned vaginally would not get reimbursement if the realization was delivered with cesarean delivery. They had to spend a long time observing vaginal delivery, but this service would not receive reimbursement. They decided to make an adverse selection for this reason.

The hospital complained about several regulations made by BPJS Kesehatan. For example, the hospital avoided delivery induction for normal delivery and instead encouraged mothers to give birth by cesarean delivery method. The hospital did not get reimbursement from BPJS Kesehatan for the induction procedure that was given to the mother who ends up with cesarean delivery.

Delay in Referral and Increased Cesarean Delivery

Most of the cesarean delivery given to women during the implementation of JKN were cesarean delivery emergencies, women who were given cesarean delivery were already in a bad condition. This condition caused the risk of death to increase. Obstetric complications dominated the cause of death in both methods of delivery.

Obstetric complications were another factor contributing to the increasing proportion of cesarean deliveries. Less massive early detection and late referral were the main causes. Women came to the referral hospital in a severe condition so that cesarean delivery was required.

The referral system was strictly implemented during JKN implementation. Women must get services from primary health facilities first, then a referral will be made if there were indications. This regulation caused women to experience delays in getting services because they have to go through a long procedure. Complications would get worse due to delays in therapy. This can be prevented by carrying out massive high-risk early detection. If early detection was not carried out massively, the risk of late referral increased.

Communication problems between health workers in primary and secondary facilities were also a factor in the delay in referrals. Communication content was still a problem regarding reference indications, there was still a miss of communication between the two facilities regarding indications that the referral should be made. This problem caused the mother to go through a long and late referral procedure.

Repeat Cesarean Delivery

A large number of cesarean delivery history becomes a ticking time bomb at subsequent deliveries. If the first child was delivered by cesarean delivery, then subsequent deliveries were most likely cesarean delivery. This was because women who have a history of cesarean delivery indicate another cesarean delivery in their next pregnancy.

Reimbursement and Increased Death due to Uterine Rupture

The increase in vaginal deliveries in deaths caused by uterine rupture was due to the presence of midwives who helped women with a history of cesarean delivery. This condition was caused by various reasons. Women with a history

of cesarean delivery still entrusted their delivery to midwives rather than by doctors or hospitals, this was because of excessive fear of giving birth cesarean delivery was back. Service providers also contributed to this condition, especially regional midwives who helped. Regional midwives still forced themselves to give birth to mothers with a history of cesarean delivery. Reimbursement standards made not by real conditions. Services already provided in primary facilities would not get reimbursement if women were referred to secondary facilities. Likewise, for women with a history of cesarean delivery, primary facilities will not get reimbursement for services that have been provided if women are referred to as secondary facilities. This condition was an indication of fraud to continue giving actions to women who previously had a cesarean delivery.

DISCUSSION

An increase in the proportion of cesarean delivery during JKN occurred significantly in four Banyuwangi referral hospitals. Several factors caused an increase in the proportion of cesarean deliveries in these four referral hospitals. The adverse selection indication made by doctors and hospitals. The causes of this were that the cesarean delivery reimbursement during JKN did not match the real cost. This funding complaint was an indication of fraud by doctors and hospitals to make cesarean delivery decisions without action so that the proportion of cesarean delivery has increased. Financing problems have indeed become an indication for health workers and health facilities to carry out the adverse selection and moral hazard [11]. Payment affected health facilities in the decision-making process. Doctors as the main decision-maker in carrying out medical actions were the determinants of the services to be provided to patients, as well as cesarean surgery [12]. A study in China states that the number of unsuitable claims would be the cause of the increase in cesarean delivery. This was related to the perception built by doctors about the higher income received when giving cesarean delivery compared to vaginal deliveries. A vaginal delivery also required a longer observation time than a cesarean delivery [9]. High obstetric complications forced the hospital to perform cesarean delivery procedures. Most of the cesarean surgery during JKN at the four Banyuwangi referral hospitals were emergency cesarean. Women came to the hospital already in a bad condition, this condition forced the hospital to do cesarean surgery. Cesarean delivery tended to occur in women with complicated pregnancies, one of which was obstetric complications[13]. Women with pregnancy complications had a 1.12 times greater risk of delivering with cesarean delivery. Women with labour complications had a greater risk of cesarean delivery, they had a 6.63 times greater risk [7].

Delay in referral was a determinant of emergency cesarean delivery. The tiered referral standard that was too strict makes it difficult for women to make referrals. This condition was also a determinant of increasing mortality during the implementation of JKN. The delay in getting adequate action tends to give birth to the cesarean method, 33.1% of women with near-miss gave birth using the cesarean method [14]. The three delays theory also explained that delays in getting action could increase the risk of death[15]. Prevention of late referral was not optimal, especially in the early detection of high-risk pregnancies. Early detection can prevent obstetric complications, unqualified early detection will increase the risk of obstetric complications and lead to death [14,16.]

Repeat cesarean delivery was one of the causes of an increase in the proportion of cesarean deliveries during the implementation of JKN. The same conditions were found in different settings. One study stated that women who previously had a cesarean delivery had a greater risk of having a cesarean delivery in a subsequent pregnancy. Only one-third of women who previously had a cesarean delivery was allowed to have a vaginal delivery, only 63.3% had a successful vaginal delivery [17].

Indications of fraud also occurred in primary care, midwives in primary care provided delivery actions for women with previous cesarean delivery. This was why the proportion of vaginal deliveries among women who die from uterine rupture increased during JKN. American College of Obstetricians and Gynecologists made guideline that Vaginal Birth After Cesarean Delivery (VBAC) was allowed, but it must meet several condition[16]. The Indonesian Ministry of Health also established guidelines that women who previously had cesarean delivery should be referred to secondary health facilities [18]. Cesarean delivery must be accompanied by medical indications, delivery that was not accompanied by medical indications will hurt the mother. Some of

the risked that could be obtained from childbirth that was not accompanied by medical indications include maternal death, intensive care unit care, blood transfusions to hysterectomy[19]. Cesarean delivery also has an impact on the psychological disorders of both mother and baby, especially in emergency cesarean delivery. Women would experience trauma, anxiety, and even problems in giving breastfeeding to their baby [20].

CONCLUSIONS

During the implementation of JKN in four secondary referral hospitals in Banyuwangi, the proportion of cesarean deliveries increased significantly. The number of mothers with a history of cesarean delivery and delays in referrals that result in complications suggests a medical indication for the number of cesarean deliveries during JKN. However, there are some indications of moral hazard and adverse selection due to the BPJS policy. Inappropriate reimbursement of health care costs is one indication of this. As the JKN policy's implementer, BPJS Kesehatan must review the standards established, one of which is the system and amount of reimbursement. Banyuwangi District's local government must also improve health services, particularly early detection of high-risk pregnant women. As a result, referral delays can be reduced and complications avoided.

REFERENCES

1. World Health Organization. WHO Statement on Cesarean Section Rates. World Health Organization;2015 https://apps.who.int/iris/bitstream/handle/10665/161442/WHO_RHR_15.02_eng.pdf?sequence=1
2. Mascarello KC, Horta BL, Silveira MF. Maternal complications and cesarean section without indication: systematic review and meta-analysis. Rev Saude Publica. 2017;51:105.
3. Esteves-Pereira AP, Deneux-Tharaux C, Nakamura-Pereira M, Saucedo M, Bouvier-Colle MH, Do Carmo Leal M. Cesarean delivery and postpartum maternal mortality: A population-based case control study in Brazil. PLoS One. 2016;11(4):1–13.
4. Nababan HY, Hasan M, Marthias T, et al,. Trends and inequities in use of maternal health care services in Indonesia, 1986–2012. Int J Womens Health. 2018;10:11–24.
5. Kemenkes RI. Laporan Nasional mRiskesdas 2018 [Internet]. Badan Penelitian dan Pengembangan Kesehatan. Jakarta; 2019. https://www.litbang.kemkes.go.id/laporan-riset-kesehatan-dasar-riskesdas/
6. Hoxha I, Syrogiannouli L, Braha M, et al,. Cesarean sections and private insurance: Systematic review and meta-analysis. BMJ Open. 2017;7(8):1–10.
7. Sihombing N, Saptarini I, Sisca D, Putri K. The Determinants of Sectio Caesarea Labor in Indonesia (Futher Analysis of Riskesdas 2013). J Kes Reprod. 2017;8(1):63–75.
8. Begum T, Rahman A, Nababan H, Emdadul Hoque DM, Khan AF, Ali T, et al. Indications and determinants of cesarean section delivery: Evidence from a population-based study in Matlab, Bangladesh. PLoS One. 2017;12(11):1–16.
9. Zhang Y, Betran AP, Li X, et al. What is an appropriate cesarean delivery rate for China: a multicentre survey. BJOG An Int J Obstet Gynaecol. 2022;129(1):138–47.
10. Banyuwangi District Health Office. Banyuwangi District Health Profile 2016. Banyuwangi District Health Office. Banyuwangi: Banyuwangi District Health Office. 2017: 1–91.
11. Palas JU, Ashraf M, Ray PK. Financing Universal Health Coverage: A Systematic Review. Int Technol Manag Rev. 2017;6(4):133–48.
12. Binyaruka P, Mori AT. Economic consequences of cesarean section delivery : evidence from a household survey in Tanzania. BMC Health Serv Res. 2021;21:1–11. ttps://doi.org/10.1186/s12913-021-07386-0
13. Kallianidis AF, Schutte JM, van Roosmalen J, van den Akker T. Maternal mortality after cesarean section in the Netherlands. Eur J Obstet Gynecol Reprod Biol. 2018;229:148–52.
14. Baharuddin M, Amelia D, Suhowatsky S, Kusuma A, Suhargono MH, Eng B. Maternal death reviews: A retrospective case series of 90 hospital-based maternal deaths in 11 hospitals in Indonesia. Int J Gynecol Obstet. 2019;144:59–64.
15. Shah B, Krishnan N, Kodish SR, Yenokyan G, Fatema K, Uddin KB, et al. Applying the Three Delays Model to understand emergency care seeking and delivery in rural Bangladesh : a qualitative study. BMJ Open. 2020;10.
16. American College of Obstetricians and Gynecologists. Clinical Management Guidelines for Obstetrician – Gynecologists. 2017;130: 184.
17. Heemelaar S, Nelissen E, Mdoe P, Kidanto H, van Roosmalen J, Stekelenburg J. Criteria-based audit of cesarean section in a referral hospital in rural Tanzania. Trop Med Int Heal. 2016;21(4):525–34.
18. Regulation Of The Minister Of Health Republic Indonesia. Health Service Standard Rate In The Implementaion Health Assurance Program 59 Indonesia. 2014. http://www.djsn.go.id/storage/app/uploads/public/58c/289/ae5/58c289ae56557376336337.pdf
19. Betran AP, Torloni MR, Zhang JJ, Gülmezoglu AM. WHO statement on cesarean section rates. BJOG An Int J Obstet Gynaecol. 2016;123(5):667–70.
20. Benton M, Salter A, Tape N, Wilkinson C, Turnbull D. Women's psychosocial outcomes following an emergency cesarean section: A systematic literature review. BMC Pregnancy Childbirth. 2019;19(1).