

A Validation Study of Women's Report and Recall of Major Complications Treated at Lampung Province, Indonesia

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Abstract— Background: The main causes of maternal mortality are thought to include hemorrhage, sepsis, obstructed labor, and hypertensive disease of pregnancy. For many years, demographic and health surveys have been used to study maternal and perinatal health in developing countries. However few nationwide population surveys have used formally validated questionnaires. **Objectives:** the purpose of this study was to determine the validity of maternal self reported of obstetrical complication **Methods:** a cross-sectional study was conducted among 300 women at Two Hospitals and one public health center, a questionnaire recorded mother's perception of obstetrical complications while hospital medical record. Sensitivity, specificity, predictive values and percent agreement were obtained for obstetrical condition. **Result:** In general, women's report of obstetrical complications did not match medical diagnosed. The highest agreement was obtained for reporting eclampsia, with less agreement for post partum haemorrhage **Conclusion:** The validity of the surveys questionnaires varies between studies due to differences in the questionnaire. Health surveys based on maternal self report must be interpreted with consideration of this limitation.

Keywords: Women self-reported; Near Miss; Obstetric Complication; Demographic Health Survey; Epidemiology.

INTRODUCTION

Maternal mortality rate in Indonesia is still high in the amount of 359/100.000 live birth or is the main health problem in the community. The decrease of maternal and neonatal death becomes the health indicator not only the mother and the kids, but also the community and the sign of strong or weak of health system of a country. The slow decrease of maternal and neonatal death makes maternal and neonatal death as the global issue (WHO, 2018a).

Obstetric complication on pregnant women and women in labor is the complex problem because the complication itself can cause death directly on the pregnant women or women in labor. In Nigeria, there are 50.000 women die every year because of pregnancy complication and labor (Daniel, *et. al.*, 2012), in Nepal there are 4.500 women die every year with the same cause (Hibstu *et. al.*, 2017). In the amount of 25% of mother's death occur during the first 24 hours since the labor and 50% death occurs in one week after the labor, both cases are caused by pregnancy complication (Kabakyenga, 2011). The same thing occurs in Nairobi, the main cause of the mother's death is pregnancy and labor complication such as abortion, haemorrhage, sepsis, eclampsia, and uterine rupture (Mbalinda, 2014).

The mother's statement about her perception and experience on obstetric complication experienced is the most frequent data used by most epidemiology research. Collecting the data in the form of the mother's report (self reported) is the most general technique of data collection used by the researcher because it is the most effective and the cheapest way compared to reviewing the mother's medical record.

Beside that, collecting the data of mother's perception makes the researcher capable of simultaneously collect other data that are not obtained in the mother's medical record such as the information about her life style. Even though the data of the mother's perception about the labor experience with obstetric complication are frequently used but the validity of these data are rarely confirmed.

Erdene et. al. (2013) who investigate about the validity of mother's perception in Canada concerning the labor experience towards the electronic medical record wrote that in Canada, the mother's perception about their labor experience is not validated on their medical record. Likewise in Indonesia, in most survey based research, the researcher only counted on the report of the mother's perception concerning their labor experience and rarely validated by their medical record.

The Objective of the study The main goal of this study was to validate interview data on obstetric complications by comparing women's reporting with data obtained from their medical records.

Methods

This research was a longitudinal survey with cross-sectional design which is the part of observational study, namely dependent variable and independent variable were collected at the same time. The research location was at two hospitals namely RSUD Abdoel Moeloek and RSUD A. Dadi Tjokrodipo and one community health center namely Kotakarang Community Health Center in October 2019 until done. RSUD Abdoel Moeloek is type A hospital residing in Bandar Lampung City which becomes the highest reference in Lampung Province for the case of obstetric complication. While RSUD A. Dadi Tjokrodipo is a hospital owned by municipality government of Bandar Lampung and it is type C hospital, also becomes the reference for obstetric complication case in Bandar Lampung City and Kotakarang Community Health Center is an inpatient community health center in Bandar Lampung and also accepts normal parturition patients. In the amount of 300 mothers with details of 75 mothers deliver with pre-eclampsia or eclampsia, 75 mothers with post partum haemorrhagic, and 75 mothers with dystosia, and 75 mothers of normal delivery without obstetric complication. These 300 mothers were asked by using arranged questionnaires. Their Spontaneous answers and probing answers were differentiated. The yes answer in Spontaneous answer will automatically include yes in the probing ones.

Statistical Analyses: Comparison were made in the sensitivity, specificity, positive predictive value (PPV), and percent agreement for responses to each question. Sensitivity refers to percentage of women with a diagnosed complication who correctly reported they had a given complication. Specificity refers to the percentage of women without a diagnosed complication who correctly reported they did not have a given complication. Positive predictive value refers to the percentage of women reporting they had a complication who were in fact diagnosed with that complication. Percent agreement refers to the percentage of responses in which mothers self reports corresponded to the clinical diagnosis.

Results

Out of 300 mothers in labor, 75 mothers are with pre eclampsia and eclampsia, 75 mothers are with post partum haemorrhagic, 75 mothers are with dystocia and 75 mothers delivering without complication, then it can be concluded as follows:

1. The values of Sensitivity, Specificity, Positive Predictive Value (PPV), Negative Predictive Value (NPV), Accuracy and Kappa in group of Mothers with PEB

No	Question Item	Spontaneous		Total		Probing		Total	
		PEB	Normal			PEB	Normal		
1	A moment before the labor or during the labor, did you feel pain in the epigastrium? Yes No	17 (77,3) 58 (45,3)	5 (22,7) 70 (54,7)	22 (100) 128 (100)	Sensitivity :23% Specificity : 93% PPV: 77% NPP: 54% Accuracy: 58% Kappa: 0,16	23 (82,1) 52 (42,6)	5 (17,9) 70 (57,4)	28 (100) 120 (100)	Sensitivity :31% Specificity : 93% PPV: 82% NPP: 58% Accuracy: 62% Kappa:0,24
2	During this pregnancy or a moment before the labor, did you feel headache? Yes No	53 (96,3) 22 (23,2)	2 (3,6) 73 (76,9)	55 (100) 95 (100)	Sensitivity :71% Specificity : 97% PPV: 96% NPP: 77% Accuracy: 84% Kappa: 0,68	56 (93,3) 19 (21,1)	4 (6,7) 71 (78,9)	60 (100) 90 (100)	Sensitivity :75% Specificity : 95% PPV: 93% NPP: 79% Accuracy: 84% Kappa: 0,70
3	During this pregnancy or a moment before the labor, did you feel that your eyes sight is blur? Yes No	22 (84,6) 53 (42,7)	4 (15,4) 71 (57,3)	26 (100) 124 (100)	Sensitivity :29% Specificity : 95% PPV: 85% NPP: 57% Accuracy: 62% Kappa: 0,24	28 (84) 47(40,2)	5 (15,2) 70 (59,9)	33 (100) 117 (100)	Sensitivity :37% Specificity : 93% PPV: 85% NPP: 59% Accuracy: 65% Kappa: 0,31
4	Did you ever suffer cramp (beside epilepsy) during the pregnancy? Yes No	59 (95,1) 16 (18,2)	3 (4,9) 72 (81,9)	62 (100) 88 (100)	Sensitivity :78% Specificity : 96% PPV: 95% NPP: 82% Accuracy: 87% Kappa: 0,75	64 (94,1) 11 (13,4)	4 (5,9) 71 (86,6)	68 (100) 82 (100)	Sensitivity :85% Specificity : 95% PPV: 94% NPP: 87% Accuracy: 90% Kappa: 0,80

5	Did you ever suffer cramp (beside epilepsy) during the labor process? Yes No	63 (97) 12 (14,1)	2 (3,1) 73 (85,9)	65 (100) 85 (100)	Sensitivity :84% Specificity : 97% PPV: 97% NPP: 86% Accuracy: 91% Kappa: 0,82	70 (95) 5(6,5)	3 (4,1) 72 (93,5)	73 (100) 77 (100)	Sensitivity :93% Specificity : 96% PPV:96% NPP: 92% Accuracy: 94% Kappa: 0,90
6	Was during the pregnancy or a moment before the labor your blood pressure is high? Yes No	62 (93) 13 (15,5)	4 (6,1) 71 (84,5)	66 (100) 84 (100)	Sensitivity :83% Specificity : 94% PPV: 94% NPP: 85% Accuracy: 88% Kappa: 0,78	68 (93,1) 7 (9,0)	5 (6,9) 70 (90)	73 (100) 77 (100)	Sensitivity :91% Specificity : 93% PPV: 93% NPP: 90% Accuracy: 92% Kappa : 0,84
7	Did the result of laboratory examination on your urine show that there is protein in it? Yes No	66 (94) 9 (11,3)	4 (5,7) 71(88,8)	70 (100) 80 (100)	Sensitivity :88% Specificity : 95% PPV: 94% NPP: 88% Accuracy: 91% Kappa: 0,83	72 (93,5) 3 (4,1)	5 (6,5) 70 (95,9)	77 (100) 73 (100)	Sensitivity :96% Specificity : 93% PPV: 94% NPP: 95% Accuracy: 95% Kappa: 0,90

In table 1 seen that the value of Sensitivity is low (29% and probing 37%), there is a question “During this pregnancy or a moment before the labor, did you feel your eyes sight is blur?” this question item is not sensitive because the mother will be difficult in remembering if during their pregnancy or during the labor their eyes sight got blur. Most of the mothers close their eyes when they pushing even though the midwife will remind them to keep their eyes open when they push.

The sensitivity value is also small (23% and probing 31%) in the question item “A mong before the labor or during the labor, did you feel pain in your epigastrium?”. This question is also not sensitive because in general the labor mother will feel pain in all their stomach and not only in epigastrium, but also in the waist and back also feeling the pain.

The kappa value in both of these questions are also small namely 0,16 and 0,24. The value of sensitivity, Specificity, PPV, NPV, and Kappa in the other question item have high value.

Table 2. The Value of Sensitivity, Specificity, Positive Predictive Value (PPV), Negative Predictive Value (NPV), Accuracy, and Kappa in the group of Mothers with haemorrhage

No	The Question Item	Spontaneous		Total		Probing		Total	
		PEB	Normal			PEB	Normal		
1	Did you feel that you experience so much haemorrhage? Yes No	21 (77,8) 54 (43,9)	56 (22,2) 69 (56,1)	27 (100) 123 (100)	Sensitivity :28% Specificity : 92% PPV: 78% NPP: 56% Accuracy: 60% Kappa: 0,20	29 (76,3) 46 (41,1)	9 (23,7) 66 (58,9)	38 (100) 112 (100)	Sensitivity :39% Specificity : 88% PPV: 76% NPP: 59% Accuracy: 63% Kappa
2	Did you experience haemorrhage that keep flowing? Yes No	62 (95,4) 13 (15,3)	3(4,7) 72 (84,7)	65 (100) 85 (100)	Sensitivity :83% Specificity : 96% PPV: 95% NPP: 85% Accuracy: 89% Kappa: 0,79	67 (89,3) 8 (10,7)	8 (10,7) 67 (89,3)	75 (100) 75 (100)	Sensitivity :89% Specificity : 89% PPV: 89% NPP: 89% Accuracy: 89% Kappa: 0,79
3	Did you experience pouring out haemorrhage? Yes No	60 (92,3) 15 (17,6)	5 (7,7) 70 (82,4)	65 (100) 85 (100)	Sensitivity :80% Specificity : 93% PPV: 92% NPP: 82% Accuracy: 86% Kappa: 0,74	66 (92,9) 9 (11,4)	5 (7,1) 70 (88,6)	71 (100) 79 (100)	Sensitivity :88% Specificity : 93% PPV: 93% NPP: 88% Accuracy: 91% Kappa: 0,82
4	Did you feel like releasing so much blood clots after the labor? Yes No	61 (91,1) 14(16,9)	6 (8,9) 69 (83,1)	67 (100) 83 (100)	Sensitivity :81% Specificity : 92% PPV: 91% NPP: 83% Accuracy: 87% Kappa: 0,73	69 (90,8) 6 (8,1)	7(9,2) 68 (91,9)	76(100) 74 (100)	Sensitivity :92% Specificity : 91% PPV: 91% NPP: 91% Accuracy: 91% Kappa: 0,84
5	Did the midwife or the medical health seem panic and said to you that you experience haemorrhage? Yes	67 (93,1) 8 (10,3)	5 (7) 70 (89,8)	72 (100) 78 (100)	Sensitivity :89% Specificity : 93% PPV:93% NPP: 89% Accuracy: 91%	72 (90) 3 (4,3)	8 (10) 67 (95,7)	80 (100) 70 (100)	Sensitivity :96% Specificity : 89% PPV: 90% NPP: 96% Accuracy: 93%

	No				Kappa: 0,83				Kappa: 0,85
6	Did during the labor you release so much blood until you feel that you will die that time? Yes No	52 (86,7) 23 (25,6)	8 (13,3) 67 (74,5)	60 (100) 90 (100)	Sensitivity :69% Specificity :89% PPV:86% NPP: 74% Accuracy: 79% Kappa: 0,59	71 (89,9) 4 (5,7)	8 (10,1) 67 (94,4)	79 (100) 71 (100)	Sensitivity :94% Specificity : 89% PPV: 91% NPP: 94% Accuracy: 92% Kappa: 0,84

In table 2 seen the lowest value of Sensitivity is obtained at question “Did you feel experiencing much haemorrhage?” this occurs because the mother who delivers the baby feels that in the labor they must release much blood, until they do not feel that releasing much blood is something dangerous for them.

Table 3. The Values of Sensitivity, Specificity, Positive Predictive Value (PPV), Negative Predictive Value (NPV), Accuracy and Kappa on the group of Mothers with Dystocia

No	Question Item	Spontaneous		Total		Probing		Total	
		PEB	Normal			PEB	Normal		
1	Was your labor more than 24 hours? Yes No	68 (94,4) 7 (8,9)	4 (5,6) 71 (91)	72 (100) 78 (100)	Sensitivity :91% Specificity : 94% PPV: 91% NPP: 91% Accuracy: 93% Kappa: 0,85	74 (92,5) 1 (1,4)	6 (7,5) 69 (98,6)	80 (100) 70 (100)	Sensitivity :98% Specificity : 92% PPV: 92% NPP: 98% Accuracy: 95% Kappa: 0,91
2	Was your labor time one day one night or more than that? Yes No	61 (96,8) 14 (16,1)	2 (3,2) 73 (83,9)	63 (100) 87 (100)	Sensitivity :81% Specificity : 97% PPV: 96% NPP: 84% Accuracy: 89% Kappa: 0,79	70 (94,6) 5 (6,6)	4 (5,4) 71 (93,4)	74 (100) 76 (100)	Sensitivity :94% Specificity : 95% PPV:95% NPP: 93% Accuracy: 94% Kappa: 0,89
3	Did you deliver the baby with breech position? Yes No	48 (94,1) 27(27,3)	3 (5,9) 72 (72,7)	51 (100) 99 (100)	Sensitivity :64% Specificity : 96% PPV: 94% NPP: 73% Accuracy: 80%	65 (94,2) 10 (12,3)	4 (5,8) 71 (87,6)	69 (100) 81 (100)	Sensitivity :86% Specificity : 95 PPV:94% NPP: 88% Accuracy: 91%



					Kappa: 0,60				Kappa: 0,82
4	Did your labor take much time until the labor process was assisted with vacuum or “aspirated” or using “pliers”? Yes No	12 (80) 63 (46,7)	3 (20) 72 (53,3)	15 (100) 135 (100)	Sensitivity :16% Specificity : 96% PPV: 80% NPP: 53% Accuracy: 56% Kappa: 0,21	52 (92,9) 23 (24,5)	4 (7,2) 71 (75,5)	56 (100) 94 (100)	Sensitivity :69% Specificity : 95% PPV: 92% NPP: 76% Accuracy: 82% Kappa: 0,65
5	Did your labor take much time and there was no aperture until caesar surgery must be done? Yes No	62 (95,4) 13 (15,3)	3 (4,7) 72 (84,8)	65 (100) 85(100)	Sensitivity :82% Specificity : 96% PPV: 95% NPP: 85% Accuracy: 89% Kappa: 0,79	73 (92,4) 2 (2,8)	6 (7,6) 69 (97,2)	79 (100) 71 (100)	Sensitivity :97% Specificity :92% PPV: 92% NPP: 97% Accuracy: 95% Kappa: 0,90
6	Did your heartburn feeling take one day one night and the baby had no intention to force you pushing? Yes No	66 (95,7) 9 (11,1)	3 (4,4) 72 (88,9)	69 (100) 81 (100)	Sensitivity :88% Specificity : 96% PPV: 95% NPP: 89% Accuracy: 56% Kappa: 0,79	73 (93,6) 2 (2,8)	5 (6,4) 70 (97,2)	78 (100) 72 (100)	Sensitivity :97% Specificity : 93% PPV: 93% NPP:97% Accuracy: 95% Kappa: 0,90

In table 2 seen the value of low Sensitivity is 16% in question item “Did your labor take much time until the labor process must be assisted by using vacuum or “aspirated” or using “pliers”?”

This question is not sensitive during the Mother’s spontaneous answer because recently the treatment using vacuum and forcep is rarely found, but when probing or read, the sensitivity increases to 69%.

While the highest sensitivity value is 88% in question item “Was your labor more than 24 hours?” this proves that the labor mother with dystocia because of long parturition will strongly remember that they had endured pain or heartburn for 24 hours, but the baby was not born yet.

Discussion

Results of this study suggest that women are able to report accurately on multiple aspects of care received during the postnatal period. In this research the highest Sensitivity value is obtained in the mother with long parturition (dystocia). The highest Sensitivity value is 88% obtained in question item “Was your labor time more than 24 hours?” this proves that the labor women with dystocia because of long parturition will strongly remember that they had endured pain or heartburn for 24 hours but they baby was not born yet.

This research proves that in a couple of things, the perception of mother did not same with the medical diagnosis enforced by the doctor at the hospital.

The average perception of mothers in the group of dystocia obstetric complication has the highest accuracy compared to the haemorrhage group, Pre eclampsia and eclampsia, and normal.

This research can inform the factor which plays roles on the women who experience obstetric complication. The problem solution of the complication service in certain area considers the factors of result findings from this research that play roles during the survey research until revealing the true occurrence in order to do precise treatment or implication.

For the ministry of health and Public Health Office of Lampung Province, through the findings on the validity of mother's perception concerning obstetric complication, expected to be the valuable feedback in the program plan and program intervention and guide the strategy in improving the access and quality of maternal health service. The information about accuracy level of perception towards obstetric complication is namely haemorrhage, pre eclampsia/eclampsia, and dystocia owning influence towards the mother's perception on the importance of the effort fo search for help, if the mother's perception about obstetric complication is not accurate, then it will slow down to obtain help.

For the survey about the cause of mother's death will give different description about the prevalence of the obstetric complication, until it can influence the priority of the management program. To the community about the validity of the mother's experience report about obstetric complication, compared to the medical diagnosis, and giving information to the community that pregnancy and labor have risk of complication, until it is necessary to do regular pregnancy check, following the class of pregnant women to know the treatment and sign of pregnancy and labor complication, doing labor at the health facility and if owning risk factor, do the labor at the hospital. And a week after the labor, do post labor check at the health facility. **Conclusion** In this research the highest Sensitivity value is obtained in the mother with long parturition. This research proves that in a couple of things, the perception of mother did not same with the medical diagnosis enforced by the doctor at the hospital.

The average perception of mothers in the group of Pre eclampsia and eclampsia obstetric complication has the highest accuracy compared to the haemorrhage group, dystocia, and normal. The validity of the surveys questionnaires varies between studies due to differences in the questionnaire. Health surveys based on maternal self report must be interpreted with consideration of this limitation.

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Appendixes:

Research Variables of Obstetric Complication

- Pre eclampsia or eclampsia

No.	Question	Spontaneous Answer	Probing Answer (read)
1.	A moment before the labor or during the labor, did you feel pain in the epigastrium?	Yes /No	Yes /No



2.	During this pregnancy or a moment before the labor, did you feel headache?	Yes /No	Yes /No
3.	During this pregnancy or a moment before the labor, did you feel your eyes sight blur?	Yes /No	Yes /No
4.	Did you ever suffer cramp (beside epilepsy) during pregnancy?	Yes /No	Yes /No
5.	Did you ever suffer cramp (beside epilepsy) during the labor process?	Yes /No	Yes /No
6.	Was during pregnancy or a moment before the labor your blood pressure is high? (150 or more)	Yes /No	Yes /No
7.	Was the result of laboratory check on your urine shows there is protein in it?	Yes /No	Yes /No

- Haemorrhage

1	Did you feel that you experience so much haemorrhage?	Yes /No	Yes /No
2	Did you experience haemorrhage which keeps flowing?	Yes /No	Yes /No
	Did you experience pouring out haemorrhage?	Yes /No	Yes /No
4.	Did you release many blod clots after the labor?	Yes /No	Yes /No

5.	Did the midwife or medical staff seem panic and say that you experience haemorrhage?	Yes /No	Yes /No
6.	Did during the labor you release so much blood until you feel that you will die?	Yes /No	Yes /No

- Dystocia

1.	Was your labor time more than 24 hours?	Yes /No	Yes /No
2.	Was your labor time one day one night or more?	Yes /No	Yes /No
3.	Did you deliver the baby in breech position?	Yes /No	Yes /No
4.	Did your labor take long time until the labor process was assisted with vacuum tool or “aspirated” or using “pliers”?	Yes /No	Yes /No
5.	Did your labor take long time and there was no “aperture” until must be done caesar surgery?	Yes /No	Yes /No

6.	Was your heartburn more than one day one night and the baby still does not trigger you to do pushing?	Yes /No	Yes /No



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