CHAPTER V

DISCUSSION CONCLUSION AND SUGGESTION

This research, "Risk Factors Associated with Birth Asphyxia in Newborn at Maharaj Nakhon Si Thammarat" aims to elucidate the association of all possible risk factors mainly causing birth asphyxia in newborn, which include maternal factor, fetal factor, intrapartum factor, maternal care service, and antenatal care service provided factor.

Data are obtained through the survey and the interview designed to cover all research objectives. The data gathered is categorized into six parts which consist of personal data of the expectant mothers, maternal factor data, fetal factor data, intrapartum factor data, maternity care service received factor data and antenatal care service provided factor data.

The content validity of the survey and the interview had been verified by a group of five experts. The case control sample group of 792 expectant mothers resulting in live births can be classified into two groups. 264 expectant mothers giving birth with asphyxiated newborns were in the study group whereas 528 expectant mothers giving births with non-asphyxiated newborns were in the control group. Thus the ratio of case to control study was 1 to 2

Besides the survey and interview, data has been reviewed from the delivery records at the delivery room additionally. Thereafter, data was analyzed using SPSS for Windows. The independent variables include the education, occupation, Income, the maternal age, number of parity, disease and complications of pregnancy, gestational age, aspects of amniotic fluid, fetal presentation, birth weight, first stage of delivery, second stage of delivery, narcotic drug intake, oxytocin induction, time of birth, antenatal care service, maternal care training for pregnant women and family/spouses, delivery service, neonatal care and referral system.

Dependent variable refers to the incidence of birth asphyxia. The variety of statistics has been used thorough this research. Frequency and percentage is firstly used to analyze the association of the maternal factor, fetal factor, intrapartum factor and maternal care service-received factor with the risk of birth asphyxia. Chi-square test with a P-value at 0.05 was considered statistically significant. It is used to compute the degree of association of the risk factors with birth asphyxia in newborn, which consist of maternal factor data, fetal factor data, intrapartum factor data and maternity care service received factor data. Next, logistic regression is used to compute the odds ratio. For the antenatal care service provided factor, which includes antenatal care service, maternal care training for pregnant women and family or spouses, delivery service, neonatal care and referral system, we lastly used the descriptive statistics to analyze.

1. Discussion

A significant finding of the study can be summarized as following: **Maternal Personal factor**

This finding shows that maternal personal factor includes education level and occupation with birth asphyxia whereas the income was not associated.

Education level The result indicate that the expectant mothers resulting in asphyxiated newborns possess cerficated in high school, primary school and uneducated. It also indicate that the expectant mothers resulting non asphyxiated newborns are uneducated, primary school and high school. This study shows that the pregnant women with low education level the Chan to give birth resulting in asphyxia newborn 1.5 time of those whose Bachelor degree or higher Diploma or equivalence. Which caused the incorrect practice during pregnancy, the cause can not be determined clearly. However. it is finding in the study.

Occupation The expectant mothers resulting in asphyxiated newborns and expectant mother resulting in non-asphyxiated are hourwive, student and employee. Occupation of pregnant women and spouses with refer to the study in UK, it shows that the pregnant women who have no occupation or lack of support from family or being separated from their spouse, these may put her at increased risk of postnatal depression or giving birth resulting in asphyxiated newborn. It is because they are more likely to have a premature delivery and intrauterine growth retardation than a normal pregnancy. Widhaya et al (1997).

Income The estimate income of expectant mothers in both asphyxiated newborns and non asphyxiated newborns between 0 – 6,000 bath/month. This study found that the income is not associated with birth asphyxia in newborn. Economic status is the indicator to assess the nutrition and well being of pregnant women. Widhaya et al (1997).The reason why this study does not show the association between the income and birth asphyxia could will be the same population have the income. This can cause decreased of birth asphyxia.

2. Maternal Factor

The age of the expectant mother factor was associated with birth asphyxia whereas the number of parity is not associated. This can be discussed as following:

Maternal age : It is found that the age of expectant mother factor is associated with birth asphyxia statistically significant ($p < .05$). The result indicates the largest group of mothers with asphyxiated newborn is between 20-25 years old being 61.0%, second largest group are those 35 years and greater at 25.8% and the smallest group at 13.3% on youngest mother 20 years old or lower. Similar result is found in mothers with non-asphyxiated newborn, which the largest group being 20-25 years old at 67.8%. The second largest group are those 35 years old and greater being 15.2%. The smallest group is found in youngest mother with age between 20 years old and lower at 17.0%. Mother older than 35 years old have a greater risk of giving births resulting in asphyxiated newborns due to preterm delivery, toxemia of pregnancy and fetal anomalies. Moreover, the risk of the complications of pregnancy is higher for this group of mother, for example, hypertensive disorder or diabetes) Widhaya et al., 1997) The result of this study is consistent with the

previous study of Praput et al (1992). The previous study confirms that high maternal age is a risk factor of the incidence of birth asphyxia in newborn. Sudacha (2000) also studies the risk factor of birth asphyxia in newborn at Patumthani hospital with two groups of expectant mothers, that is, young maternal age less than 18 years and high maternal age older than 35 years. The result of her study also strongly supports that maternal age is the risk factor of birth asphyxia in newborn. Moreover, Wanna (2001) has also studied in the risk factor of birth asphyxia in newborn at Trang hospital. The result of her study found that mother at 40 year or more have a greater risk of birth asphyxia.

Number of Parity : In this study the number of parity was not associated with birth asphyxia. At first delivery, the proportion of expectant mothers giving births was 49.6 % for resulting in asphyxiated newborn and 48.3% for resulting in non-asphyxiated newborn. For the multiparity (2-4), there were 48.9% of expectant mothers giving births resulting in asphyxiated newborn compared to 48.1% of mothers giving births resulting in non-asphyxiated newborn. In category of grand multiparity (>5), the incidence of birth asphyxia was considered slightly, only 1.5% of mothers giving births resulting in asphyxiated newborns whereas 3.6% resulting in non-asphyxiated newborns. This finding is consistent with the study of Dilok (2000). By contrast, it is inconsistent with the study of Santhit (1999). It is found in his study that the number of parity associated with birth asphyxia in newborn. Mothers who previously gave birth will be at a decreased risk of birth asphyxia compared to the nulliparous mother, implying that they can keep the gestation until delivery. On the other hand, the nulliparous women may experience a number of problems during their pregnancy. Such problems include cephalo pelvic disproportion, prolonged delivery, and other complications of pregnancy.

The reason why this finding is not consistent with the study of Santhit (1999) can be that the most of sample population more frequently received the antenatal care for essential diagnosis of the complications arising during pregnancy, which appears harmful to both mother and fetal survival/health. (Warawut, 1990) Antenatal visit is recognized as a regular check-up during pregnancy and complications monitoring tool for mother and fetal health.)Wanna, 2001) A regular antenatal visit with high quality and standard will help diagnose the complications arising in pregnancy more accurately and detect them earliest. Further, it will help prepare the delivery appropriately prior to the intraparturm period, which can reduce the incidence of birth asphyxia in newborn. Teera (2002) indicates that antenatal care is a vital factor in identifying / recognizing the complications arising in pregnancy which affect the mother and infant health

In addition, the maternity care in the intrapartum period with partogram used will help monitor the progress of delivery and diagnose the abnormalities more quickly. By doing this, the mothers will be resuscitated quickly and help reducing the incidence of birth asphyxia in newborns) Withoon et al, 1999).

Disease or complications during pregnancy: This finding appears that the disease or complications arising during pregnancy not related to the incidence of birth asphyxia. The percentages of expectant mothers with asphyxiated and non-asphyxiated newborns were 75. 8% and 74.6% do not have any disease or complications during pregnancy respectively. The percentage of those two groups of expectant mothers with disease or complication during pregnancy are 24.2 % and 25.4% respectively.

The expectant mothers with disease or complications arising during pregnancy such as antepartum haemorrhage due to placenta previa, premature rupture of membrane and multiple pregnancies will be at increased risk of resulting in an adverse outcome of pregnancy. These complications will cause an adverse effect to the fetus, for example, fetal growth retardation, perinatal mortality. Multiple pregnancy can cause a higher perinatal mortality rate, which is 2.3 fold of normal pregnancy. The most common causes of a higher perinatal mortality rate include preterm delivery, placenta previa, intrauterine growth retardation, prolapsed umbilical cord, placental abruption Widhaya (2001). Cunningh et al (2001) also state that pregnancy induced hypertension will put a higher risk to mother to experience the fetal growth restriction, placental abruption, preterm delivery and stillbirths as the blood flow to placenta will be reduced and result in fetal asphyxia. On the contrary, the study of birth asphyxia in newborn at Maharat Nakhon Si Thammarat conducted by Dilok (2000) illustrated that birth asphyxia was not present in the newborn that was given by mothers with pregnancy induced hypertension.

The finding of this study is inconsistent with the study of risk factor of birth asphyxia in newborn at Trang hospital conducted by Wanna (2001). Wanna concludes that complications of pregnancy are associated with birth asphyxia in newborn, in particular, the newborn who was given by complicated mothers will have a greater risk of birth asphyxia compared to those who was not. Likewise, the finding of Sarawut's study supports that a complication of pregnancy is a risk factor associated with birth asphyxia in newborn.

The reason why this study does not show the association between disease or complications factor and birth asphyxia could well be that the sample population have the continous/frequent antenatal care appointment with obstetrician. This can cause a decreased risk of birth asphyxia)Wanna, 2001; Widhaya, 2001).

3. Fetal Factor

The finding shows that the fetal factor which include gestational age, fetal presentation and birth weight are associated with birth asphyxia whereas the aspect of amniotic fluid is not. This can be discussed as following:

Gestational age : The finding shows that the gestational age associated with birth asphyxia in newborns statistically significant)p< .05). In the category of 32-42 weeks gestation, there are 62.5% of mothers gave birth with asphyxiated infants and 83.3% of mothers gave births with non-asphyxiated infants. For the group of 28-36 weeks gestation, there are 36.4% of mothers gave birth with asphyxiated infants and 15.5% of mothers gave births with non-asphyxiated infants. Lastly, for the group of those more than 46 weeks gestation, there are 1.1% of mothers gave birth with asphyxiated infants and 1.1% of mothers gave births with non-asphyxiated infants.

The mothers with 28-36 weeks gestation and more than 42 weeks gestation are more likely at risk of birth asphyxia at 2.1 fold of those with 37-42 weeks gestation. This finding is consistent to the study of Sarawut Tangsrisakul (2001). He states that the gestational age is associated with birth asphyxia in newborn. The mothers with 37 weeks gestation or more gave births with asphyxiated newborn more than those less than 37 weeks gestation which is inconsistent with other studies. For example, the study of Mac Donald, et al referred in Sarawut (2001) found that the newborn who was given birth by mother with less 37 weeks gestation will have more increased risk of the presence of birth asphyxia 3.7 times of those whose mother have more than 37 weeks gestation.

Aspect of Amniotic fluid: In this study a aspects of amniotic fluid were not associated with birth asphyxia. The normal amniotic fluid was mostly found in the both group of mother resulting in asphyxiated newborn (75.8%) and non-asphyxiated newborn (79.6%). The second largest group goes to those with mild meconium stain at 12.8 % for asphyxiated newborn and 10.5% for non-asphyxiated newborn. Lastly, the smallest group goes to those having thick meconium stain amniotic fluid at 11.4% for asphyxiated newborn and 9.8% for non-asphyxiated newborn respectively. This finding is inconsistent with the study of Lawan (2002) which concluded that meconium stained amniotic fluid factor is associated with birth asphyxia in newborn. In addition, having meconium stain amniotic fluid can cause birth asphyxia 3.28 fold of clear amniotic fluid.

The finding illustrates that aspect of amniotic fluid is not associated with birth asphyxia. It shows in such way due to the close monitoring in newborn heart rate by using the electronic fetal monitoring and a proper preparation prior to intrapartum period are provided. Clearing the airway by suctioning the mouth and nose if there is meconium after immediate delivery will significantly help reduce suffocating the meconium to newborns' lung and decrease the complications in respiratory. Moreover this will lower the neonatal mortality rate (Sarawu, 2001).

Fetal Presentation : This is an important finding that the fetal presentation factor associated with birth asphyxia in new born statistically significant ($p<.05$). The most of expectant mother in both groups, giving birth with asphyxiated newborn group and with non-asphyxiated newborn group, have a normal delivery (86.7% and 92.0%

respectively). Whereas the breech presentation and other malpresentation are not common found in both groups, 13.3% for asphyxiated newborn and 8.0% for non-asphyxiated newborn. This finding is consistent with the study of Sarawut (2001) in the way that the breech presentation is a risk factor which associated with birth asphyxia in newborn. Similarly, Dilok (2002) also supports that the breech presentation is a risk factor associated with birth asphyxia in newborn since the malpresentation can cause an adverse outcome of pregnancy and can put more risk of birth asphyxia. In this case, the most common causes of birth asphyxia include prolapsed umbilical cord, instrumental extraction (Widhaya et al, 1997) or prolonged delivery (Srinari, 2001).

Birth weight : The finding shows the association between birth weight and birth asphyxia in newborn with statistic significance)$p < .05$) Mothers with asphyxiated newborn are mostly found in birth weight category of 2,500-4,000 grams being of 61.1% whereas those with non-asphyxiated newborn being of 85.2%. In the group of less 2500 gram birth weight, 35.2 % of mother resulting in asphyxiated newborn and 12.3% of mothers resulting non-asphyxiated newborns. The smallest group are the mothers in the category of more than 4000 gram birth weight, only 3.4% of mothers giving births resulting in asphyxiated newborns whereas 2.5 % resulting in non-asphyxiated newborns respectively. Mother with less 2500 gram birth weight or more than 4,000 gram birth weight are at greater risk of having given asphyxiated newborn for 0.39 fold of those with 2,500-3999 gram birth weight. This finding is consistent with the study of Wanthana (2000) and Theera (2002), which found that the newborn with less 2500 gram birth weight are more at increased risk of birth asphyxia than those with normal birth weight. Low birth weight can be caused by preterm delivery or intrauterine growth retardation which is the condition that the fetus

experience chronic asphyxia. Insufficiency of placenta, uterine contractions during delivery and decreased amniotic fluid volume can put more increased risk of the incidence of birth asphyxia in newborns (Dilok, 2000).

4. Intrapartum Factor

The result of study illustrates that the time spent in first stage of delivery is not associated with birth asphyxia in newborn whereas the time spent in second stage of delivery is. This can be discussed as follow:

First stage of delivery : The finding shows there are no association between the time spent in first stage of delivery and birth asphyxia. There are 95.5% of mothers resulting in asphyxiated newborn and 97.5 % of those resulting in non-asphyxiated newborn spent the first stage of delivery less than 12 hours. Whereas only 4.5 % of mother with asphyxiated newborn and 2.5% of those with non-asphyxiated newborn took more than 12 hours in the first stage of delivery. This result of study is consistent with the study of Ratchaneewan et al (2002) which found that the prolonged first stage of delivery is not associated with birth asphyxia in newborn.

There are no association between the first stage of delivery and birth asphyxia in newborn for some reasons. Most of sample population spent the first stage of delivery less than 12 hours. They also received the essential maternal and neonatal care during delivery, such as, the routine use of partogram to observe the progress of delivery, skilled attendants for maternal and neonatal resuscitation. These can help detect the complications and resuscitate mother and newborn immediately (Thewaporn, 2001).

Moreover, the availability of skilled attendant for resuscitation will help mother feel relaxing, release the stress and handle the trauma during delivery more effectively. (Murray et al, 2002). Therefore, these can help spend time in the first stage of delivery less than 12 hours.

Second stage of delivery: The finding indicates that the time spent in second stage of delivery is associated with birth asphyxia in newborn with statistical significance ($p < .05$). There are about 49.6% of mothers with asphyxiated newborn took less than one hour and 50.4 % took more than one hour or more. In comparison with those resulting in non-asphyxiated newborn, 69.9 % took less than one hour and 30.1 % took one hour or more in the second stage of delivery. Mothers who spent the second stage of delivery more than one hour, their newborn will be at increased risk of birth asphyxia in newborn for 2.3 fold of those who spent less than one hour. This finding is consistent with the study of Dilok (2002) which shows that mothers who spend the second stage of delivery more than one hour, the newborns will have a greater risk of birth asphyxia in newborn for 5 times of those spent less than one hour. It is because more than one hour spent in second stage of delivery is seen as a prolonged delivery. The chance of using the instrument extraction will be higher. Similar to the study of Sarawut (2001) which found the delivery with more than one hour spent in the second stage of delivery is most likely to get at highest risk of birth asphyxia in newborn.

Route of delivery: The finding indicates that the route of delivery is associated with birth asphyxia in newborn with statistical significant)$p < .05$). There are 54.9 % of mothers with asphyxiated newborn have given breech or abnormal delivery while 45.1 % of those have a normal delivery. In contrast, 59.3% of mother with non-asphyxiated newborn

have a normal route of delivery while 40.7% have a breech delivery and other abnormal. This is consistent with the study of Wanna (2001) which found that the route of delivery associated with birth asphyxia in newborn. The caesarean section, vacuum and forceps extraction can put more increased risk of birth asphyxia than the normal route of delivery. Suchada (2000) and Theera (2002) also confirm that the vacuum extraction and breech delivery will put more increased risk of birth asphyxia than other routes. In addition, Dilok (2000) suggests that breech delivery can put more increased risk of birth asphyxia to newborn as the head will be obstructed. This can occurs both in premature infants and term infants.

5. Maternity Care Service Received Factor

The finding shows that the antenatal care service, narcotic drug intake, Oxytocin induction and time of birth are not associated with birth asphyxia in newborn. This can be discussed as follows:

Antenatal care visit: The finding demonstrates that antenatal care visits was not associated with birth asphyxia in newborn. It shows that 83.7% of mothers resulting in asphyxiated newborn complete the antenatal care visit as required, 14.4% did not complete the minimum of four antenatal care visits and 1.9 % did not have any antenatal care visit at all. For the mothers resulting in non-asphyxiated newborn, it shows that 78% complete the antenatal care visit as required, 18.8 % did not complete the minimum of four visits and 2.8 % have none of antenatal care visit.

Antenatal care visit is a continuous care with a minimum of four visits which provided for the expectant mothers and the fetus during pregnancy. It aims to check the

mother and fetal health and monitor the complications of pregnancy both in mother and fetus (Department of Public Prosecution, 1999). Regarding to the study of Wanthana (2001), it shows that the antenatal care visit is associated with birth asphyxia in newborn. Mothers with none of antenatal care visit have more risk of having birth asphyxia than those with a regular antenatal visit. The essential antenatal care and regular check-up will help handling the unexpected thing and treat the complications arising during pregnancy more appropriately and timely. Moreover, it will help decrease any harms which more likely to occur to mother and newborns. However, the finding shows that most of pregnant women did not have a minimum of four antenatal visits as required. It is because they do not realize the importance of essential antenatal care. Another cause is that the antenatal care service provided is not widespread over the responsible area)Apichart and Sompol, 1994).

Narcotic drug intake: The study of influence of narcotic drug intake during perinatal period shows that it is not associated with birth asphyxia in newborns. Mothers with asphyxiated newborn about 93.2 % do not take narcotic drug and 90.5 % of mothers with non-asphyxiated newborn have never taken narcotic drug either. There are only 6.8% and 9.5% of mothers resulting in asphyxiated and non-asphyxiated newborn have taken narcotic drug respectively. This finding is consistent with the study of Ratchaneewan et al (2002) which found that narcotic drug intake during antenatal period will cause a risk of birth asphyxia in newborn as the drug can be transferred to the fetus thorough the placenta. The drug will cause an affect to fetus by compressing the fetal respiratory and cardiovascular system. It results in the low fetal heart rate and abnormal blood flow (Murray et al, 2002).

In conclusion, the finding shows there is no association between narcotic drug intake factor and birth asphyxia in newborn. It is because the most of sample population are the mothers who experienced a previous pregnancy. This can result in the more tolerance to the trauma than those with the first pregnancy. The narcotic drug may not be needed or a small amount will be necessary. In case of mothers who took narcotic drug prior to delivery period, the drug intake will be controlled to ensure that it will not be harmful to the fetus. Further, the essential standard of newborn resuscitation has been set up clearly. As a result, it helps decrease the risk of incidence of birth asphyxia in newborns.

Oxytocin induction : The study of oxytocin induction shows that 67.0 % of mothers with asphyxiated newborn did not have oxytocin induction during delivery period while 33.0 % took it. A similar result found in mothers with non-asphyxiated newborn, 62.9 % did not receive oxytocin while 37.1% did. ($p > 0.05$). The result is consistent with the study of Ratchaneewan et al (2002) which found that oxytocin induction is not associated with birth asphyxia in newborn. On the contrary, the study of Dilok (2000) shows that oxytocin induction is a risk factor which for a low Apgar score. Although oxytocin is useful for delivery induction and stimulate the uterine contraction, it may cause a danger to mother if the uterus is broken. Moreover, it will cause an adverse effect to the fetus if the uterus is not functioning properly or if it is administered too frequently or too long. This can cause the lack of oxygen in the fetus.

From the result of this study, it is found that oxytocin induction not associated with birth asphyxia in newborn. It can be that there is a clear guideline and procedure in maternal care for the induced delivery. In case the incidence of birth asphyxia in

newborn is present, the skilled attendant can give the appropriate and timely treatment including immediate resuscitation to both mother and newborn.

Time of birth: The finding shows that 43.6% of mothers with asphyxiated newborn gave birth during 08.31 am -04.30 pm., 36.4 % during 04.31 pm – 00.30 am and the smallest group 20.1% during 00.31 am – 08.30 am. A similar result goes to the mothers with non-asphyxiated newborn; about 45.6 % gave birth during 08.31 am - 04.30 pm, 32.2% during 04.31 pm-00.30 am and the smallest group of 22.2% during 00.31 am-08.30 am. The result of statistical significant test suggests that the time of birth is not associated with birth asphyxia in newborn which consistent with the study of Santhit (1999). The finding of his study illustrates that those time of birth which categorized into three shifts, that is, morning shift (08.31 am – 04.30 pm), afternoon shift (04.31 pm – 00.30 am) and night shift (00.31 am – 08.30 am) is not associated with birth asphyxia in newborns ($p < .05$). It is because the manpower of skilled attendant in each shift at delivery room is sufficient. It is not likely to cause any problem in newborn care after birth. Therefore, it is concluded that time of birth is not associated with birth asphyxia.

The reason why the finding is not consistent to the research assumption many will be that there has been an improvement of the essential standard of newborn care at delivery recently. The new essential standards include the availability of skilled personnel for neonatal resuscitation, especially the immediate care and resuscitation after birth. The new standard can help the nurse in delivery room have enough time to monitor the complications arising both in mother and newborn during labor more efficiently. As a result, it is concluded that time of delivery is not associated with birth asphyxia in newborns due to the availability of skilled personnel in all three shifts.

Maternal care service provided factor: It is found that the care service system management at Maharaj Nakhon Sri Thammarat hospital has been implemented according to Safe Motherhood hospital program of Health Promotion Bureau, Department of Public Prosecution. Such maternal services provided include antenatal care service, maternity care training and education for pregnant women and family or spouses, delivery service, newborn care and referral system. However, in respect of referral system, there are some room of improvement due to the delay in referral consideration, the incomplete referral data and the small number of pregnant women and their family/spouse who will participate in training and the lack of practical application in handling trauma during delivery.

6. Conclusion

This study is a case-control study to elucidate the following risk factors associated with birth asphyxia in new born. The result is shown that

1. Maternal Factor: It is clearly shown that gestational age associated with birth asphyxia in newborn statistically significant ($p < .01$) whereas the number of parity and disease or complications of pregnancy are not.
2. Fetal Factor: The finding illustrates that maternal age, fetal presentation and birth weight are associated with birth asphyxia in newborn with statistical significance ($p < .05$). On the contrary, the aspect of amniotic fluid is not associated with birth asphyxia in newborn.
3. Intrapartum factor : The result shows that time spent in the first stage of delivery is not associated with birth asphyxia in newborn whereas time spent in the second stage of delivery is associated with birth asphyxia statistically significant ($p < .01$).

4. Maternity care service received factor : The finding shows that there is no association between this factor and birth asphyxia in newborn . The detailed factors include antenatal care visit, narcotic drug intake, oxytocin induction and time of birth.
5. Antenatal care service provided factor: The result depicts that there are a number of antenatal care services provided at Maharaj Nakhon Sri Thammaraj hospital according to Safe Motherhood hospital program, Bureau of Health Promotion, Department of Public Prosecution. Such services include antenatal care service, maternity care training and education for the pregnant women and family or their spouses, delivery service, newborn care. However, there are some problems found in respect of referral system. These include a delay in referral consideration, incomplete information about referral. Besides, it is found that the number of pregnant women who will participate the group training for maternity care is very small. They do not practice the technique of handling the trauma during delivery.

7. Suggestion on Research Application

1. The education level and occupation are the basic problem of public health. Health personal will be concerns to approach the pregnant women who are low education and no occupation. Expectably, the nutrition during pregnancy of the pregnant women, the consistency of the antenatal care visit are important. If they are received well, it will be decrease risk in birth asphyxia.

2. The maternal age is the fundamental factor, which indirectly causes birth asphyxia in newborn. In case of the maternal age less than 20 years, during pregnancy, the midwife/ carer should focus attention on method of taking care their own health, frequency in antenatal care visit and psychological problem. The maternal age more than 35 years should be aware of the complications arising during pregnancy which may cause an adverse affect to the fetus in the uterus. In perinatal period, the adolescent mother may not be able to tolerate to the exceed trauma that hazardous to themselves and fetuses. A combination of a close antenatal care, psychological support, and care from family will decrease the problem.
3. Gestational age is the important factor causing an adverse outcome of pregnancy, such as, preterm delivery and low birth weight. These will directly result in birth asphyxia in newborn. The essential antenatal care with quality during pregnancy will be the best prevention of the presence of birth asphyxia. The availability of skilled attendants and equipment for maternal and neonatal resuscitation will help increase the newborn survival from birth asphyxia.
4. The accurate prognosis of fetal presentation should be done within the third trimester of gestation in order to prepare the appropriate route of delivery for the mothers. Occasionally, the special instruments needed, such as, ultrasound transducer or x-ray test to reduce the possible problem will occur during delivery. The problems include prolonged delivery and obstructed delivery which will cause an adverse affect to the fetus.

5. More than one hour of time spent in second stage of delivery is considered as a prolonged delivery. This can cause birth asphyxia in newborn. Strengthening the competency and skill of the carer in rapid assessment of abnormality is very necessary. There should be a guideline or standard of procedure for obstetrician and nurse for a prompt reporting when any abnormality occurs. Availability of equipment and supplies including skilled attendant for newborn resuscitation and selection of proper route of delivery by skilled obstetrician will help decrease the incidence of birth asphyxia.
6. Effective referral system: This can help decrease the potential problems which are likely to occur to mother and fetus. The attention should be focused on all problem occurred and a good cooperation is needed to strengthen the functioning referral system.

8. Suggestion in Further Research Study

1. Conduct the match case control study by using the risk factors found from this finding.
2. Implement the project to solve the problem from the factor found in this study and do the research to apprise the project of birth asphyxia in newborn problem solving project)Appendices)
3. Study the incidence and adverse impact of incidence of birth asphyxia in newborn who is referred to NICU in the context of neonatal mortality rate, the disabilities, duration spent in hospital and expense.