RISK FACTORS OF

UNASSISTED

DELIVERY INPERAK

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APPROVAL PAGE

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DECLARATION

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This thesis is dedicated to my beloved parents, Thurairasu Murugan and Revathi Thurairasu

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MCH MATERNAL AND CHILD HEALTH

MOH MINISTRY OF HEALTH

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TBA TRADITIONAL BIRTH ATTENDANTS

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ABSTRACT

Malaysian women give birth to children in unsafe environments, with relatives or customary birthorderlies (TBAs) for assortment of reasons including doubt of the degree of consideration that willbe given at health clinic, absence of accounts and social standards which advance the act of unsafehome and unbooked delivery. This paper investigates risk factors of unassisted delivery in Perak in line with the customary traditions. A case-control study design was used incorporating case study analysis. All cases of unassisted deliveries in Perak from 2017 to 2019 will be compared to similar number of controls (assisted deliveries) in Perak within the same period of time. This studywas carried out in Perak Darul Ridzuan. The dependent variable is cases of unassisted deliveries in Perak from 2017 to 2019 whereas independent variables are risk factors that affect theoccurrence of unassisted delivery in Perak during the aforementioned duration. The data was analyzed using IBM Statistically Package for Social Sciences (SPSS) version 23. The findings revealed that a significantly higher proportion of cases were not booked for antenatal care (60.1%)compared to 23.6 % among controls ($p < 0.001$). Not having legal document with mother and maternal choice were other significant maternal risk factors leading to the practice of unassisted delivery ($p < 0.001$). The main factor associated with unassisted delivery and delivery assisted byan unskilled attendant was the failure to use maternity care services. It was concluded and recommend that more health clinics should be developed to improve accessibility of rural population to medical health facilities. Legislators should participate in lobbying on available welfare services for teenagers, community enragement, revision of immigration policies and strengthening health promotional activities as potential solutions for the risk factors affecting unassisted deliveries in Perak.

CHAPTER 1

INTRODUCTION

1.1   BACKGROUND OF STUDY

Intricacies of pregnancy and unassisted deliveries completed at unsafe home and unbooked or clinic facilities are one of the main sources of maternal mortality. As indicated by World Health Organization (2007) the present yearly gauge for maternal deaths worldwide is 536 000, of which 99% (533 000) happen in developing nations. Marginally, the greater part of the maternal deaths (270 000) happens in Sub Saharan Africa. It had additionally been accounted for that maternal death ratio (MMR) worldwide is 450/100 000 live births; in Africa, the rate is 1500/100 000 live births; SSA is 900/100 000 live births (Inter Press Service, 2007). In Malaysia, 9000 maternal mortality cases were identified to be associated with pregnancies (Kimani, 2008), which bring MMR to 578/100 000 live births (RAWG, 2005). Social insurance laborers in Obstetrics and Gynecology underscore the significance of antenatal consideration and most research in this field has exhibited that great pregnancy result is identified with sufficient consideration (Ayo, 2006).

Antenatal consideration programs, as at present rehearsed, started from models created in the early many years of the twentieth century in Europe, particularly the United Kingdom. Obstetrics and Midwifery were at first seen as medical aid services worried about work and its complexities. During the 1920's a more extensive acknowledgment of the maternal issues of pregnancy developed. It was understood that occasions of work had their antecedents in pregnancy. In 1929, in the United Kingdom, Dame JanetCampbell began a national arrangement of antenatal centers with a uniform example of visits and techniques. The standard example of month-to-month visits until 28 to 30 weeks, fortnightly until 36 weeks then week after week until delivery was set up. This did not depend on a methodical investigation of risks and suitable intercessions yet on thepresent

routine with regards to the researchers of those occasions. After the Second World War this standard convention of consideration was all the more generally upheld and rehearsed. The center bundle of consideration in the early models of antenatal management remains basically unaltered in current projects aside from the expansion of a couple of new advancements, for example, ultrasonographic evaluation of fetal prosperity and hereditary screening. Developing nations have for the most part clung to the antenatal projects of the industrialized nations with just minor alterations. Parts of antenatal consideration and the planning of visits have regularly been presented without legitimate logical assessment (Cohen, 2002).

Normally, health mediations are assessed through randomized controlled trials (RCT), which are viewed as the best strategy for setting up adequacy yet today it would be outlandish and exploitative to plan a RCT to think about standard antenatal consideration versus no consideration. Accordingly, most investigations survey the result of patients who don't access care with the individuals who do. Time and again new conventions. advances have been presented without appropriate assessment and it is regularly hard to pull back or evaluate these after the usage Single mediations for example iron supplementation may in any case be assessed in properly planned trials and it is clearly significant that doubtful management systems later on ought to get sufficient assessment before being brought into clinical practice. Assessment of antenatal consideration projects ought to likewise consider tolerant fulfillment and money saving advantage investigation. Moreover, the requirements of developing nations may contrast from those of created nations where the conventions were started and this ought to be tended to when planning obstetric projects (Furuta, 2006).

1.2 INTRODUCTION

Unassisted delivery is defined as childbirth conducted by unskilled birth attendants or anyone other than trained medical personnel (KKM, 2014). As far back as the Safe Motherhood Initiative was propelled by the World Health Organization (WHO) in 1987, with the point of decreasing the inadmissibly significant levels of maternal mortality prove in many developing nations, there has been elevated national and worldwide worry to improve maternal health – MDG 5. This objective, which advanced out of the Program of Action of the 1994 United Nations International Conference on Population and Development (ICPD), and consequently the Fourth World Conference on Women in Beijing in 1995, has prompted a lot more spotlight on giving expanded access to general health mediations that outcome in better maternal health. Malaysia has encountered emotional enhancements in health all in all, and maternal and youngster health specifically, all through the post-Independence time. A long time before the Safe Motherhood Initiative, the announced maternal mortality proportion (MMR) had split somewhere in the range of 1957 and 1970, when it tumbled from around 280 to 141 for each 100,000 live births. By 1990 it was beneath 20 for every 100,000 live births– a level near that of most exceptional nations (Germain, 2005).

Accordingly, the MMR has stayed around this low level, with the end goal that maternal deaths have turned out to be generally uncommon occasions: under two in each 10,000 deliveries. Malaysia's momentous involvement in diminishing maternal mortality mirrors an extensive vital way to deal with improving maternal health. The six key components of this methodology are as per the following: (I) improve access to, and nature of consideration of, maternal health services, including family arranging, by extending medicinal services clinics in country and urban zones; (ii) put resources into updating the nature of fundamental obstetric consideration in locale clinics, with an attention on crisis obstetric consideration services; (iii) streamline and improve the proficiency of referral and input frameworks to forestall delays in management delivery; (iv) increment the expert abilities of prepared delivery orderlies to oversee pregnancy and delivery confusions; (v) execute an observing framework with periodical surveys of the arrangement of

examination, including revealing of maternal deaths through a secret enquiry framework; and (vi) work intimately with networks to expel social and social limitations and improve adequacy of current maternal health services (Gihang, 2000).

The next is about the arrangements, methodologies, and projects that were actualized to improve maternal health, including a rundown of the bits of knowledge picked up in executing an adaptable methodology which empowered nearby activities that are delicate to the socio-social, religious, and customary condition of women and the network. The section finishes up with certain pointers on future difficulties. Malaysia has shown progress in its consistent and continued decrease in maternal mortality (Figure 5.1).In the range of1970 and 1980, MMR tumbled from 141 to 56 for every 100,000 live births, a decreaseof 40 percent. The quick decay proceeded all through the 1980s to such an extent that by1990 the MMR was only 19 for every 100,000 births.

Among a few factors that were in charge of this decrease in the MMR incorporate (I) the national promise to improve maternal health which empowered the MOH to acquire sufficient portion of assets; (ii) access to expert consideration during pregnancies and labor; and (iii) expanding access to quality family arranging services and data. During the 1990s the MMR has floated around this low level, with the exception of an impermanent ascent in 1998 and 1999. This expansion was because of alterations in the recorded quantities of maternal deaths to assess reason for death misclassifications. Further decreases in the MMR will be delayed as circuitous reasons for maternal mortalityare increasingly perplexing to oversee and will need backing of different controls for

particular aptitudes, multidisciplinary case management, and anticipation of pregnancies of realized high-chance variables. (Golob, 2002)
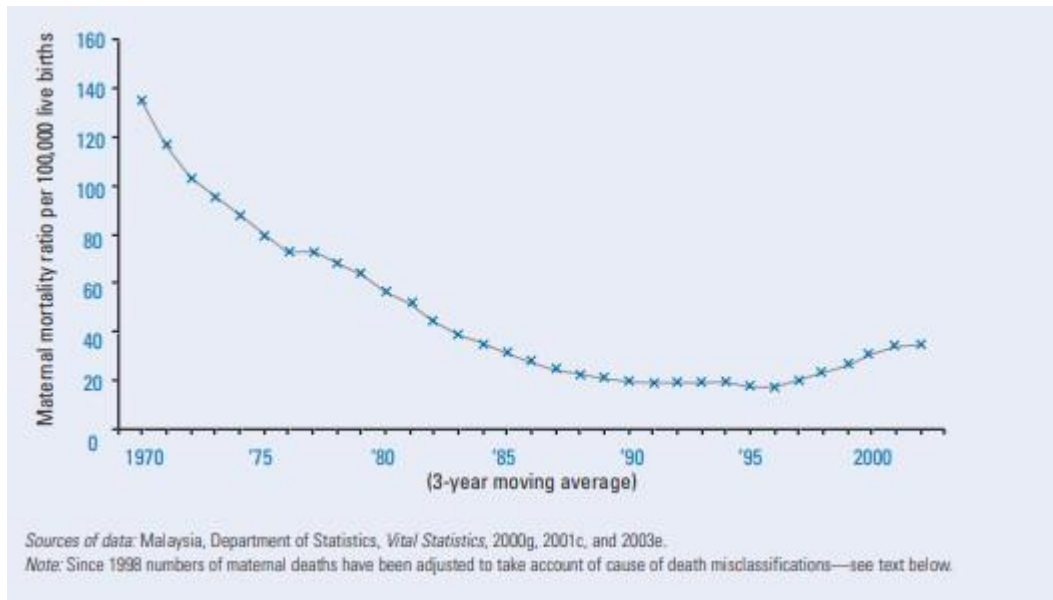
Figure 1.1: Maternal Mortality Ratios, Malaysia, 1970 – 2002

1.3   PROBLEM STATEMENT AND JUSTIFICATION

Concentrates from global record demonstrate that home and unbooked deliveries persevere particularly in developing nations. For example, Sreeramareddy (2006) announced that in Nepal, over 90% of deliveries occurred at homeand unbooked, and were gone to customarily under unhygienic conditions. Koenig, (2007) in Bangladesh found that 90% of deliveries occurred outside health clinics and were gone to by restoratively untalented birth orderlies and just 10% conveyed in healthclinics. In Sub-Saharan Africa, the circumstance is likewise more regrettable. For example, in Uganda antenatal services inclusion is above 90%, yet 74% to 90% of deliveries still happen outside the health clinics (Morogoro District Council Health Management Team, 2006).

Rosenfield, (2007) announced that 60% of mothers convey without help of health laborers in the locale. In Malaysia, the issue of risky home and unbooked deliveries was likewise disturbing. The Ministry of Planning and Economic Affairs (2006) show decrease of extent of births conveyed in the health clinics additional time from 53% in 1991-1992 to 47% in 1996 and to 44% in 1999, while in 2004 it was 47% of all women going to antenatal consideration. Births gone to by gifted work force were 41% in 1999 while in 2004 they were 46% of total deliveries. In Kinta District, unsafe home and unbooked deliveries are accounted for to be a steady issue. Somewhere in the range of 2005 and 2007, the circumstance of unsafe home and unbooked deliveries in the region was as per the following: 44% in 2005; 40% in 2006; and 42% in 2007, which were all probably gone to by incompetent health faculty outside health clinics, albeit over 95% of pregnant women went to antenatal consideration in health clinics (SDC, 2007).

Studies directed in Malaysia, Kenya, Uganda, and Benin found that deficient health clinics, good ways from unsafe home and unbooked to health clinics, low salary of individuals, women' inclinations on common labor, incredible trust in conventional birth orderlies, upkeep of customary traditions and convictions, utilization of refined machines

in medical clinics, shaving, repelling the children from mothers after delivery, awkward situations during delivery, low nature of social insurance gave in health clinics, and absence of protection in health clinics have been affecting unsafe home and unbooked deliveries in developing nations (Sargent, 1982; Hodgkin, 1996; Membeni et al., 1999 ; MPEE, 2000; MDCHMT, 2006; and Kimani, 2008). Regardless of these examinations featuring what decided unsafe home and unbooked deliveries in the three nations of East Africa, their number is certainly restricted. As a result of the for the most part constrained data to clarify why unsafe home and unbooked deliveries are constantly on the ascent, the requirement for further examinations wound up objective. One intriguing inquiry that has not been replied in these investigations is: are statistic factors likewise not adding to this issue? This examination expected to research components impacting risky home and unbooked deliveries in Malaysia; Kinta District as a contextual investigation (Green, 2005).

The World Health Organization led a multicenter randomized controlled preliminary for the assessment of another model of antenatal consideration with more objective orientated visits and less center visits. Fifty-three centers in Argentina, Cuba, Saudi-Arabia, and Thailand took an interest in the investigation. They inferred that the new model didn't antagonistically influence maternal and perinatal results. 19 The World Health Organization further did an orderly survey of 7 qualified randomized controlled trials and reasoned that diminished quantities of visits exhibited no hazard to generally safe mothers and infants, however that disappointment from the mothers, on account of decreased contact, could be normal (Kayongo, 2006).

There is some discussion whether it is the unbooked status as such or the "type" of women who is unbooked that adds to poor pregnancy result. Social conditions, age, conjugal status, equality and money related help have all been appeared to impact result. Fink et al did a writing audit to assess antenatal consideration projects and found that positive findings may have mirrored the sorts of women who were probably going to consent to mind instead of the impacts of program investment. In South Africa and

Zimbabwe variables adding to unbooked status were poor social conditions, joblessness and poor monetary and social help. Psychosocial stress is one conceivable instrument by which social inconvenience may offer ascent to poor pregnancy outcome.26 Adverse variables, which are regularly distinguished, incorporate low salary, deficient access to and take-up of services and data, physical exertion, separation, terrible eating routine and living conditions, indecision about the pregnancy and the absence of social help (Kimani, 2008).

Antenatal consideration has been appeared to improve neonatal and maternal dismalness and mortality. In the USA Vintzileos et al broke down 14,071,757 births given by the National Center to Health Statistics and inferred that antenatal consideration is related with less preterm births for both African-American and white women. They additionally decided the relationship between antenatal consideration and postnatal death and reasoned that absence of antenatal consideration ought to be viewed as a high-chance factor for postnatal demise. In Hungary, Orvos et al did a review investigation of 5262 deliveries of which 1 % had no antenatal consideration. The unbooked mothers had more preterm deliveries and low birth weight children contrasted with the booked mothers. As per the World Health Organization there is a wide variety in the extent of women who get antenatal consideration, for example Africa 2 - 99 %, Asia 8 - 90 %. A few investigations in developing nations have demonstrated that the more care gave, the better the perinatal result (Lankester, 2002).

Concentrates in industrialized and developing nations have shown that antenatal consideration improves maternal and neonatal result. In the USA Ryan et al, revealed expanded rashness (15.8% versus 9.9%), expanded stillbirth (multiple times higher), and perinatal mortality (multiple times higher) in the gathering with less pre-birth contact. 31n Saudi Arabia, Abotalib and Adelushi found a fundamentally higher rate of preterm deliveries, stillbirths and neonatal deaths in an unbooked gathering of mothers contrasted

with the booked gathering. In South Africa various examinations have explored the impact of practically no antenatal consideration. In Durban, Larsen detailed "unbooked" status related withunnecessary perinatal mortality.24 In a Johannesburg study the neonatal death rate was multiple times higher in the unbooked mothers contrasted with booked mothers.23 In a review performed in1987 at Tygerberg Hospital the perinatal mortality for infants gauging in excess of 1000 g amongunbooked women was 128/1000 contrasted with 14.6/1000 in booked patients (Lin, 2005).

Figure 1.2 depicts theconceptual frameworks of factors contributing to unassisted delivery.

Sociodemographic factors:

- ✓ Maternal age
- ✓ Citizenship
- ✓ Race
- ✓ Marital status
- ✓ Education
- ✓ Occupation

Antenatal visit

- ✓ Booked / unbooked pregnancy

Intrapartum

- ✓ Delivery attendant
  - o Self
  - o husband/partner
  - o relatives/ neighbour
  - o village midwife
  - o doula

Socioeconomic factors:

- ✓ Mother's employment status
- ✓ Single parent
- ✓ Teenage pregnancy
- ✓ No transportation
- ✓ No legal document

Unassisted delivery

Access to antenatal careservices

- ✓ Accessibility to health care services
- o Transportation
- o Distance from home to healthcare facility
- o Timeliness of ambulance

Maternal and Obstetric factors:
- ✓ Parity
- ✓ Ability to appreciate pain
- ✓ Unknown pregnancy
- ✓ Maternal choice
- ✓ Birth process
- o Precipitatedlabour
- o Non- precipitatedlabour

Figure 1.2 Conceptual frameworks of factors contributing to unassisted delivery

1.4   RESEARCH OBJECTIVES

1.4.1   General Objective

i. To determine the risk factors of unassisted deliveries in Perak

1.4.2   Specific objectives

i.   To assess the association between sociodemographic characteristics and unassisteddeliveries in Perak.

ii.   To assess the impact of risk factors on occurrence of unassisted deliveries in Perak.

1.5   RESEARCH QUESTIONS

This study was guided by the following main research questions:

1. What are the risk factors associated with unassisted deliveries in Perak?

2. How do the risk factors influence the occurrence of unassisted deliveries in Perak?

1.6   SIGNIFICANCE OF THE STUDY

The essentialness of the investigation incorporates age of further learning; formation of mindfulness on the issue to various health partners that will at long last helpin setting up progressively reasonable mediations to accomplish MDG number 5 and theNSGRP bunch 3, that is diminishing maternal and newborn child mortality by ¾ by 2025. Antenatal

consideration is an ideal case of protection medication. The point is to guarantee the prosperity of mother and youngster. The essential parts of antenatal consideration have been characterized as right on time and constant hazard management.health advancement. psychosocial mediation and development (Maeda, 2007).

More visits apparently implied a superior result. The weakness of this methodology is that the length of pregnancy will adjust the quantity of visits without essentially trading off nature of consideration. Women who convey rashly have less visits and this was compared to poor result, the alleged "preterm inclination". This issue has been tended to by the utilization of the Kessner file. The normal time interim between visits is utilized as a file of the recurrence of visits, free of the development at booking and incubation at delivery. For instance, preterm delivery is the reason for the predetermined number of antenatal visits and poor result, not really unacceptable consideration (Manasseh, 2008).

1.7   ASSUMPTIONS

The presumption for the statistic factors was that age, family size, and conjugal status were thought to be decidedly related with risky home and unbooked deliveries. However, for instruction, the speculation was that it was conversely related with unsafe home and unbooked deliveries. The suspicion for the financial factors was that family's pay, transport cost, cost for delivery at health clinics previously and during work, and time spent were thought to be adversely identified with unsafe home and unbooked deliveries. The supposition for the geographic factors was as per the following: that separation to health clinics was emphatically connected with unsafe home and unbooked deliveries, that accessibility of vehicle to health clinics was adversely connected with unsafe home and unbooked deliveries; and that better state of streets was contrarily identified with risky home and unbooked deliveries (Lin, 2005).

With respect to socio-social viewpoints, it was expected that planning, women' basic leadership power, and traditions applied during work were decidedly identified withrisky home and unbooked deliveries. Since during ANC centers the mothers were recounted attributes of pregnancies that they are constantly one of a kind in that everyone has its very own complexities, past delivery experience was not a determinant of unsafe home and unbooked deliveries. That is, the way that a mother had recently conveyed at unsafehome and unbooked securely didn't imply this was going to impact her for the second risky home and unbooked delivery (Nyigo, 2009).

The supposition for condition of health clinics was that accessibility of delivery gear and supplies, nature of delivery services, and accessibility of prepared work force were adversely identified with unsafe home and unbooked delivery in that with better hardware and better prepared health staff at health clinics, women were probably going to lean toward health clinics to risky home and unbooked deliveries. The suspicion for the effect of risky home and unbooked deliveries was that unsafe home and unbooked deliveries were emphatically connected with maternal and newborn child mortality since the deliveries were generally gone to by incompetent birth orderlies and along these lines less secure.

1.8   SCOPE OF STUDY

The study will be focused on all reported unassisted deliveries in Perak from 2017 to 2019.

1.9 CHAPTERS ORGANIZATION

This proposal will be comprising on total 5 chapters in which chapter 1 is the introduction, chapter 2 is literature review, chapter 3 research methodology, chapter 4 is results, chapter 5 is discussion and chapter 6 is recommendation.

CHAPTER 2

LITERATURE REVIEW

2.1   REVIEW

Health and prosperity of women wherever is significant for it is a key to the health and prosperity of their families and social orders. This is valid because of their jobs in the soundness of individuals from their families. They additionally need great fundamental consideration during pregnancy, during childbirth and after delivery by approaching safe clinics that can give the management which are accessible to health units (Mpembeni et al., 2000; Family Care International, 2006). In the wake of the significance of the health and prosperity of women, different activities have been built up on the planet to spare mothers' and babies' lives. For instance, around the world, the Safe Motherhood Initiatives began in 1987 to improve maternity services and to secure the health of mother and newborn children (Glob and Regan, 2002). In Kenya the activities were set up in May 2007 by canceling maternity charges in open emergency clinics so as to build availability to referral obstetric consideration (Kimani, 2008).

In Malaysia the activities began in 1998 (MDCHMT, 2003; Maswia et al., 2006). Kinta District propelled Safe Motherhood Initiatives in the entirety of its 41 health clinics by furnishing them with delivery beds, delivery packs, gloves just as maternal and youngster health prepared staff, hoping to serve women during work and labor (SDC, 2007). World Health Organization and different clinics call for worldwide activity of guaranteeing that every single pregnant woman approach a gifted orderly at delivery and referral for high-hazard pregnancies and obstetric crises. Various developing nations have made approaches and have set up systems and broad health foundations to offer conceptive and kid health services for nothing out of pocket in improving regenerative

and kid social insurance services (Mpembeni et al., 2008; Rahma, 1999). For instance, Mpembeni et al. (2000) found that the legislature of Malaysia has been building up broad foundation of health services.

It is assessed that 72% of Malaysians live inside 5kms of health clinic and 93% live inside 10kms. In 1994, 87% of all health clinics gave regenerative and youngster health services complimentary. Rahma (1999) found that in Bangladesh, a huge of framework has been set up to give maternal human services under national health and family arranging projects, which are sans given of charge. With every one of these endeavors, be that as it may, written works, for example, Rosser et al. (2000); MDCHMT, (2006) and Kimani, (2008) detailed that women' health status keeps on being undermined by lacking maternal social insurance particularly in provincial zones (Marley, 1996).

This has suggestions for both baby and maternal welfare, as it prompts their mortality. It is accounted for that untalented work force go to the greater part of deliveries at risky home and unbooked, generally without cleanliness, and unsafely; accordingly, they make hazard to the mothers and newborn children; pregnant women had no brief access to referral obstetric consideration and safe delivery which are accessible in health clinics; therefore, numerous women convey at unsafe home and unbooked (Sreeamareddy, 2006; Koenig, 2007). In Malaysia, unsafe home and unbooked deliveries are alluded to labors outside health clinic (Ministry of Health, 2000). Different investigations have discovered that numerous labors happen at unsafe home and unbooked, greater part of them are in developing nations. For instance, in Nepal, Sreeramareddy, (2006) detailed that an enormous extent (over 90%) of deliveries occurred at unsafe home and unbooked. A large portion of the deliveries were regular and generally visited. They were secretly performed, however unhygienic since there was no utilization of delivery packs, the researchers didn't wash their hands before going to the mothers, and they applied mustard oil to the umbilical string.

Additionally, Koenig (2007) found that in Bangladesh 90% of deliveries occurred outside health clinics and product helped by medicinally untalented birth researchers, with just 10% of them conveying in health clinics. In Sub Saharan Africa, the level of risky home and unbooked deliveries gone to by non-therapeutic staff is likewise high. For example, Per et al. (2007) detailed that 60% of mothers in Sub Saharan Africa convey without help health laborers. Telemu (2002) and MDCHMT (2006) found that in Uganda, while antenatal services inclusion is 90%; it is vile that 74% to 90% of deliveries still happen outside the health clinics. In Malaysia, (URT 2005; MPEE 2006) detailed that however 95% of pregnant women went to antenatal consideration in health clinics; 47% of the deliveries occurred at unsafe home and unbooked.

There is a decrease in the extent of births conveyed in health clinics after some time; from 53% in 1991 to 1992, to 47% in 1996, and 44% in 1999; while in 2004 were 47% of the women that went to antenatal consideration in health clinics. SDC yearly health reports of 2005; 2006 and 2007 demonstrate that there was an industriousness of unsafe home and unbooked deliveries in Kinta District; in 2005, 44%, 40% in 2006, 42% in 2007 that were gone to by incompetent health work force outside health clinics, albeit over 95% of pregnant women went to antenatal consideration in health clinics. Findings from various investigations announced that, the underutilization of health clinics during work and deliveries has been impacted by different financial factors in particular; view of social orders on pregnancy is that, conceiving an offspring is a typical regular procedure and not a malady, so there is no need of going to emergency clinic except if there are inconveniences.

Mothers especially of more seasoned children feel a lot more joyful to remain at riskyhome and unbooked with them (Ensor, 1985, Gihanga 1997); they have incredible opportunity at unsafe home and unbooked as opposed to at clinic, a mother chooses who will visit her and when; what she will eat, who will care for her, etc (this is regularly in created nations) (Rayner,1968). Women request common labor and reject any obstruction; consequently, the deliveries are seen to be helpful. Rayner, (1968); Gihanga,(1997) and

Screeramaddy (2006) found that hospitalization is too exorbitant many can't bear, regardless of whether the emergency clinic services were to be free, there are costsfor vehicle, and some different things purchased that would somehow have not been purchased, all these make medical clinic delivery costly and just couple of women in labor can manage.

Besides, health units don't acknowledge conventional convictions and taboos like utilization of customary herbs that encourage work, ropes be cut by most established women in a family or neighborhood, use of mustard oil to the umbilical string just as shirking of sustaining colostrums to their children (Gihanga, 1997 and Sreeramareddy et al., 2006). Gihanga (1997); NBS (2000) and MPEE (2006) moreover, announced that refined machines, shaving, warding off the child from mother after delivery, awkward situations during delivery alarm women, to maintain a strategic distance from such circumstance they better convey at unsafe home and unbooked.

Once more, Gihanga (1997) found that some eager mothers don't communicate in asimilar language as the medical clinic work force, this makes a gap; therefore, they choose to be gone to by customary birth chaperons at unsafe home and unbooked. Rahma et al. (1999) Sreeramareddy et al., (2006), and Kayongo (2006) have demonstrated that most health units particularly in provincial regions are sick prepared and stuffed; there is no protection except if one can bear to pay for a private room. Medical clinic staffs now and again don't possess energy for patients as people, this makethem feel being ignored (MDCHM, 2006).

A large portion of mothers start adventure to health units when they are in set up work and once in a while wind up conveying in transit with the help of whoever was accompanying them. In the event that they remain at risky home and unbooked greater part of mothers feel they could maintain a strategic distance from such shame (Rahma, 1999 and Mpembeni et al., 2000). Good ways from unsafe home and unbooked to health clinic; absence of vehicle and absence of escort during work are among purposes behind

spontaneous risky home and unbooked deliveries (MDCHMT, 2006). Mlay (2006) has additionally detailed that Malaysian women conceive an offspring at unsafe home and unbooked alone, with relatives or customary birth orderlies (TBAs) for assortment of reasons including doubt of the degree of consideration that will be given at health clinic, absence of accounts and social standards which advance the act of unsafe home and unbooked delivery (Maswia, 2003).

The social standards are amazingly unsafe practice given the quantity of entanglements that can emerge and that these deliveries are checked by an untrained researcher. Despite the fact that Kinta District has a place with a developing nation Malaysia, it might have unique or more factors separated from those found in the regions in which studies have been directed. There is a requirement for further examinations on elements impacting risky home and unbooked deliveries (availability, quality, and cost of delivery services, biases, women in basic leadership process, subordinate status of women, and delivery practices of provincial women in the region).

2.2 IMPACT OF UNASSISTED DELIVERIES ON MATERNAL MORTALITY

Maternal deaths are one of the enormous worldwide medical issues, which need incredible consideration be paid to since they are among the main sources of deaths and handicaps for women in developing nations (Mc Michael, 1976; Mascarenhas and Mbilinyi, 1983). Family Care International (2000); Lankinen (2002); Murphy (2005); and Veena (2006) characterize maternal mortality as deaths of pregnant women during pregnancy, labor and inside 42 days after end of pregnancy from any reason identified with pregnancy or its management. As indicated by WHO (2007), the present yearly gauge for maternal deaths worldwide is in excess of 500 000 of which over 90% happen in developing nations. Factually, maternal mortality contributes 2.3% complete mortality.

For each maternal demise, other 30 to 50 women endure genuine and long haul confusions. Mlay (2006) contends that the ascent of maternal deaths is because of the way that over portion of pregnant women convey at unsafe home and unbooked and are gone to by untalented work force who need legitimate training and experience to deal with the most widely recognized reasons for maternal deaths including draining blocked work, fetus removal, contamination, and eclampsia or have no entrance to crisis obstetric consideration. Each of these can be helped whenever distinguished in time by talented health providers. Kimani (2008) has revealed that 60% mothers in SSA don't have a health researcher present during labor. This uplift the risks of inconveniences, adding to more prominent maternal and youngster demise and handicap. The 23 nations on the planet with the most exceedingly terrible maternal and newborn child death rates in 2006 were all in SSA. Kimani (2008) has discovered that in Sierra Leone, the risk of maternal death is one out of seven while in Sweden one out of 30 000. Kimani keeps revealing that if nothing is done to improve access to maternal consideration in Africa, 2.5 million women would be born before the decade's end, and 49 million would live with incapacities. In Malaysia, Kimani (2008) has detailed that 9000 women pass on every year because of entanglements identified with pregnancy. Maternal mortality in Malaysia is evaluated to be

578 for each 100 000 live births (RAWG, 2005).

Likewise, Demographic Health Survey (DHS) information demonstrate that maternal mortality has not changed in Malaysia. Assessments from 2004 information are in certainty higher than that of 1999 (578 versus 529) separately (NBS, 2005). SDC (2005, 2006 and 2007) yearly health reports have demonstrated status of maternalmortality in the Kinta more than three years as 0.09%, in 2005; 0.11% in 2006; and 0.07%in 2007. The majority of these deaths were because of labors at unsafe home and unbooked.

Once more, worldwide endeavors have been made to diminish deaths related with pregnancy and labor. These incorporate Deliver Now, a battle by 80 Governments, Donor Agencies, and NGOs targeting raising the dedication and assets to improve delivery and availability to maternal services and diminishing maternal mortality being one the Millennium Development Goals (Linkester, 2002 and NBS, 2002). With this impact, in May 2007, Kenya for example, abrogated maternity charges in open medical clinics like Pumwani. Improving access to crisis obstetric consideration is a vital aspect for sparing mothers' and newborn children's lives (Kimani, 2008). Malaysia has put an objective to diminish seventy five percent of maternal death rate, somewhere in the range of 1990 and 2015 by improving health framework like those identified with obstetric access to mind including brief referral benefits particularly for poor and provincial women (MPEE, 2005).

In addition, the WRATZ attempts to elevate open mindfulness and to create activity intends to make pregnancy and labor alright for all women and babies in the created and developing universes (Mlay, 2006). Together with these endeavors, there is a need of extraordinary spotlight on talented researcher organizations (maternity

researchers) who give care to women during all phases of their pregnancies and guarantee satisfactory consideration for mothers and their infants (Myles, 1981; Nafis, 1989; Gihang, 2000; Ayo, 2006). They recognize inconveniences and give fitting treatment, guarantee birth readiness, envision any potential difficulties, and teach women on human services of their infant. Along these lines, any decrease in the maternal death pace of the nation will require utilization of these experts (Nyigo, 2009).

Together with these endeavors, developing nations need long haul interests in the general condition of human services framework as opposed to concentrating on explicit topics like HIV/AIDS, TB, and jungle fever (Rosser, 1997; Mwaluko et al., 1999). For instance, if a medical procedure room is well prepared, it will serve whole network, not just mothers; or a street, which goes to a health unit will serve the network in different manners. Additionally, Malaysian health framework like some other of a developing nation as of now faces a HR emergency because of intense lack of health laborers running from 30% to 70% contingent upon human on websites (Mlay, 2006).

The management ought to along these lines set up health training organizations, train and utilize satisfactory health providers who are the foundation of any social insurance framework (Ayo, 2006). The legislatures and giver clinics should place maternal mortality in their yearly spending plans like Honduras and Sri Lanka, which notwithstanding neediness have had the option to do a great deal (Bernis, 2008). In Hamilton's Johannesburg study the principle reason given for not going to antenatal facilities was the cost of voyaging and social and social restrictions. In the USA explanations behind not going to antenatal centers incorporate absence of therapeutic protection, long facility holding up times, long separations to centers, absence of childcare, language contradiction, dread that they would be pressurized to modify certain practices, undesirable pregnancies and dread of medicinal methods. In 1980 Reid and

Mcllwaine from Glasgow revealed the foundation of a fringe facility to diminish voyaging and sitting tight time for mothers.35 This is like the selVice built up in Cape Town in 1980 with the arrangement of the Peninsula Matemal and Neonatal SelVice which offers perinatal consideration to mothers and their newborn children inside the network and, to the extent is conceivable, limits the quantity of visits to the supporting emergency clinics. Therapeutic faculty go to the facilities consistently to evaluate clinicalissues recognized by the birthing researcher (Murphy, 2005).

Most investigations of unbooked mothers in South Africa have been done earlier 1994.Since 1994 free antenatal consideration has been accessible and fringe centers have been built up in numerous zones. The PMNS bargains a tertiary level maternity selVice at Groote Schuur Hospital, two auxiliary level emergency clinics - Mowbray Maternity Hospital and New Somerset Hospital - and eight birthing researcher obstetric units (MOU's) - False Bay, Guguletu, Khayelitsha, Hanover Park. Heideveld, Mitchells Plain, Retreat and Vangaurd Drive. Regardless of these clinics despite everything we have a high occurrence of unbooked mothers in our services. Unbooked mothers have involved five to seven percent of the Peninsula Maternal and Neonatal Service (PMNS) for some years.9 In the PMNS about twenty-eight thousand women convey every year and the 5- 7% unbooked women represent 33% of maternal deaths and one fourth of the perinatal mortality. This study was attempted to look at maternal and neonatal results in booked and unbooked mothers in our service and to survey the variables that at present impact a woman's decision to book for consideration in her pregnancy, given the accessibility of free maternity services since 1994.

2.2 IMPACT ON INFANT MORTALITY

Deficient maternal medicinal services benefit particularly in the rustic regions have suggestions to newborn child mortality (Marley, 1996; MoH, 2000; Kimani, 2008) characterize baby mortality as any death of a baby short of what one year of age. Newborn child death rate (IMR) is communicated as the quantity of such deaths per 1000 live births in a particular territory. Maternal difficulties of pregnancy and unsafe deliveries did at risky home and unbooked are one of the main sources of newborn child deaths in developing nations (UNICEF, 1992; NBS, 1997).

In any event 1.2 million babies were born from difficulties of during delivery. Neonatal mortality represents 70% in newborn child mortality around the world. IMR is one of the key pointers of a country's health status. The rate expanded from 37.2/1000 of every 2001 to 49/1 000 out of 2002 around the world (UN, 2005). In Malaysia, MPEE (2006) has revealed that talented health work force went to just 42% of deliveries in provincial territory. This circumstance (of low staff participation) prompts high hazard to infant pass on before their first birthday celebration. Hence, social insurance experts and the open have focused on the requirement for better pre-birth care, coordination of health services, the arrangement of complete maternal-youngster services, and participation of talented health staff at labor so that as to spare newborn children's lives. As per UN (2005) talented consideration during labors and quickly a while later can make a basic commitment in anticipating the infant deaths. SDC (2005, 2006 and 2007) yearly health reports have shown status of newborn child mortality in the area more than three years (2005 to 2007): as 5%, in 2005 4% in 2006 and 3% in 2007. The greater part of these deaths was because of labors at risky home and unbooked (Mwaluko, 1999).

2.3 ENABLING ENVIRONMENT

Expanding access to quality family arranging services and data has been a significant factor in improving maternal health in Malaysia. It has, for instance, been a factor in bringing down ripeness levels among women at the most youthful and most seasoned childbearing ages, just as among those of high equality – bunches known to have moderately higher risks of maternal mortality. Leader endeavors for composed family arranging exercises were first started by common society through the state FamilyPlanning Associations (FPAs), the first was set up in Selangor in 1953, trailed by those in three different states. The development of the Federation of Family Planning Associations, Malaysia (FFPAM) in 1958, encouraged the arrangement of FPAs in everysingle other state in Malaysia (Myles, 1981).

In 1966, the Family Planning Act was ordered prompting the foundation of a National Family Planning Board, renamed as the National Population and Family Development Board in 1988, to supervise a national program in family arranging. The National Family Planning Program (NFPP), which was actualized as a vital segment of the First Outline Perspective Plan (OPP1), 1971–90, has been guided by monetary, social, and health reasons. Family arranging services, in view of deliberate acknowledgment, were at first effectively advanced, in this manner empowering couples to choose mindfully and unreservedly the number and dispersing of their children . After some time, theNFPP has experienced a few periods of improvement, including extension of methodologies utilized, territories secured, and organizations associated with the help andarrangement of family arranging data and services (Rahma, 1999).

Since 1971, family arranging services have been logically incorporated into the Rural Health Services kept running by the Ministry of Health (MOH). The reason for reconciliation was to guarantee that family arranging could be given under the total family health program, which was increasingly adequate to the dominatingly Bumiputera provincial populace. The incorporation of family arranging into Rural Health Services overcome numerous natural socio-social and religious hindrances. As of now, all rustic health clinics give family arranging services as a major aspect of a coordinated MCH/FP program. The NFPP has arrived at practically all qualified couples for family arranging services and data, instruction, and correspondence related exercises, through a system of management outlets kept running by the MOH, NPFDB, and FFPAM, and the private part, with help given by the United Nations Population Fund (UNFPA).

Prophylactic pervasiveness rates (CPR) have expanded continuously and have markedly affected degrees of childbearing. The CPR, which was only 8 percent in 1966, ascended from 37 percent in 1974, to 52 percent in 1984, stretching around 58 percent in 2000 (Figure 5.5). During these three decades, the total richness rate per woman tumbled from 4.9 in 1970, to 3.3 in 1990 and to 3.0 in 2000. There is degree for further improving maternal health by growing access to regenerative health services and data to all who need them, particularly the less fortunate networks. Moreover, on the grounds that sex relations influence conceptive health, men should assume more noteworthy liability for their own sexual conduct just as regard and bolster their accomplices' privilege and health. Particularly with regards to rising degrees of HIV/AIDS, the regenerative health needs of young people and adolescents require specific consideration. This requires sexual orientation touchy training and data programs at different levels (Rosenfield, 2007).
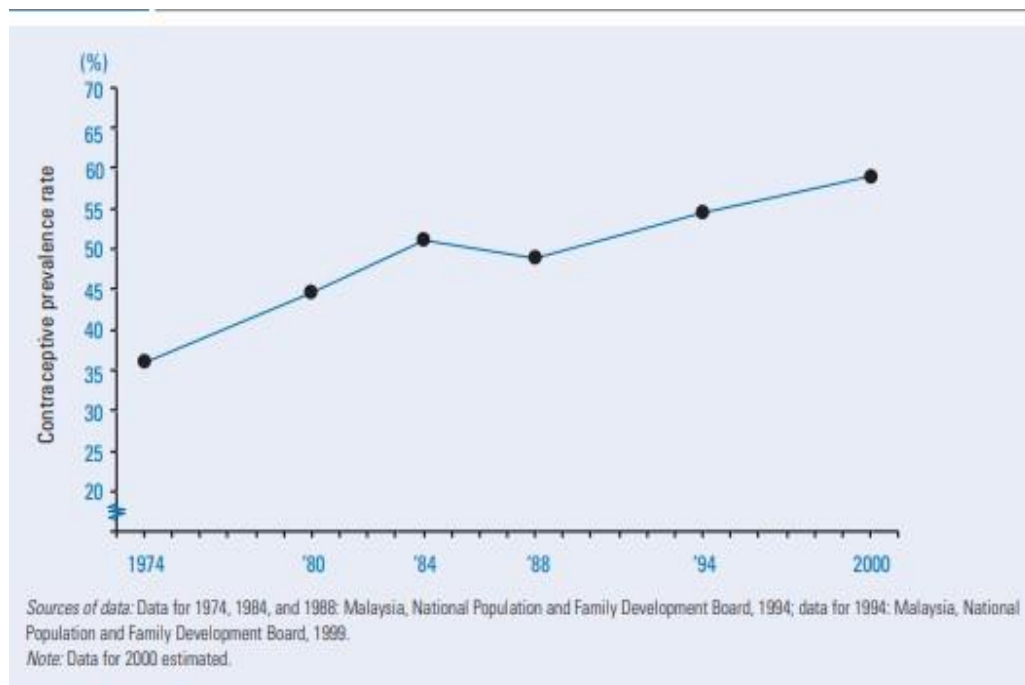
Figure 2.1: Estimated contraceptive prevalence rates, Malaysia 1974-2000

2.4 GOVERNMENT COMMITMENT

The national responsibility to improve maternal health was actualized by the MOH with sufficient assignment of assets, including monetary, labor, and physical foundation. This has supported continued responsibility from health experts prompting improved maternal health. One key factor that has empowered the MOH to pick up and continue government backing was through the utilization and sharing of information on high maternal mortality with key leaders at all levels and at proper occasions to impact demeanors and to acquire support for new approaches. Malaysia's responsibility to nonstop improvement and fortifying of maternal and kid medicinal services is obvious from the development and overhauling of the health foundation, labor, and strategic help, including correspondence and transport clinics (Rosser, 1997).

The MOH has given adequate numbers and classes of HR, as indicated by management standards and models, to update the aptitudes and capability of birth chaperons, particularly as to the management of obstetric crises and pregnancy complexities. Training in relational abilities and steady supervision with in-management training of researchers in obstetrics, pediatrics, and analgesic aptitudes before locale clinic postings are factors that have prompted better maternal social insurance. Consideration has been given to staff welfare and prosperity. Staff in provincial postingsare given staff quarters, while vehicle advances are accessible to all staff, including cruiser credits for network medical caretakers and birthing researchers. These have empowered the maintenance and inspiration of prepared and talented work force, particularly those at essential level clinics. In the mid-1980s, the management looked into the common assistance pay structure whereby explicit classifications of health work force, including researchers, medical attendants and birthing researchers were delegated basic staff and given a 'basic remittance' (Sreeramarelly, 2006).

2.5   PARTNERSHIP INITIATIVES

One activity, bolstered by WHO and UNICEF (United Nations Children's Fund), was the 'Essential Health Care' way to deal with connect with underserved and unserved bunches in remote zones, and to socially barred gatherings, for example, poor people, the indigenous, and the home populace. Explicit systems for these difficult to-arrive at gatherings were brought out through portable groups and town health laborers, with essential human services gave, including antenatal consideration, delivery, postnatal consideration, and family arranging. UNICEF and WHO, through the Alma Ata Declaration for Primary Health Care in 1978, bolstered these effort systems, while the World Bank and UNFPA helped bolster better health clinics (separate MCH/FP square) and training of MCH work force (researchers, medical caretakers, and birthing assistants) in specific territories of maternal and youngster health and health training. Arranging and

usage of health strategies and projects in Malaysia has been multi-organization and multisectoral with coordination by the Economic Planning Unit (EPU).

Health approaches and methodologies inside national formative plans have been founded on an expansive partner meeting, that incorporates NGOs and applicable networks. A coordinated methodology has empowered collaborations among sectoral programs, for example, the aversion of infections, arrangement of water and natural sanitation, and better nourishment, to profit the general health status. The cognizant exertion to advance the headway of women in formal and casual instruction, aptitudes training, and smaller scale credit clinics, has enabled women to settle on decisions with respect to their own and family matters, including social insurance and utilization of health clinics. The help from expert health affiliations and medicinal schools has encouraged the consolidation of new arrangements and innovation into the therapeutic and nursing educational programs and in-management training, while the development of the private health segment has managed women more options for maternal consideration and delivery (Telemu, 2002).

2.6   SKILLED BIRTH ATTENDANTS AND MIDWIFERY

Access to skilled birth participation is one of the most significant intercessions for diminishing maternal mortality. This relates both to the accessibility of adequate quantities of gifted health faculty, just as the accessibility of an empowering situation, for example, arrangement of sufficient medications, supplies, transportation, referral clinics, and strong management and supervision. Proficient birthing assistance, with the preparation and enlistment of maternity researchers, started in the pre-Independence time. The foundation of birthing assistance schools and the resulting updating of maternity researchers to network attendants has been an imperative factor in the enduring increment in 'safe deliveries (United Nations, 2005).

This has been additionally fortified by help and supervision of the network nurture by a prepared medical caretaker/maternity researcher and general health medical attendant at the health focus, who took care of referrals. Improved capability of birthing assistance abilities and management of pregnancy and delivery confusions through refreshing training educational programs, in-management training, institutionalization of management conventions for management of significant reasons for maternal mortality, and enabling birthing researchers and medical attendants to embrace lifesaving crisis strategies fortified the limit and capacity of attendants and birthing assistants to fill in as viable bleeding edge health experts. Underutilization of essential medicinal services clinics was overwhelmed by expelling customary social and social obstructions, individual convictions, and inclinations of the networks through broad endeavors in health training in centers, at unsafe home and unbooked, in the towns, and among persuasive people in the network to improve 'agreeableness' of services (URT, 1990).

Some time ago in Malaysia, pregnancy and delivery were uniquely influenced by customary and socio-social practices, convictions, and taboos. Concentrates on inclinations for spot of delivery gave information to enhancements to in-management training and to the administrative and hierarchical parts of services. Lessening holding up time, improving patient stream, auspicious referrals, and suitable management of pregnant women with difficulties, just as giving all the more cordial customer situated services, were among the measures embraced. Regardless of whether nations ought to put resources into training TBAs or whether expert maternity researchers and network medical attendants ought to supplant TBAs is a disputable theme. Malaysia received the two alternatives.

Understanding that TBAs were effectively leading deliveries during the 1960s and 1970s and that most of maternal deaths were among women who conveyed at unsafe home and unbooked with TBAs, the MOH started to enlist TBAs in 1974 and gave

training on cleanliness. In the late 1960s, the Family Planning Board had enlisted TBAs as network helpers and merchants for family arranging products, for example, pills and condoms. The proceeding with notoriety of TBAs and the underutilization of fringe health clinics (maternity researcher facilities and network centers) called for strategizing of endeavors to accommodate risky home and unbooked deliveries by talented birth chaperons (Lin, 2005).

An investigation on the acts of, and inclinations for, TBAs, just as explanations behind underutilization of government birthing researchers, was embraced in 1984/5, and. the findings were utilized to draw up a system for a progressively powerful usage of TBAs. This involved serving the individual needs of the mother and family; activating network and family support for pregnant women to use maternity researcher facilities for antenatal consideration; staying away from destructive customary practices did during pregnancy and delivery; and supporting government birthing researchers during unsafe home and unbooked deliveries and going with women to medical clinics when alluded for pregnancy checks or delivery. TBAs were likewise instructed to perceive the threat indications of pregnancy and delivery, to illuminate women and families on the shading coding framework, and to urge them to come to centers month to month for updates and social visits.

They were likewise permitted to carry on innocuous conventional practices, for example, presenting supplications and postnatal back rub. On the other hand, government birthing researchers were given in-management reports on the shading coding management rules, management of intricacies of pregnancy and delivery, crisis strategies for maternal and infant endurance, and methods to improve their correspondence, cheerfulness, and amicability with TBAs, families, and the network. This association procedure was effective, as prove by the fast decrease of deliveries directed by TBAs, the ascent in emergency clinic deliveries, and the acknowledgment of TBAs by expert birthing researchers and medical attendants. By 2000, only 4,500 out of the 530,000

deliveries were done with the help of TBAs, contrasted and 20,000 of the 501,000 births in 1985. (Cressey, 2000)

2.7   HAZARD APPROACH IN MATERNAL HEALTH CARE

Maternal death examinations in the mid-1970s uncovered that most of deaths happened at risky home and unbooked, and included delivery by TBAs, and that more than 80 percent were because of postponement in looking for expert assistance and to inappropriate management of deliveries bringing about baby blues discharge, eclampsia, injury/damage, and disease. Poor acknowledgment of government birthing assistants, particularly in customary Bumiputera people group, and absence of ability in lifesaving aptitudes to manage crisis circumstances and genuine complexities of pregnancy and delivery were significant limitations. Henceforth from 1979, Malaysia found a way to take a shot at maternal mortality decrease techniques efficiently through the 'Hazard Approach', which started as an organization activity with WHO. Krian locale in Perak, the region with the most noteworthy revealed maternal mortality in Peninsular Malaysia in 1979, was picked as the 'field research facility'. Standard examinations were completed to distinguish the causes and contributory variables of maternal deaths cutting crosswise over individual and individual elements, health services, and network factors, to acquire explanations behind postponements (Rosser, 2005).

In light of the findings, a point by point issue investigation and prioritization of issues where intercessions could be of most help was finished. This was trailed by the detailing of fitting mediation procedures. So as to get ready for a progressively composed and compelling management of pre-birth care, a framework was contrived, posting the most normally happening risk factors fundamental the recognized issues. This advanced into a shading coding framework for pre-birth appraisal which characterized the degree of consideration and class of health staff required for every pregnancy. Cutoff focuses were resolved for activating activity and management conventions drawn up for management

of significant reasons for mortality (Min, 2007).

Researchers, medical attendants, and maternity researchers or network attendants from clinic and network health clinics were given in-management training to improve their birthing assistance fundamental abilities while an increasingly efficient and adaptable referral framework was tried to evade delays in referrals and to cook for instances of confusions and crises. Network instruction and backing were solid components of this methodology as it was perceived that pregnancy and delivery are inseparably connected to the socio-social and customary condition of the family and network. These included: (I) centered health training to women and their families to look for early care and to perceive the risk indications of pregnancy and delivery; (ii) naming women who had experienced genuine pregnancy or delivery confusions as network inspirations; (iii) activation of network assets for crisis transport; (iv) unsafe home and unbooked assistance and money related help for penniless families; and (v) backing by persuasive people in the network, including area and town religious leaders.

A National Seminar on Risk Approach in 1987 brought about a large number of the methodologies being embraced into the national program. The 'Hazard Approach' in maternal health in the Malaysian setting in this way turned into a framework intended for the early ID, proper management, and convenient referral of pregnant women as per their relegated shading codes. This shading coding framework conceived for pre-birth hazard appraisal is done in full acknowledgment of the way that every single pregnant woman are in risk, that it is preposterous to precisely anticipate chance, and that foreseeing risk doesn't really prompt the ideal result. In the Malaysian setting, nonetheless, this framework is intended to 'actuate' care for pregnant women, particularly those with pregnancy entanglements and to keep up a ready framework for forestalling and staying away from potential reasons for maternal mortality that may emerge particularly from deferrals. The Risk Approach subsequently intends to offer consideration to every singlepregnant woman yet more to those out of luck. It was additionally enlarged through bits of knowledge picked up from the technique emerging out of WHO's District Team Problem-Solving Approach (Robson, 1993).

2.8   CONFIDENTIAL ENQUIRY INTO MATERNAL DEATHS (CEMD)

So as to acquire a profile of the causes and contributory components of maternal deaths, an arrangement of examination of maternal deaths was founded in the mid-1970s. Deaths among women who conveyed at risky home and unbooked and in government emergency clinics were researched by birthing researchers and medical attendants through a maternal demise examination group and the findings were talked about by theregion health official and the state MCH Committee. Be that as it may, this data was not accumulated deliberately and in a uniform way and the information gathered were regularly not used to settle on automatic decisions (WHO, 2005).

Therefore, in 1991, the CEMD framework was presented. A National Technical Committee, comprising of obstetricians and gynecologists, anaesthesiologists, pediatricians, drug researchers, and medical caretakers, was built up to give authority, alongside the help of state and area boards. The CEMD procedure is intended to guarantee an auspicious assessment of each maternal demise; utilize an incorporated methodology that takes a gander at both social and medicinal causes; survey the jobs of all staff associated with the consideration of the woman; recognize preventable variables present in the management of the cases and the limitations experienced; and distinguish measures to be taken at all levels to address insufficiencies in norms of consideration. The names of patients and researcher co-ops are kept classified, and the CEMD framework is viewedas a learning procedure and not an issue finding or reformatory procedure.

A portion of the difficulties of executing the CEMD have included recognizing the most significant reason for death (both restorative and social causes), especially when demise authentications are given by the police for unsafe home and unbooked deliveries; endorsement for post-mortems which are not socially worthy to upgrade clinical finding; and getting satisfactory quantities of prepared staff to direct examinations, especially in

private emergency clinics. In 1996, a Knowledge, Attitudes, and Practice Survey demonstrated that health managers had used the CEMD findings to improve the nature of consideration. For instance, 68 percent of open clinics and 72 percent of private organizations changed their practices to upgrade correspondence and transport all the more successfully through the referral framework (Table 5.2).

As an outcome of the CEMD findings, a steady spending plan was accommodated building up elective birthing focuses and improving clinics in existing health focuses; improving correspondence to encourage referral and recovery of obstetric crises; directing national and state training; and improving work forms, including the utilization of partogram for risky home and unbooked deliveries, the support of unsafe home and unbooked-based maternal health records, and the advancement of clinical conventions. Besides, in the mid-1990s, a significant number of the maternal deaths that happened in private clinics were because of deficient prepared staff, or absence of access to blood supply. Subsequent to evaluating the demise reviews, general society and private medical clinics agreed for private clinics to move crisis maternal cases to government emergency clinics. This understanding enabled the private part to keep up its customer base and salary while guaranteeing legitimate consideration for patients.

Category of Change	Government Facilities (%)	Private Facilities (%)	Action Taken
Change in practices	68	72	Improved communications, telephones, transport
Training	67	–	Training to address remedial problems
Changes in protocols	61	77	Adjusted in clinical protocols to better fit the local situation
Staffing	44	–	More staff added
Infrastructure	40	68	Equipment upgraded
Budget	30	–	Budget increased to support activities

Table 2.1: Service changes made by government and

private facilities due to CEMDFindings, Malaysia, 1996

CHAPTER 3

RESEARCH METHODOLOGY

The purpose of this study is to determine the risk factors of unassisted deliveries in Perak. With the available data, associated factors such as sociodemographic factors, maternal factors, geographical factors, healthcare facility factors and maternal knowledge and practice need to be statically analysed to understand and identify the pitfalls. Finally, this study hopes to outline meaningful recommendation to implement effective and efficient preventive measures. Hence, this section describes the methods and procedures to determine the purpose, answer the research questions and prove the hypothesis to support the objective of this study and finding elaborated in literature review.

3.1   RESEARCH   STUDY DESIGN

The study design will be a case-control study, which will use a case study analysis. The study design will be a case-control study design. All cases of unassisted deliveries in Perak from 2017 to 2019 will be compared to similar number of controls (assisted deliveries) in Perak within the same period of time. The control group samples will be obtained from that of those who delivered in government health settings and will be matched with cases by age and mode of delivery (spontaneous vertex delivery) by multivariate analysis.

This study design is chosen as it quick, cheap, suitable for rare conditions and can evaluate multiple exposures. Furthermore, this study enables comparison between a group of cases and controls in term of associated factors that influence the occurrence of unassisted delivery. This study design also serves as a baseline data that can be used for elaborative future studies.

The design is good for determining the relationship between dependent and independent variables. Based on the benefits illustrated in this research design, the researcher will be focusing on the design, which will allow an easy statistical description and interpretation of the data and provides the opportunity to determine the relationship between the necessary variables in the discussion (Per, 2007).

3.2   STUDY SITE

This study was carried out in Perak Darul Ridzuan. The per capita income of the district is below the national per capita income. The state has a well distributed government medical and health facilities which are the tertiary hospital, health clinics, maternal and child health clinics, community health clinics and village health clinics.

The study will be focused on the unassisted deliveries in the whole of Perak. This study site is chosen as it is cost effective, time efficient and data can be easily accesible and analaysed thoroughly as it is also researcher's work site. On the other hand, Perak has a total of 11 major health districts assigned in their respective district offices as shownin Table 3.1. Kinta Health District Office is one of the largest health districts in Peninsular Malaysia.

Table 3.1: District Health Offices in Perak Darul Ridzuan

No	District Health Office
1	**Kinta District Health Office** Jalan Aman, 31000 Batu Gajah, Perak Darul Ridzuan.
2	**Larut Matang and Selama District Health Office** Tingkat 2, Wisma Persekutuan,Jalan Istana Larut, 34000 Taiping, Perak Darul Ridzuan.
3	**Manjung District Health Office** Jalan Dato' Ahmad Yunus,32000 Sitiawan, Perak Darul Ridzuan.
4	**Perak Tengah District Health Office** Jalan Ipoh - Lumut Bandar Seri Iskandar,32610 Seri Iskandar, Perak Darul Ridzuan.

5	**Batang Padang District Health Office** Jalan Temoh,35000 Tapah Perak Darul Ridzuan.
6	**Kuala Kangsar District Health Office** Jalan Sultan Idris Shah I,33000 Kuala Kangsar, Perak Darul Ridzuan.
7	**Hulu Perak District Health Office** Aras 3, Bangunan Persekutuan,33300 Gerik, Perak Darul Ridzuan.
8	**Hilir Perak District Health Office** Jalan Maharaja Lela, 36000 Teluk Intan, Perak Darul Ridzuan.
9	**Kerian District Health Office** Jalan Sekolah, 34200 Parit Buntar, Perak Darul Ridzuan.
10	**Kampar District Health Office** Jalan Degong, 31900 Kampar, Perak Darul Ridzuan.

11	**Mualim District Health Office** Aras Bawah, Klinik Kesihatan Slim River,\ Jalan Indah 5, Taman Krishnan,35800 Slim River, Perak Darul Ridzuan.

There are a total of 15 government hospitals and 97 health clinics throughout the state that offer maternal and child health services. As Perak has high number of deliveries, the state also contributes to high number of maternal and under-5 mortality cases. Hence, Perak is a potential study site with a huge strength of the study.

Figure 3.1: Eleven districts under Perak State Health Department

3.3   STUDY POPULATION

According to the Department of Statistics Malaysia (2019), the state has a population of 2.51 million with a growth rate of 0.3%. The state is located in an area of 20,976 km². The study population includes samples of cases and controls. Cases are all unassisted deliveries in Perak from 2017 to 2019. The controls include same sample size (as number of cases) of assisted deliveries in Perak from 2017 to 2019.

Control group is part of the study population as well. The same number of samples for control group will be obtained from that of those who delivered in government health settings in the aforementioned duration. In this study, cases are collected from the secondary data.

These cases are studied further on their risk factors such as social demography (age, ethnicity, education level, occupation and financial status), parity and booking status (booked or unbooked pregnancy), geographical factor, health facility factor, and communication factor.

3.4   SAMPLING PROCEDURE

In this study, samples are collected from secondary data from Maternal and ChildHealth Units (MCH) of all the 11 districts in Perak. As per the healthcare policy in all health clinics, all deliveries are reported by health clinics to their respective district MCHunits. District MCH units then verify and send the data to the state MCH division.

Samples for this study include a group of cases and controls. All cases of unassisted deliveries in Perak from 2017 to 2019 are included in the case group. This dataset is obtained from the MCH division of Perak State Health Department. Control groups include cases of assisted deliveries in Perak that occur within the same duration of

years which is matched to the cases by age and mode of delivery (Spontaneous Vertex Delivery). The control group is obtained from each of the district MCH units.
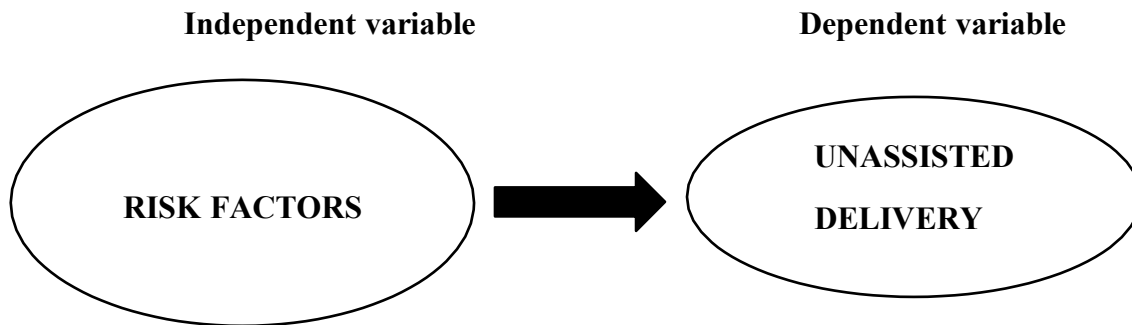
Independent variable   **Dependent variable**

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   ⬭ RISK FACTORS ⬭   ➡   ⬭ UNASSISTED DELIVERY ⬭
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Figure 3.2: Association between independent variable and dependent variable

In this study the researcher proposed the unassisted delivery as a dependent variable while on the other hand the risk factors as independent variable to conduct the research. Figure 3.2 shows the association between independent variable and dependent variable in this study.

3.4.1   INCLUSION CRITERIA

All cases of reported unassisted deliveries in Perak from 2017 to 2019.

3.4.2   EXCLUSION CRITERIA

All cases of unreported unassisted deliveries in Perak from 2017 to 2019.

3.5   DATA COLLECTION METHOD

As a Standard Operating Procedure set by the Ministry of Health, Malaysia, all deliveries in a district are recorded into a data collection tool named *Reten KIB202A* (Appendix 1) which is in Microsoft Excel format. It is a standardized tool set by ministry for the use of the entire nation. This data is recorded and sent by the health clinics to their respective MCH units every month. The MCH officers verifies the data and compile them (data of all health clinics) into one dataset of the district and send it to the state MCH division.

Reten KIB 202A includes all deliveries in the district, regardless of whether it is assisted or unassisted. Column 10 in *Reten KIB 202A* denotes incidents unassisted delivery. If this column is ticked '√', the respective health clinic is responsible to investigate the incident and report it to the district MCH unit using another standardized reporting form called *Laporan Insiden Kelahiran Tidak Selamat -KTS 1 Pindaan 2018* (Appendix 2).

All of these reports are again verified by district MCH units before being sent to the state division. At state level, the data from the reports received from all the districts are extracted and recorded into a data compilation format (Microsoft Excel format) called *Biodata Kes Kelahiran Tidak Selamat (KTS -1 Pindaan 2015)* as listed in Appendix 3. The variables filled up in this dataset include:

 - Name
 - Address
 - Age
 - Citizenship
 - Race
 - Marital status
 - Education level

- Parity

- Maternal occupation

- Presence of antenatal visit (e.g. booked or unbooked pregnancy)

- Attendant of delivery (e.g. self, partner, midwive or others)

- Geographical risk factors (e.g. distance from home to clinic)

- Maternal risk factors (e.g. no legal marital documentation, delay in appreaciating pain and others)

- Economic risk factors (e.g. financial constraint, no transportation and others)

- Health service factors (e.g. availability of ambulance)

- Communication factors (e.g. good phone line)

In order to obtain samples for cases, this secondary data, *Biodata Kes Kelahiran Tidak Selamat (KTS -1 Pindaan 2015*) is requested from state MCH division for year 2017, 2018 and 2019. However, before it is shared for the research purpose, those variables that serve as patient identifiers (name and address) are removed. Therefore, the data collection form received for the purpose of this research does not contain any patient identifier.

As for control group, the same set of data collection tool (*Biodata Kes Kelahiran Tidak Selamat -KTS -1 Pindaan 2015)* without patient identifier is used with age being matched with cases. Clear instructions are given to the district MCH units to randomly collect samples from their respective health clinics. Matching criteria (age and mode of delivery) is clearly explained.
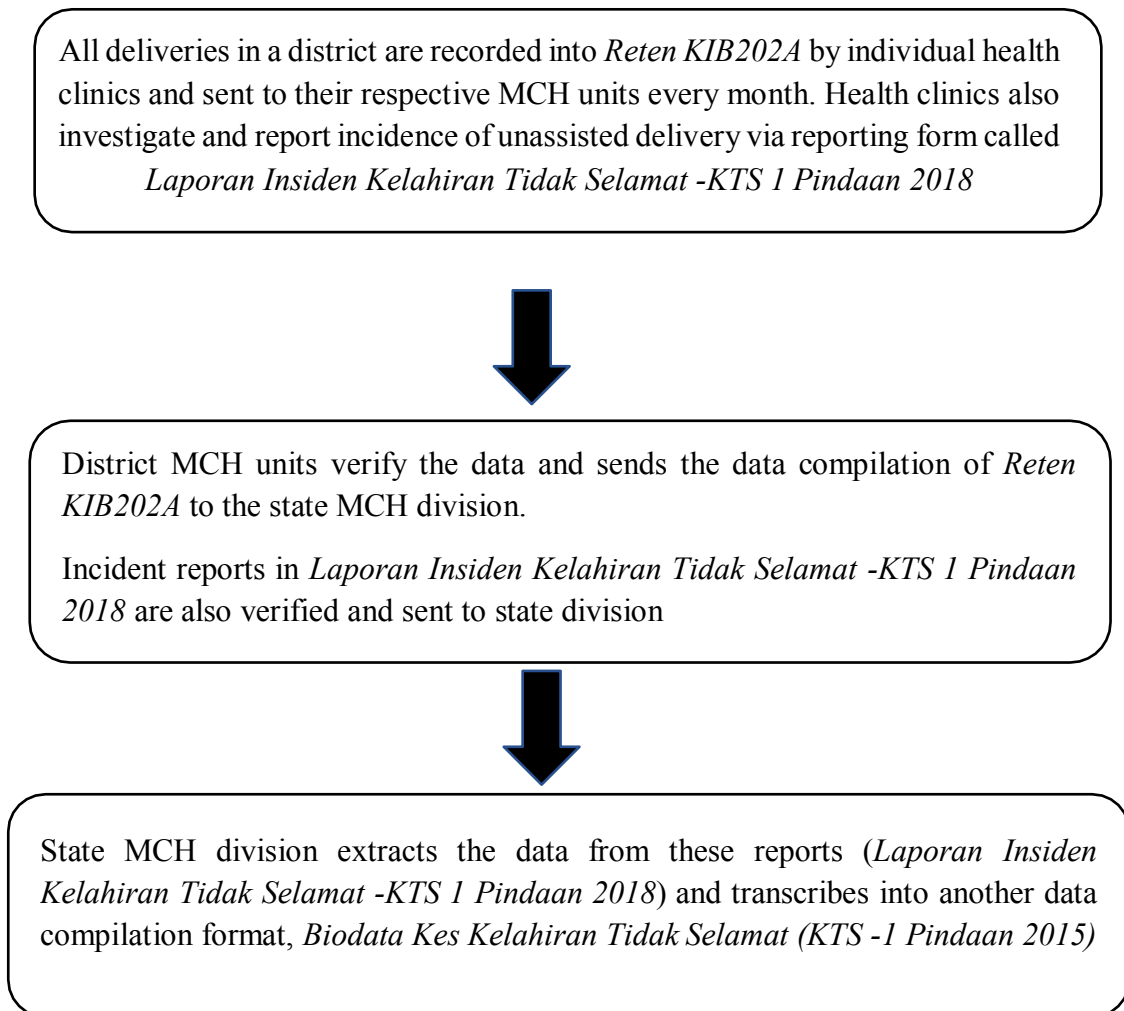
All deliveries in a district are recorded into *Reten KIB202A* by individual health clinics and sent to their respective MCH units every month. Health clinics also investigate and report incidence of unassisted delivery via reporting form called *Laporan Insiden Kelahiran Tidak Selamat -KTS 1 Pindaan 2018*

District MCH units verify the data and sends the data compilation of *Reten KIB202A* to the state MCH division.

Incident reports in *Laporan Insiden Kelahiran Tidak Selamat -KTS 1 Pindaan 2018* are also verified and sent to state division

State MCH division extracts the data from these reports (*Laporan Insiden Kelahiran Tidak Selamat -KTS 1 Pindaan 2018*) and transcribes into another data compilation format, *Biodata Kes Kelahiran Tidak Selamat (KTS -1 Pindaan 2015)*

Figure 3.3: Flow chart of the work process in Maternal and Child Health Division

Again, it is assured that there is no patient identifier in this data collection for both cases and controls. As the study is held in Perak Darul Ridzuan, data will be obtained from MCH division of Perak State Health Department for cases and MCH units of districts for control. For this purpose, data collection permission is obtained formally from the Perak State Health Department. Communication with district as wellas state MCH officers is held by digital communication platforms (through e-mails and WhatsApp application)

3.6   VARIABLES

Dependent variable is cases of unassisted deliveries in Perak from 2017 to 2019 whereas independent variables are risk factors that affect the occurrence of unassisted delivery in Perak during the aforementioned duration. The term of reference for the variables is as defined in Table 3.2.

Table 3.2: Term of reference for variables

No	Variable	Definition
1.	Unassisted delivery	Childbirth in which mothers delivered without the assistance of a medically trained birth attendant.
2.	Age	Age calculated based on date of birth
3.	Parity	Total number of viable pregnancies, including live births and stillbirths.
4.	Citizenship	Attained a rightful status of belonging to Malaysia and its lawful jurisdiction

5.	Legal immigrant	A non-citizen who is legally admitted to Malaysia based on approved and verified legal documents
6.	Illegal immigrant	A non-citizen residing in Malaysia without approved legal documents and only by violation of law
7.	Race	Social grouping based on physical, behavioral and cultural attributes that is affected by inheritance
8.	Marital status	A legally defined relationship status between a couple
9.	Education level	The highest level of education successfully completed
10.	Occupation	A state of being in an employment, job or profession
11.	Distance	The numerical measurement of space in terms of kilometer (unit) between two places

12.	Antenatal check-up	Health visit to a health facility with trained health professionals for pregnancy check-up and care Booking of pregnancy refers to the first antenatal check-up
13	Delivery attendant	Refers to the person who is present during a labour and attends to the childbirth
14	Delay in calling ambulance	The presence of delay in seeking for medical attention upon onset of labour symptoms (show, contraction pain and leaking liquor)
15	Unable to appreciate labour pain	Mother who is unintentionally unaware of the presence of labour symptoms (show, contraction pain and leaking liquor)
16	Unknown pregnant	Mother who is unaware of her status of being conceived
17	Afraid no legal document	The fear of no legal documents of registration of marriage

18	Maternal choice	Mother who intentionally opts for unassisted delivery

19	Financial issue	A poor economic background that renders one to be unable to fulfill medical expenses (delivery charges)
20	Single parent	a person bearing a child solely without a legal partner.
21	Transportation	The ability to access healthcare facilities by a vehicle system
22	Teenage mother	Adolescent mothers aged between 11 to 19 who become pregnant
23	Precipitated labour	Rapid expulsion of fetus within less than 3 hours of the onset of contractions
24	Delay in ambulance arrival time	More than 15 minutes (as per the Key Performance Index) for ambulance paramedics to reach the place of scene from the time the Emergency Incident Call received
25	Home far from healthcare facility	More than 10 kilometers

26	Phone line	Accessibility to telecommunication signal and services
27	Failure in communication between client and healthcare staff	Healthcare staffs contacted and notified about the incident of unattended delivery but not responded as per response protocol

3.7   DATA PROCESSING AND ANALYSIS

The data is analysed using IBM Statistically Package for Social Sciences (SPSS) version 23. Quantitative data from the existing secondary dataset will be cleaned, verified and coded into SPSS to conduct the analysis. The risk factors that lead to unassisted deliveries are studied retrospectively and compared with control group. Matched cases and controls are compared and studied for variables (risk factors) that affect the occurrence of unassisted deliveries. The types of statistical analysis applied in this research are descriptive analysis and inferential analysis.

Age is the only variable which is a continuous data in this analysis. The rest of the variables are categorical data, hence, non-parametric test is applied accordingly. Therefore, Chi-square analysis is applied for this research. No further statistical analysis is made due to limitations in terms of time, complexity of study and focus of study. The proportion of cases for unassisted deliveries in Perak from 2017 to 2019 and other results related to it is also presented in descriptive form.

As for inferential statistics, Chi- square test is done between outcome variableand social demographic variable. Furthermore, calculation of Odds Ratio is proceeded. A p-value of <0.05 was considered significant at 95% confidence interval.

3.8   ETHICAL APPROVAL

Approval for the study obtained from Medical Research Ethics Committee (MREC), Faculty of Medicine, UniKL Royal College of Medicine Perak (UniKLRCMP/MREC/2020/129) dated 5th of July 2020 (Appendix 4). Ethical approval from the Medical Research & Ethical Committee, Ministry of Health is obtained with registration number NMRR-20-3106-55116(IIR) (Appendix 5).

3.9   STUDY DURATION

This study was conducted from the month of December 2019 till March 2021. It takes almost one and a half year to perform all activities to complete this study as listed in Appendix 7.

CHAPTER 4

RESULTS

A case control study was carried out to evaluate the possible risk factors for unassisted deliveries in Perak state during a period of 3 years from January 2017 to December 2019. Unassisted deliveries during this period were selected as cases and the same number of assisted deliveries were selected as controls.
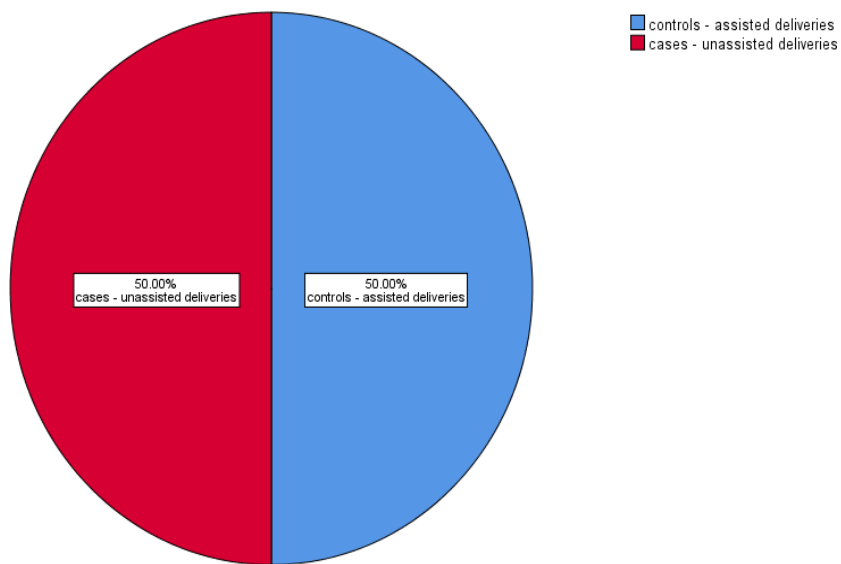
Figure 4.1: Distribution of cases and controls

Data related to risk factors were collected from 208 cases who practiced unassisteddeliveries and 208 controls who practiced assisted deliveries during this period of 3 years.
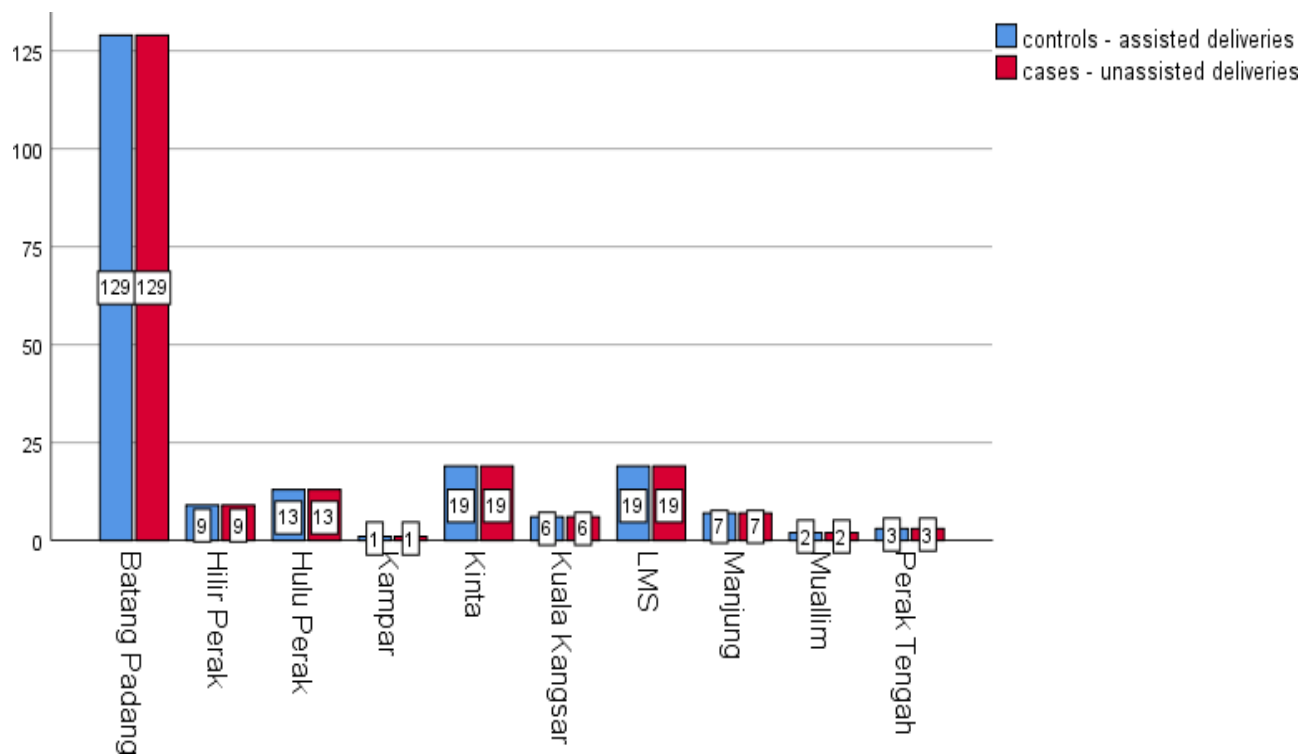
Figure 4.2: Distribution of cases and controls from different districts in Perak state

Equal numbers of cases (those with unassisted deliveries) and controls (with assisted deliveries) were selected from different districts of Perak

Table 4.1: Distribution of cases and controls based on age

Age	Mean (SD)	Median (IQR)	p value*
Cases (unassisted deliveries)	27.25 (6.897)	27 (12)	
Controls (assisted deliveries)	27.19 (6.618)	27 (11)	0.918
Overall	27.22 (6.751)	27 (11)	

* Non-parametric Mann Whitney U test was applied

Age distribution of cases and controls did not show any significant difference. Age was notnormally distributed (significance value for Shapiro Wilk test was less than 0.05). So non- parametric test was applied to know if age was significantly different among cases and controls.

Table 4.2: Distribution of study participants based on various socio demographic characteristics

Variables	Total n (%)
Year	
2017	170 (40.9%)
2018	124 (29.8%)
2019	122 (29.3%)
Total	416 (100%)
Citizenship	
Malaysian	355 (85.3%)
Legal immigrant	44 (10.6%)
Illegal immigrant	17 (4.1%)
Total	416 (100%)
Ethnicity	
Malay	195 (46.9%)
Chinese	44 (10.6%)
Indian	41 (9.9%)
Orang Asli	68 (16.3%)
Others	68 (16.3%)
Total	416 (100%)
Marital status	
Unmarried	125 (30%)
Married	291 (70%)
Total	416 (100%)

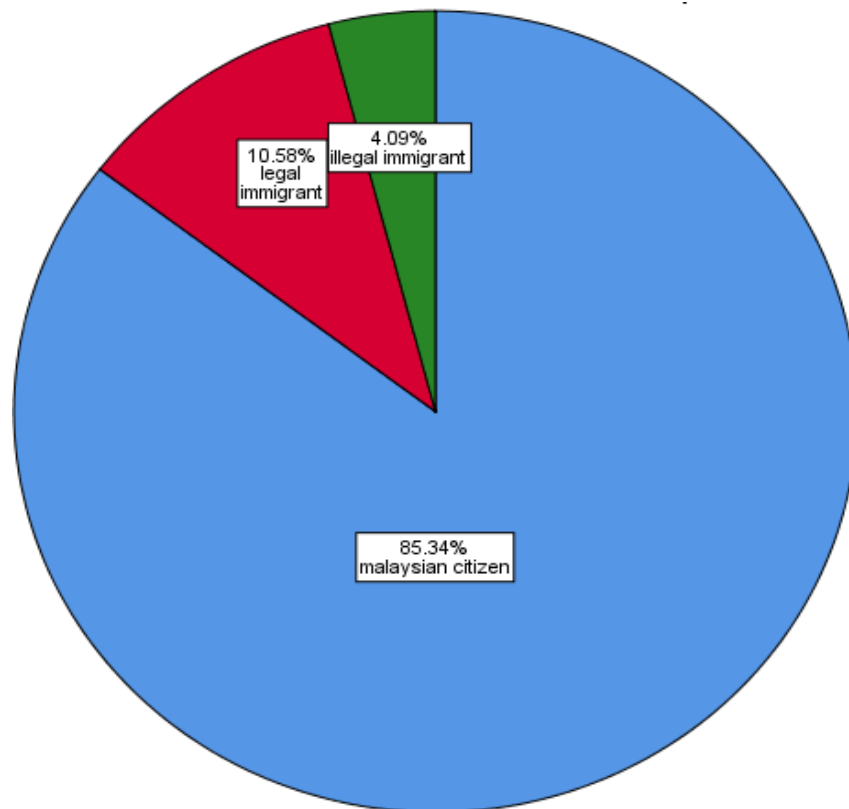| Education level	
Uneducated	45 (10.8%)
Primary	57 (13.7%)
Secondary	276 (66.3%)
Tertiary	38 (9.1%)
Total	416 (100%)
Occupation	
Unemployed	312 (75%)
Employed	104 (25%)
Total	416 (100%)

Figure 4.3: Distribution of study participants based on citizenship status

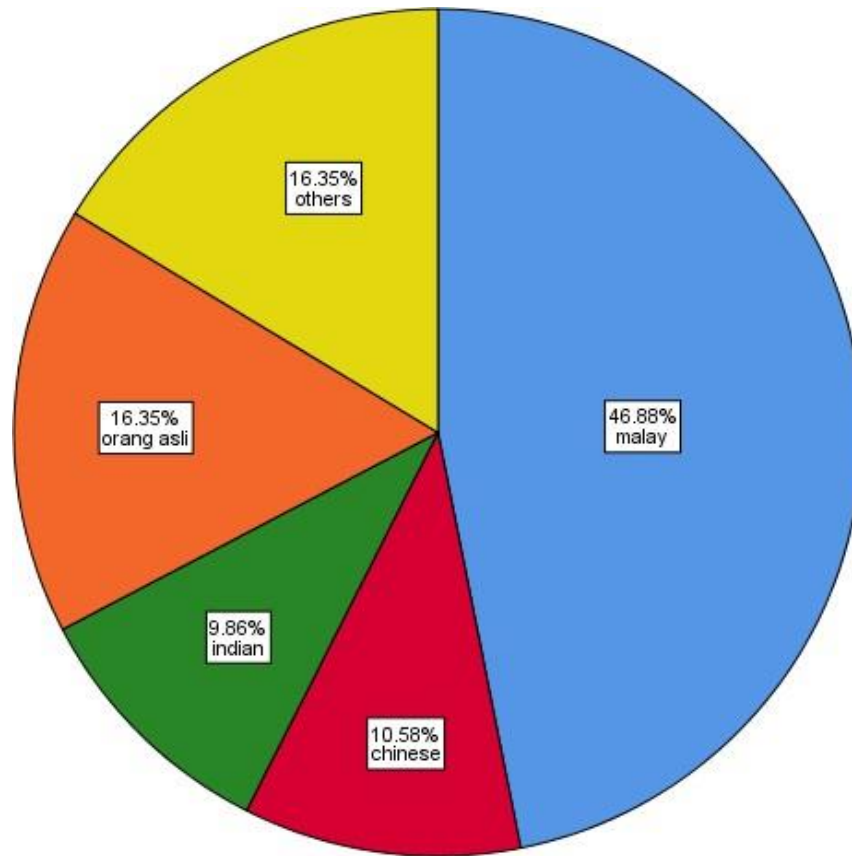Majority of study participants were Malaysian citizens, followed by legal immigrants and illegal immigrants.

Figure 4.4: Distribution of study participants based on ethnicity

Majority of study subjects were of Malay ethnic group, followed by Orang Asli,others (foreigners), Chinese and Indians.
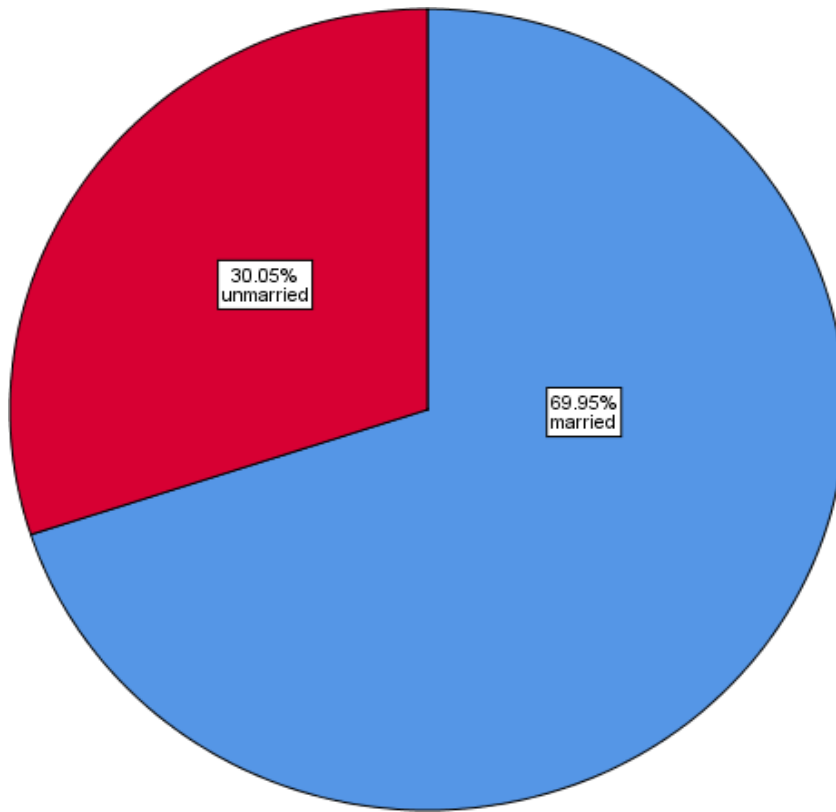
Figure 4.5: Distribution of study participants based on marital status

Majority of study participants were married (69.95%).
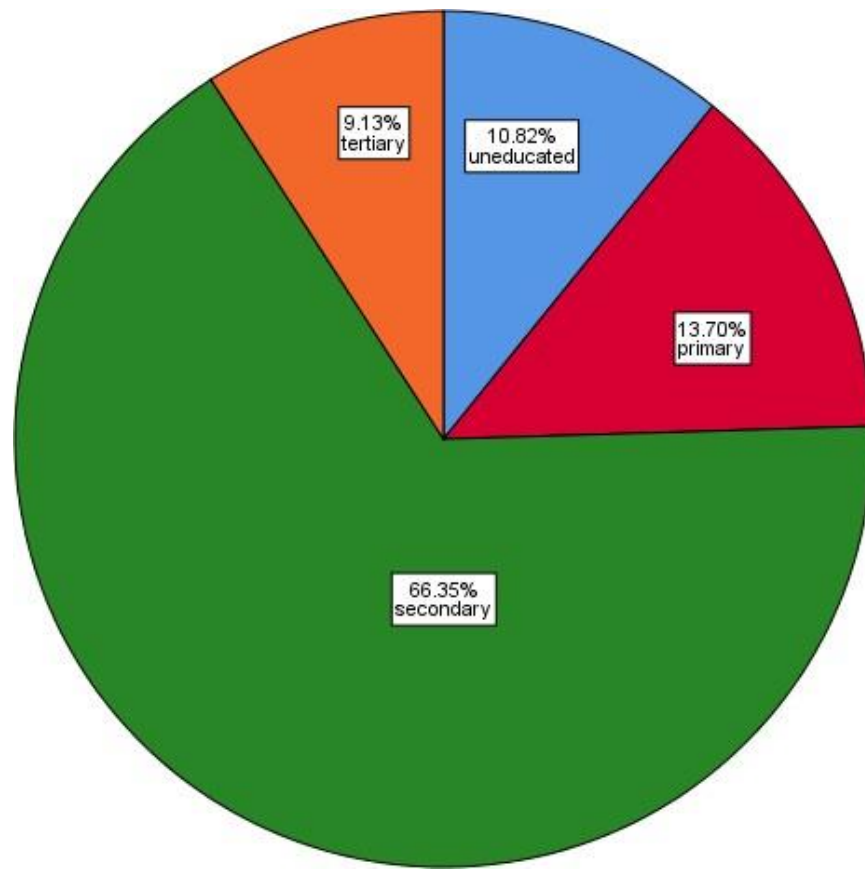
Figure 4.6: Distribution of study participants based on educational level

Most of the study participants were having secondary level of education(66.35%), followed by primary, uneducated and tertiary level of education.
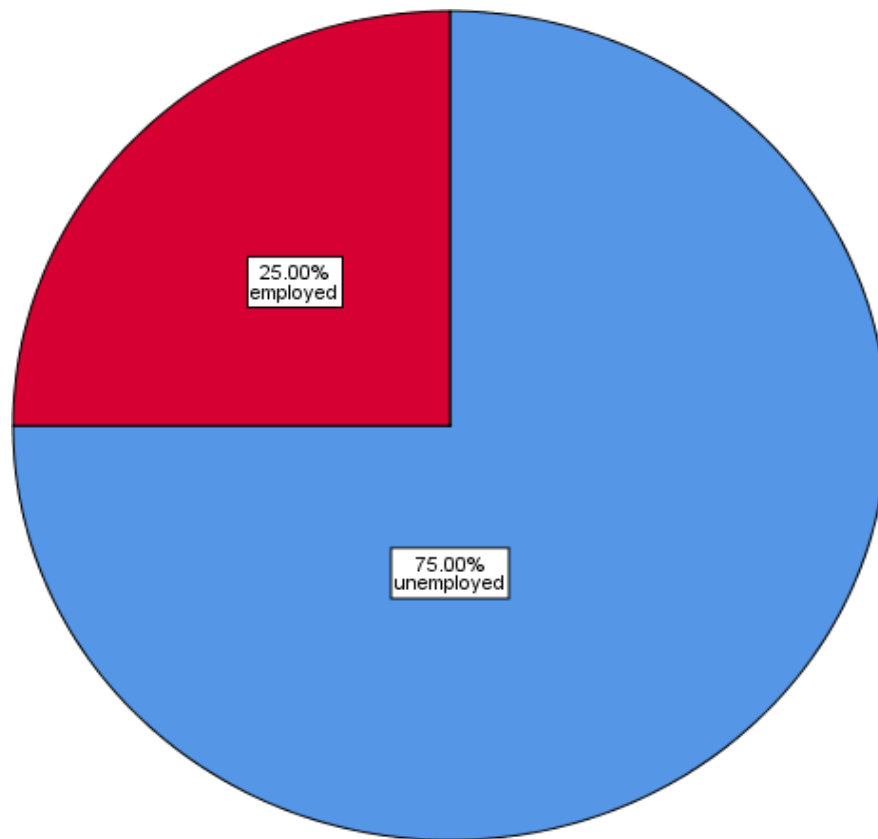
Figure 4.7: Distribution of study participants based on occupational status

Majority of study subjects were employed (75%).

Table 4.3: Distribution of cases and controls based on various socio demographic characteristics

Variables	Cases, n (%)	Controls, n (%)	Total, n (%)	Chi square p value
Year				
2017	85 (50%)	85 (50%)	170 (100%)	
2018	62 (50%)	62 (50%)	124 (100%)	> 0.05
2019	61 (50%)	61 (50%)	122 (100%)	
Total	208 (50%)	208 (50%)	416 (100%)	
Citizenship				
Malaysian	168 (80.8%)	187 (89.9%)	355 (85.3%)	0.007
Legal immigrant	26 (12.5%)	18 (8.7%)	44 (10.6%)	
Illegal immigrant	14 (6.7%)	3 (1.4%)	17 (4.1%)	
Total	208 (100%)	208 (100%)	416 (100%)	
Ethnicity				
Malay	110 (52.9%)	85 (40.9%)	195 (46.9%)	< 0.001
Chinese	6 (2.9%)	38 (18.3%)	44 (10.6%)	
Indian	11 (5.3%)	30 (14.4%)	41 (9.9%)	
Orang Asli	35 (16.8%)	33 (15.9%)	68 (16.3%)	
Others	46 (22.1%)	22 (10.6%)	68 (16.3%)	
Total	208 (100%)	208 (100%)	416 (100%)	
Marital status				
Unmarried	81 (38.9%)	44 (21.2%)	125 (30%)	< 0.001
Married	127 (61.1%)	164 (78.8%)	291 (70%)	
Total	208 (100%)	208 (100%)	416 (100%)	
Education level				
Uneducated	31 (14.9%)	14 (6.7%)	45 (10.8%)	0.052
Primary	28 (13.5%)	29 (13.9%)	57 (13.7%)	
Secondary	129 (62%)	147 (70.7%)	276 (66.3%)	
Tertiary	20 (9.6%)	18 (8.7%)	38 (9.1%)	
Total	208 (100%)	208 (100%)	416 (100%)	
Occupation				
Unemployed	147 (70.7%)	165 (79.3%)	312 (75%)	0.042
Employed	61 (29.3%)	43 (20.7%)	104 (25%)	
Total	208 (100%)	208 (100%)	416 (100%)	

Proportion of illegal immigrants (6.7%) and legal immigrants (12.5%) were significantly higher among cases (who practiced unassisted deliveries) compared to

controls (1.4% of illegal immigrants and 8.7% of legal immigrants) (p 0.007). Proportion of Malays and others were significantly higher among unassisted delivery groups as compared to assisted delivery group. Proportion of Chinese and Indians were significantly lower among cases (those who practiced unassisted delivery) (p < 0.001).

Proportion of unmarried were significantly higher among cases (38.9% compared to 21.2% among controls) while proportion of married were significantly higher among controls (78.8% compared to 61.1% among cases) (p < 0.001). A significantly higher proportion of those who practiced unassisted delivery were employed (p 0.042). There was no significant different in proportion of education levels between cases and controls.

Table 4.4: Association between various risk factors and unassisted delivery

Unassisted delivery	Antenatal care booked			
	Yes n (%)	No n (%)	Total n (%)	Chi square p value
Yes No Total	83 (39.9%) 159 (76.4%) 242 (58.2%)	125 (60.1%) 49 (23.6%) 174 (41.8%)	208 (100%) 208 (100%) 416 (100%)	< 0.001
Unassisted delivery	Delivery assistance - self			
	Yes n (%)	No n (%)	Total n (%)	Chi square p value
Yes No Total	95 (45.7%) 0 (0%) 95 (22.8%)	113 (54.3%) 208 (100%) 321 (77.2%)	208 (100%) 208 (100%) 416 (100%)	< 0.001
Unassisted delivery	Delivery assistance - husband			
	Yes n (%)	No n (%)	Total n (%)	Chi square p value
Yes No Total	42 (20.2%) 0 (0%) 42 (10.1%)	166 (79.8%) 208 (100%) 374 (89.9%)	208 (100%) 208 (100%) 416 (100%)	< 0.001
Unassisted delivery	Delivery assistance - midwife			
	Yes n (%)	No n (%)	Total n (%)	Chi square p value
Yes No	3 (1.4%) 0 (0%)	205 (98.6%) 208 (100%)	208 (100%) 208 (100%)	0.248

Total	3 (0.7%)	413 (99.3%)	416 (100%)	
Unassisted delivery	**Delivery assistance – relatives / neighbour**			
	Yes n (%)	**No n (%)**	**Total n (%)**	**Chi square p value**
Yes **No** Total	47 (22.6%) 0 (0%) 47 (11.3%)	161 (77.4%) 208 (100%) 369 (88.7%)	208 (100%) 208 (100%) 416 (100%)	< 0.001
Unassisted delivery	**Delivery assistance – others**			
	Yes n (%)	**No n (%)**	**Total n (%)**	**Chi square p value**
Yes **No** Total	15 (7.2%) 0 (0%) 15 (3.6%)	193 (92.8%) 208 (100%) 401 (96.4%)	208 (100%) 208 (100%) 416 (100%)	< 0.001
Unassisted delivery	**Maternal factor – Delay in calling ambulance**			
	Yes n (%)	**No n (%)**	**Total n (%)**	**Chi square p value**
Yes **No** Total	53 (25.5%) 2 (1%) 55 (13.2%)	155 (74.5%) 206 (99%) 361 (86.8%)	208 (100%) 208 (100%) 416 (100%)	< 0.001
Unassisted delivery	**Maternal factor – Unable to appreciate labour pain**			
	Yes n (%)	**No n (%)**	**Total n (%)**	**Chi square p value**
Yes **No** Total	26 (12.5%) 4 (1.9%) 30 (7.2%)	182 (87.5%) 204 (98.1%) 386 (92.8%)	208 (100%) 208 (100%) 416 (100%)	< 0.001
Unassisted delivery	**Maternal factor – Unknown about being pregnant**			
	Yes n (%)	**No n (%)**	**Total n (%)**	**Chi square p value**
Yes **No** Total	14 (6.7%) 1 (0.5%) 15 (3.6%)	194 (93.3%) 207 (99.5%) 401 (96.4%)	208 (100%) 208 (100%) 416 (100%)	0.001
Unassisted delivery	**Maternal factor – No legal document**			
	Yes n (%)	**No n (%)**	**Total n (%)**	**Chi square p value**
Yes **No** Total	27 (13%) 0 (0%) 27 (6.5%)	181 (87%) 208 (100%) 389 (93.5%)	208 (100%) 208 (100%) 416 (100%)	< 0.001
Unassisted delivery	**Maternal factor – Maternal choice**			

	Yes n (%)	No n (%)	Total n (%)	Chi square p value
Yes	24 (11.5%)	184 (88.5%)	208 (100%)	< 0.001
No	0 (0%)	208 (100%)	208 (100%)	
Total	24 (5.8%)	392 (94.2%)	416 (100%)	
Unassisted delivery	**Economic and social factor – Teenage mother**			
	Yes n (%)	No n (%)	Total n (%)	Chi square p value
Yes	21 (10.1%)	187 (89.9%)	208 (100%)	0.287
No	28 (13.5%)	180 (86.5%)	208 (100%)	
Total	49 (11.8%)	367 (88.2%)	416 (100%)	
Unassisted delivery	**Economic and social factor – Single mother**			
	Yes n (%)	No n (%)	Total n (%)	Chi square p value
Yes	78 (37.5%)	130 (62.5%)	208 (100%)	< 0.001
No	42 (20.2%)	166 (79.8%)	208 (100%)	
Total	120 (28.8%)	296 (71.2%)	416 (100%)	
Unassisted delivery	**Economic and social factor – No transport available**			
	Yes n (%)	No n (%)	Total n (%)	Chi square p value
Yes	39 (18.8%)	169 (81.3%)	208 (100%)	< 0.001
No	1 (0.5%)	207 (99.5%)	208 (100%)	
Total	40 (9.6%)	376 (90.4%)	416 (100%)	
Unassisted delivery	**Economic and social factor – Financial problem**			
	Yes n (%)	No n (%)	Total n (%)	Chi square p value
Yes	40 (19.2%)	168 (80.8%)	208 (100%)	< 0.001
No	1 (0.5%)	207 (99.5%)	208 (100%)	
Total	41 (9.9%)	375 (90.1%)	416 (100%)	
Unassisted delivery	**Birth process factor – Precipitated labour**			
	Yes n (%)	No n (%)	Total n (%)	Chi square p value
Yes	45 (21.6%)	163 (78.4%)	208 (100%)	< 0.001
No	2 (1%)	206 (99%)	208 (100%)	
Total	47 (11.3%)	369 (88.7%)	416 (100%)	
Unassisted delivery	**Medical service factor – delay in ambulance arrival**			

	Yes n (%)	No n (%)	Total n (%)	Chi square p value
Yes	14 (6.7%)	194 (93.3%)	208 (100%)	< 0.001
No Total	0 (0%) 14 (3.4%)	208 (100%) 402 (96.6%)	208 (100%) 416 (100%)	
Unassisted delivery	**Geographical factor – home far away from health facility**			
	Yes n (%)	No n (%)	Total n (%)	Chi square p value
Yes **No** Total	29 (7%) 0 (0%) 29 (7%)	179 (86.1%) 208 (100%) 387 (93%)	208 (100%) 208 (100%) 416 (100%)	< 0.001
Unassisted delivery	**Communication failure between mother and health staff**			
	Yes n (%)	No n (%)	Total n (%)	Chi square p value
Yes **No** Total	10 (4.8%) 1 (0.5%) 11 (2.6%)	198 (95.2%) 207 (99.5%) 405 (97.4%)	208 (100%) 208 (100%) 416 (100%)	0.011
Unassisted delivery	**Communication failure – No phone**			
	Yes n (%)	No n (%)	Total n (%)	Chi square p value
Yes **No** Total	8 (3.8%) 0 (0%) 8 (1.9%)	200 (96.2%) 208 (100%) 408 (98.1%)	208 (100%) 208 (100%) 416 (100%)	0.007

A significantly higher proportion of cases were not booked for antenatal care (60.1%) compared to 23.6 % among controls ($p < 0.001$). A significant proportion of those who practiced unassisted delivery were getting delivery assistance from self or husband or relatives / neighbours or others ($p < 0.001$). Delay in calling for ambulance, unable to appreciate labour pain, unknown about being pregnant were the significant maternal risk factors among those who were practicing unassisted delivery ($p\ 0.001$).

Not having legal document with mother and maternal choice were other significant maternal risk factors leading to the practice of unassisted delivery ($p < 0.001$). Being a

single mother, having no transport available and financial problem were the significant economic and social factor (p < 0.001). Precipitated labour was a risk factor which was significantly higher among cases (21.6%) as compared to controls (1%) (p < 0.001). Home far away from health facility, communication failure between mother and health staff and not availability of phone was also found to be significant risk factors among cases.

Table 4.5: Results of Logistic regression analysis between various risk factors and outcome

Independent variables	Crude OR (95% CI of OR)	p value	Adjusted OR (95% CI of OR)	p value
Citizenship Malaysian Legal immigrant Illegal immigrant	Reference category 1.608 (0.851 to 3.037) 5.194 (1.467 to 18.390)	0.143 0.011	0.094 (0.013 to 0.683) 0.152 (0.013 to 1.727)	0.019 0.129
Ethnicity Malay Chinese Indian Orang Asli Others	Reference category 0.122 (0.049 to 0.302) 0.283 (0.134 to 0.598) 0.820 (0.471 to 1.425) 1.616 (0.903 to 2.890)	< 0.001 0.001 0.481 0.106	0.115 (0.029 to 0.458) 0.354 (0.119 to 1.057) 0.605 (0.243 to 1.508) 4.816 (0.845 to 27.460)	0.002 0.063 0.281 0.077
Marital status Unmarried Married	Reference category 0.421 (0.273 to 0.649)	< 0.001	1.616 (0.574 to 4.553)	0.363
Education level Tertiary education Secondary Primary Uneducated	Reference category 0.790 (0.400 to 1.558) 0.869 (0.382 to 1.976) 1.993 (0.813 to 4.885)	0.496 0.738 0.132		
Occupation Unemployed Employed	Reference category 1.592 (1.016 to 2.495)	0.042	1.719 (0.870 to 3.397)	0.119

Antenatal care Booked Not booked	Reference category 4.887 (3.199 to 7.466)	< 0.001	8.591 (3.586 to 20.579)	< 0.001
Maternal factor – **delay in calling for** **ambulance.** No Yes	Reference category 35.219 (8.453 to 146.746)	< 0.001	52.040 (11.274 to 240.214)	< 0.001
Maternal factor – **unable to appreciate** **labour pain.** No Yes	Reference category 7.286 (2.495 to 21.272)	< 0.001	4.505 (1.098 to 18.478)	0.037
Maternal factor – **unknown about** **being pregnant** No Yes	Reference category 14.938 (1.946 to 114.675)	0.009	7.137 (0.827 to 61.555)	0.074
Economic and social **factor – teenage** No Yes	Reference category 0.722 (0.396 to 1.318)	0.288		
Economic and social **factor – single** **mother** No Yes	Reference category 2.371 (1.528 to 3.681)	< 0.001	0.574 (0.212 to 1.552)	0.274
Economic and social **factor – no** **transport** No Yes	Reference category 47.769 (6.495 to 351.317)	< 0.001	26.204 (2.406 to 285.390)	0.007
Economic and social **factor – financial** **problem** No Yes	Reference category 49.286 (6.705 to 362.258)	< 0.001	55.957 (3.809 to 822.068)	0.003

Birth process factor – precipitated labour No Yes	Reference category 28.436 (6.797 to 118.965)	< 0.001	58.461 (9.867 to 346.395)	< 0.001
Communication failure between mother / care taker and health staff No Yes	Reference category 10.455 (1.326 to82.424)	0.026	35.803 (0.773 to 1657.345)	0.067

4.1 FINDINGS FROM SIMPLE BINARY LOGISTIC REGRESSION ANALYSIS

Simple binary logistic regression analysis was performed between various risk factors with the dependent or outcome variable which was unassisted delivery. Preliminary univariate analysis showed that being an illegal immigrant and being employed were statistically significant socio demographic risk factors (p value < 0.05 and Crude OR above 1). Being of Chinese or Indian ethnic origin as compared to being Malay and being married were statistically significant socio demographic protective factors (p value < 0.05 and Crude OR below 1).

Not getting booked for Antenatal check-up was a statistically significant risk factor (p value < 0.05 and OR above 1) for unassisted delivery. Maternal factors such as delay in calling for ambulance, unable to appreciate labour pain and not knowing about being pregnant were statistically significant maternal risk factors (p value < 0.05 and Crude OR above 1).

Being a single mother, non-availability of transport facilities and having financial problem were statistically significant economic and social risk factors in this research (p value < 0.05 and Crude OR above 1). Precipitated labour was a statistically significant birth

process factor (p value < 0.05 and Crude OR above 1). Communication failure between mother or care taker and the health staff was also a major and statistically significant risk factor.

4.2   FINDINGS FROM MULTIPLE LOGISTIC REGRESSION

Independent variables or risk factors which showed statistical significance in univariate logistic regression were added to the multivariate regression model. Dependent or outcome variable was unassisted delivery.

Being a legal immigrant was found to be a statistically significant protective factor when compared to being a Malaysian citizen (p value < 0.05 and Adjusted OR 0.094). Adjusted OR is calculated by taking into consideration all the interactions between the risk factor variables which are included in the model. Chinese ethnicity was also found to be astatistically significant protective factor when compared to other ethnics.

Not getting booked for antenatal check-up was another statistically significant risk factor (p value < 0.001 and Adjusted OR 8.591) for unassisted delivery. Maternal factors such as delay in calling for ambulance and being unable to appreciate labour pain were statistically significant maternal risk factors (p value < 0.05 and Adjusted OR above 1).

Non-availability of transport facilities and having financial problem were statistically significant economic and social risk factors in this research (p value < 0.01 and Adjusted OR above 1). Precipitated labour was a statistically significant birth process factor (p value < 0.001 and Crude OR above 1).

CHAPTER 5

DISCUSSION

A case control study was carried out to study various risk factors associated with unassisted deliveries in Perak state, Malaysia. Those with non-supervised deliveries were selected as cases while those with supervised deliveries were selected as controls. The main outcome variable was supervised delivery, which was measured by the presence of a skilled birth attendant during delivery.

This study is one of the first to focus on the factors that influence use of supervised delivery services among women from Perak state, Malaysia. WHO's definition of skilled birth attendant is "an accredited health professional such as a midwife, doctor or nurse who has been educated and trained to proficiency in the skills needed to manage uncomplicated pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns" (John K. G. et al.,2019). Proportion of deliveries assisted by skilled healthcare professionals is an indicator of achievement towards Millennium Development Goal 5, which focuses on improving maternal health.

Multivariate logistic regression of data from our research, revealed that being unbooked for antenatal care was one of the major risk factors among those with unassisted deliveries. This finding was similar to the research done by Ngatho. S. Mugo et al., which showed that 71.8% of unattended home birth were without any ANCs. Our research revealed that 60.1% of those who practiced unassisted deliveries, were not booked for antenatal care (Ngatho S. M. et al., 2016).

In the cross-sectional survey done by Ngatho. S. M. et al, births that were either unattended or attended by an unskilled assistant was higher among women who had less access to health care facilities during pregnancy (Ngatho S. M. et al., 2016). Distance to health facilities in this study was shown to be a significant risk factor for non-utilisation of supervised delivery services. Distance is a combination of geographical distance, mode of travel, time of travel, and costs of travel all of which play a crucial role. Therefore, women and their families will most likely make decisions about supervised delivery service utilization after careful consideration of factors such as mode of travel, time it takes to travel, and the cost of travelling to reach the facility, and the difficulty of arranging an appropriate means of transport. However, our focus on geographical distance to health facilities has helped to highlight the crucial fact that supervise delivery services are not readily available to women in their communities (John K. G. et al.,2019).

In the current research, 25.5% of those with unassisted deliveries were experiencing delay in calling for ambulance, while 18.8% were experiencing non-availability of transport which was significantly higher than those with assisted deliveries. In the study done in South Sudan by Ngatho. S. M. et al, births that were either unattended or attended by an unskilled assistant was higher among women who were poorer and more marginalized.

Our research also revealed that 19.2% of those with unassisted deliveries were suffering from financial problem and was significantly higher than those with assisted deliveries. Our research also revealed that 40 out of 41 women (97.6%) who were suffering from financial problem opted for non-supervised delivery.

In a study carried out in Ghana by John K.G. et al, on factors influencing supervised delivery services in Ghana, 64% of single mothers were not having supervised deliveries. In our study, 78 single mothers out of 120 (65%) were not practicing supervised or assisted deliveries. Findings of the current research was similar to the research from Ghana (John K. G. et al.,2019).

The main factor associated with unassisted delivery and delivery assisted by an unskilled attendant was the failure to use maternity care services. The failure to use maternal health services, such as ANC visits, was a predictor of women delivering without a skilled birth assistant. We found that women who had no ANC visits were at an increased risk of delivery with unskilled birth attendants or unassisted delivery, in comparison with women who had booked for antenatal care (Ngatho S. M. et al., 2016).

In the current research, the proportion of those who practice deliveries conducted by unskilled birth attendants was significantly high among illegal immigrants and those who were not having legal documents. Access to general practitioners is a particular problem for undocumented migrants. The most common barriers described in accessing treatment relate to administrative barriers, restricted possibilities of further referral and financial problems.

Similar problems have been described in a study from Canada exploring access to health care services for undocumented migrants. It is reported in that study that administrators turn away undocumented migrants due to a very strict application of administrative procedures, and that health professionals in primary care settings are forced to work around institutional procedures, for example, by patients coming directly to their office instead of presenting at the front desk and by processing patients without keeping records of the action. Unassisted deliveries practiced by illegal immigrants and those without legal documents are not documented in previous research from Malaysia. The current study is one of the first one to show light on this issue. The current research followed a case control design while the previous research followed cross sectional design.

CHAPTER 6

RECOMMENDATION

Throughout this study, the main objectives and hypotheses were tested and answered according to the study method and statistical analysis. Hence, based on the study findings, few recommendations can be made as described as follow:

Improve accessibility to health care facilities

More health clinics should be developed to improve accessibility of rural population to medical health facilities. These clinics should be implemented with well-equipped mobile teams that run out-reach programs in distant interior villages. These teams also be assigned with trained health care personnel who can educate the community regarding the importance of proper antenatal care and the safetiness in hospital delivery.

There are also transit centers of Orang Asli population who live in interior rural areas that are geographically difficult to get accessed to health facilities. Orang Asli mothers are transferred to these transit centers at 36 weeks of gestation. This is to facilitate and ensure that they are able to deliver in hospital settings. In order to maximize this effort, more transit centers should be made available for this indigenous population. The Orang Asli Development Department (JAKOA) should collaborate with Ministry of Health (MOH) to expedite this effort especially in term of budget allocation.

Adequate lobbying on available welfare services for teenage pregnancies

The Welfare Department had introduced a special helpline called 'Talian Kasih' at 15999. This helpline was also introduced in a national level program called 'Generasiku Sayang' dedicated to cater the needs of teenage mothers in terms of health and welfare. The helpline is available for 24 hours. Teenage mothers who are in dire need for help just need to call up the helpline. They will then be assisted and channeled to the respective health clinic. Thereafter, they will receive a comprehensive health care not only focusing on antenatal health but also to overcome the psychological impacts experienced. However, there is lack of awareness regarding this helpline among the community. Therefore, most teenage mothers experience social withdrawal, left unattended and end up trying to wide their pregnancy by delivering without medical help.

In order to overcome this drawback, an expanded mode of strong lobbying should be done in collaboration of the Welfare Department as well as MOH. Social medias and popular online platforms can be used to advertise "Talian Kasih" widely as this information gets shared widely, the community becomes more aware of the forms of services offered to assist pregnancy.

Strengthening of health promotional activities.

Most of current health promotional activities are traditional in nature. The use of digital technology should be applied to effectively deliver health knowledge to the community. For instance, retired health professionals like matrons and sisters can be engaged in forming a small social group, also comprising of other health care workers. At community level, these social groups can be delegated to carry out programs like talks, briefings, counselling and even workshops targeting secondary school and college students. This is to tackle various social problems pertaining to health at the very

beginning. Data on the complications of unassisted delivery should be one of the mandatory health education material to instill the knowledge of the young generation.

Strengthening of Family Doctor Concept (FDC) throughout all health care clinics

The concept of FDC has been introduced in 2016. It emphasizes on health care service delivery by one doctor to a particular family. Repetitive visits by the members of the family should be attended by the same doctor according to its conceptual framework. However, FDC is mostly implemented only in major health clinics due to various impediments such as inadequate budget, under-staffing, inadequate facilities available and many other issues. These obstacles should be focused from the ground level and solved methodologically. FDC should be implemented at all available primary health care facilities. This builds good rapport and trust between clients and the servicing doctor. Hence, a good communication will improve patient's help seeking behavior during medical needs and emergencies. Client, therefore, may avoid feeling fearful to access health facilities despite their social problems like uneducated, no legal marital documents, teenage pregnancies and others.

Advocacy of strong political will in improving woman and child health

A strong political will may serve as a backbone in the realm of maternal health in Malaysia. The basis the political framework should give importance to woman participation in various sectors, woman empowerment and value women as a strong member of the society. Henceforth, women health will be given utmost importance at least in the near future. Revised policy focusing on betterment of women and child health indicates that the country is under the reign of a savvy politician. Examples of such revision in policies include prioritization of maternal and child health programs, bringing maternal and child health care as part of broader goals of the country and untangling the issues of health economics involving maternal and child health financing. Such strong policies

should also aim to aggressively reduce Maternal Mortality Ratio and Under-5 Mortality Rates, thus achieve the target goal of SDG-3. A strong political will should also highlight the agenda of betterment of maternal and child health in the manifesto and transparently ensure financial resources are made available to implementation.

Negotiation of immigrational policies

Occurrence of unassisted deliveries are ought to ensue at least among the illegal immigrants in Malaysia. Once they become pregnant, they are financially unsecured to get medical attention. In addition to that, they are bound to the rules and regulations of being prosecuted if their presence in our country were to be identified especially by any government officials. Hence, they rather choose to hide their pregnancies and silently deliver at home. This has significantly contributed to the statistics of maternal mortalities.

An immediate revision in the immigrational policy should be looked into, where pregnant illegal immigrants should be given free access to medical care services upon delivery with exemption of financial expenses. Once the mothers have delivered, they should be handed over to the Immigration Department to be deployed back to their respective countries without being heavily prosecuted. Humanitarian element should be dominant over man-made written policies in this case.

Community engagement

Community engagement can play a strong leadership role in overcoming the issue of unsafe delivery members of the community should take leadership roles in modifying the certain community norms. Public health programs should empower voluntary village and community workers and incentivize them for their efforts. Activities under their guidance should be aimed to raise awareness among community members about the

importance of pillars of safe motherhood. These pillars include proper antenatal care, educate obstetric care, good postnatal care appropriate familyplanning methods.

Community health education should also be diversified into focused sexual education. Besides incentives, these volunteers should be awarded merits through digital certificates. Subsequently, these certificates should be given value through taxredemption. Furthermore, more traditional and religious leaders should be encouragedto enroll in this effort to influence high community participation.

Change of norm

Societal change of norm should aim to divert home deliveries to hospital deliveries. Societal expectations of good quality of care, appropriate patient-provider interactions, educate facility supply matching demands and facilitative service provision should be fulfilled. Enhancement of such health care quality should be brought to public viewing, for example, through open access review of each healthcarefacilities. Hence, good reputation is built, ensure to ensue and slowly change the unsafe norms. Overtime, traditional misbeliefs and mythoses can be dissolve and replace by contemporary healthy practices.

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APPENDIX 1

Sistem Maklumat Pengurusan Kesihatan

Laporan Bulanan / Tahunan Kes. Bersalin

KIB 202A

Pind.2/2007

Tahun: 2018

Bulan: JAN DIS

Kod Fasiliti: 91-08050006
PKD Kinta

Negeri : Perak

Daerah: Kinta

KIB 2024 Bahagian 1

KIB 2024 Bahagian 2

Kelahiran Disambut Bidan Kerajaan — Kelahiran

Kelahiran Berdaftar
- Rumah
- ABC
- Hospital Kerajaan
- Swasta

Bilangan Komplikasi Yang Dirujuk
- Semasa Kelahiran
- Semasa Postnatal

Peringkat

JUMLAH

APPENDIX 2

NO RN : …………………..

LAPORAN INSIDEN KELAHIRAN TIDAK SELAMAT

Negeri		Klinik yang bertanggungjawab	
Daerah		Tarikh kejadian kelahiran	

A. **PENGENALAN DIRI DAN SEJARAH ANTENATAL IBU**

1.	Nama Pesakit	:		**2.** Umur : Tahun
3.	Alamat rumah	:		
4.	LMP	:		**5.** EDD :
6.	Para (Sila isi yang berkenaan)	:	☐ + ☐ ☐ Tidak diketahui	**7.** Jangkamasa kandungan (POG) : ……………… ☐ Tidak diketahui
8.	Kewarganegaraan	:	☐ Warganegara ☐ Bukan Warganegara dengan izin ☐ Bukan Warganegara tanpa izin ☐ Tidak diketahui	
9.	Bangsa	:	☐ Melayu ☐ Cina India ☐ Orang Asli ☐ Bumiputra Sarawak, sila nyatakan : ☐ Bumiputra Sabah, sila nyatakan : ☐ Lain-lain, sila nyatakan :	

10. Taraf perkahwinan :	☐ Ya ☐ Tidak ☐ Tidak diketahui
11. Taraf pendidikan tertinggi ibu	☐ Tidak bersekolah ☐ Sekolah rendah ☐ Sekolah menengah ☐ Diploma ☐ Ijazah ☐ Master / PhD ☐ Tidak diketahui
12. Pekerjaan ibu :	☐ Bekerja, sila nyatakan : ☐ Tidak bekerja ☐ Pelajar sekolah ☐ Pelajar institusi
13. Pekerjaan suami :	
14. Jarak rumah ibu ke fasiliti kesihatan	Klinik Desa : _____ km Klinik Swasta : _____ km Klinik Kesihatan : _____ km Hospital Swasta : _____ km Hospital Kerajaan : _____ km
15. Pemeriksaan antenatal	☐ Ada ☐ Tiada
16. Jika ADA pemeriksaan antenatal	
	Tempat pemeriksaan antenatal : ☐ Kerajaan sahaja ☐ Swasta sahaja Kedua-dua kerajaan & Swasta
	Jumlah bilangan pemeriksaan antenatal : _____ kali
	Masalah kesihatan yang dikenalpasti semasa antenatal : ☐ Tiada Ada, sila nyatakan : _____
	Kod risiko antenatal terakhir : ☐ Putih ☐ Hijau Kuning ☐ Merah

B. KRONOLOGI KEJADIAN KELAHIRAN TIDAK SELAMAT

17. Tarikh & masa ibu bersalin	Tarikh : Masa : ☐ Tidak diketahui
18. Tempat bayi dilahirkan	☐ Rumah ☐ Kenderaan ☐ Lain-lain, sila nyatakan :

	☐ Tidak diketahui
19. Bagi kejadian kelahiran yang *unattended* sepenuhnya. Siapakah pemberitahu kelahiran kepada anggota Klinik Kesihatan / Klinik Desa? Tarikh dan masa diberitahu	☐ Ibu sendiri ☐ Anggota kesihatan (semasa lawatan ke rumah) ☐ Hospital ☐ Suami / Pasangan ☐ Saudara mara / jiran / rakan ☐ Lain-lain, sila nyatakan : Tarikh : Masa :
20. Tarikh & masa anggota kesihatan dipanggil	Tarikh : Masa : ☐ Tidak berkenaan
21. Tarikh & masa anggota kesihatan tiba di lopkasi	Tarikh : Masa : ☐ Tidak berkenaan

22. Keadaan ibu secara umum semasa jururawat tiba	☐ Ibu telah melahirkan dan sedar sepenuhnya ☐ Ibu telah melahirkan tetapi separa sedar ☐ Ibu telah melahirkan tetapi tidak sedar ☐ Tidak berkenaan	**23.** Tarikh & masa ibu mula sakit utk bersalin	Tarikh : Masa :

24. Pemeriksaan ibu (jika berkenaan)	
Tekanan darah ibu	mmHg
Nadi ibu	Bpm
Suhu ibu	^{0}C
Keadaan uterus	☐ Mengecut ☐ Tidak mengecut
Keadaan perineum	☐ *Intact* ☐ *2nd degree tear*
	☐ *1st degree tear* ☐ *3rd degree tear*
Anggaran kehilangan darah	ml ☐ Tidak diketahui

25. Cara bersalin	☐ SVD tanpa kaedah alternatif ☐ SVD dengan kaedah alternative (sila pilih di bawah)

	☐ *Natural birth (Amani, Lamaze Method, Bradley Method , Hypnobirthting)*
	☐ *Water Birth* ☐ *Lotus Birth*
26. Posisi bersalin	☐ *Dorsal position*
	☐ Posisi selain *Dorsal position,* nyatakan : ....
27. Komplikasi kepada ibu	☐ Tiada ☐ Ada, sila nyatakan : ....
28. Siapa yang menyambut kelahiran?	☐ Bersalin sendiri ☐ Bidan Kampung (*Traditional Birth Attendant*)
	☐ Suami / Pasangan ☐ Doula (*Birth companion*)
	☐ Saudara mara / rakan / jiran ☐ Lain-lain, sila nyatakan : ....
29. Adakah terdapat penglibatan Doula semasa proses kelahiran?	☐ Ya ☐ Tidak Jika Ya, nyatakan sama ada : ☐ Hadir secara fizikal ☐ Melalui talian komunikasi semasa proses bersalin
30. Jika ibu didapati mempunyai kaitan dengan pengaruh natural birth / doula, nyatakan sumber pengaruh tersebut	☐ Menghadiri kelas ☐ Melayari internet ☐ Pengaruh rakan / kumpulan setempat ☐ Lain-lain, sila nyatakan : **Nota : Boleh tanda lebih dari satu sumber**
31. Keadaan tali pusat semasa anggota kesihatan tiba	☐ Belum dipotong ☐ Telah dipotong ☐ Tidak diketahui ☐ Tidak berkaitan
32. Siapakah yang memotong tali pusat?	☐ Anggota kesihatar ☐ Tidak berkenaan (bagi *Lotus Birth*) ☐ Selain anggota kesihatan ☐ Tidak diketahui

33. Adakah uri telah keluar semasa anggota kesihatan tiba?		**34.** Siapakah yang mengeluarkan uri?	
☐ Sudah		☐ Anggota kesihatan	
☐ Belum		☐ Selain anggota kesihatan	
☐ Tidak diketahui		☐ Tidak diketahui	
35. Keadaan uri	☐ Lengkap	**36.** Keadaan ibu dalam tempoh 24jam selepas bersalin	☐ Hidup
	☐ Tidak lengkap		☐ Mati
	☐ Tidak diketahui		

37. Keadaan bayi	☐ Hidup
	☐ Mati
	☐ *Fresh Still Birth*
	☐ *Macerated Still Birth*
	☐ *Tidak diketahui*
	Sila nyatakan sebarang keabnormalan pada bayi jika ada :
38. Terangkan secara ringkas kronologi kejadian dan bagiamana ianya berlaku	

C. ULASAN JURURAWAT DAN PENYELIA

39. Faktor penyumbang kelahiran tidak selamat (Boleh tanda ✓ lebih dari satu faktor)	**Faktor ibu dan waris**	
	☐ Lewat memanggil ambulan / anggota kesihatan	☐ Ibu tidak tahu sedang mengandung
	☐ *Mother was unable to appreciate labour pain*	☐ Tiada dokumen pengenalan diri sah
	Faktor ekonomi dan sosial	
	☐ Masalah kewangan keluarga	☐ Tiada pengangkutan ketika hendak bersalin
	☐ Ibu tidak berkahwin (*Single parent*)	☐ Ibu remaja
	Faktor proses kelahiran	
	☐ Kelahiran bayi secara mendadak (*PrecipitatedLabour*)	
	Faktor petugas kesihatan / perubatan	

	□ Ambulan lambat tiba ke lokasi kelahiran
	Faktor geografi
	□ Rumah jauh dari fasiliti kesihatan
	Faktor keselamatan
	□ Kawasan hitam
	Faktor komunikasi
	□ Tiada talian telefon
	□ Kegagalan komunikasi di antara ibu / waris & anggota kesihatan (*miscommunication*)
	Lain-lain
	□ Nyatakan, sila nyatakan :

D.   **ASPEK KUALITI PERKHIDMATAN KELAHIRAN SELAMAT**

<u>Perhatian : untuk diisi sekiranya ibu mendapat penjagaan antenatal</u>

40. Adakah ibu pernah menerima pendidikan kesihatan mengenai kelahiran selamat	□ Ya □ Tidak				
41. Semasa antenatal di manakah ibu bercadang untuk bersalin?					
42. Siapakah yang menetapkan pimilihan tempat bersalin ini?					
43. Apakah factor yang menyebabkan ibu memilih untuk bersalin selain di fasiliti kesihatan atau tidak disambut oleh petugas kesihatan (jika berkenaan) :					
44. Jika ibu pernah mendapatkan perkhidmatan ibu hamil di klinik / hospital kerajaan, bagaimana pendapat ibu dari aspek berikut :	Perkhidmatan kesihatan antenatal di klinik / hospital kerajaan				
	1	2	3	4	5

| Bulatkan jawapan mengikut skala berikut:

1. Sangat tidak setuju

2. Tidak setuju

3. Tidak pasti

4. Setuju

5. Sangat setuju | Penerangan pendidikan kesihatan mengenai kelahiran selamat

1   2   3   4   5

Isi kandungan pendidikan kesihatan mengenai kelahiran selamat

1   2   3   4   5 |

E.   <u>**ULASAN PENYIASAT DAN PENYELIA**</u>

45. Ulasan Jururawat Kesihatan / Ketua Jururawat Kesihatan / Penyelia Jururawat Kesihatan (Nyatakan factor penyumbang kelahiran tidak selamat dan cadangan penambahbaikan)	
46. Ulasan Penyelia Jururawat Kesihatan Daerah (Nyatakan faktor penyumbang kelahiran tidak selamat dan cadangan penambahbaikan dan tindakan yang telah diambil)	
Tandatangan Jururawat :	.... Nama : Jawatan : Tarikh :
Tandatangan Penyelia Jururawat Kesihatan yang bertanggungjawab	.... Nama : Jawatan : Tarikh :

APPENDIX 3

BIL	UMUR	PARA	CITIZENSHIP			RACE				OTHERS	MARITAL STATUS	
			CITIZEN	LEGAL IMMIGRANT	ILLEGAL IMMIGRANT	M	C	I	OA		YA	NO

OCCUPATION					DISTANCE		ANC CHECKUP	
WORK	UNEMPLOYED	STUDENT (SCHOOL)	STUDENT (COLLEGE)	HOUSEWIFE	KK	HOSPITAL	BOOKED	UNBOOKED

DELIVERED BY				MATERNAL FACTOR				
SELF	HUSBAND/PARTNER	RELATIVES/FRIENDS/NEIGHBOUR	VILLAGE MIDWIFE	DELAY IN CALLING AMBULANCE	UNABLE TO APPRECIATE LABOUR PAIN	UNKNOWN PREGNANT	AFRAID NO LEGAL DOCUMENT	MATERNAL CHOICE

ECONOMIC & SOCIAL FACTOR				BIRTH PROCESS FACTOR	MEDICAL SERVICE FACTOR
FINANCIAL ISSUE	SINGLE PARENT	NO TRANSPORTATION	TEENAGE MOTHER	PRECIPITATED LABOUR (Y/N)	DELAY IN AMBULANCE ARRIVAL TO LOCATION

GEOGRAPHICAL FACTOR	COMMUNICATION FACTOR	
HOME FAR FROM HEALTH FACILITY	NO PHONE LINE	FAILURE IN COMMUNICATION BETWEEN MOTHER/CARETAKER AND HEALTH STAFFS

APPENDIX 4

UNIVERSITI KUALA LUMPUR
ROYAL COLLEGE OF MEDICINE PERAK

No. 3, Jalan Greentown,
30450 Ipoh, Perak Darul Ridzuan.
Tel : (605) 243 2635
Fax : (605) 243 2636
Website : www.rcmp.unikl.edu.my

UniKLRCMP/MREC/2020/129

5 July 2020

Dr. Vanitha Thurairasu
UniKL RCMP

Dear Dr.

MEDICAL RESEARCH ETHICS COMMITTEE: ETHICAL APPROVAL FOR RESEARCH

The above matter refers.

Title of research: **Risk Factors of Unassisted Delivery in Perak.**

Thank you for presenting your study in Medical Research Ethics Committee Meeting, UniKL RCMP. We are pleased to inform that the committee agreed and approved the research proposal submitted.

Therefore, we hope that you can conduct your research subject to rules and regulation.

On behalf of the committee, I wish the best in your future researches.

Thank you.

" UniKL | Where Knowledge Is Applied and Dreams Realized "

Yours sincerely,

PROF. DR. OSMAN ALI
Chairman
Medical Research Ethics Committee (MREC)
oa/naz

APPENDIX 5

JAWATANKUASA ETIKA & PENYELIDIKAN PERUBATAN
(*Medical Research & Ethics Committee*)
KEMENTERIAN KESIHATAN MALAYSIA
d/a Kompleks Institut Kesihatan Negara
Blok A, No 1, Jalan Setia Murni U13/52,
Seksyen U13, Bandar Setia Alam,
40170 Shah Alam, Selangor.   Tel: 03-3362 8888/8205

Ref : KKM/NIHSEC/ P21- 487 (4)
Date: 26-March-2021

DR VANITHA A/P THURAIRASU
UNIVERSITY KUALA LUMPUR - ROYAL COLLEGE OF MEDICINE PERAK (UNIKL - RCMP)

Dear Sir/ Mdm,

ETHICS INITIAL APPROVAL: NMRR-20-3106-55116 (IIR)

RISK FACTORS OF UNASSISTED DELIVERY IN PERAK

This letter is made in reference to the above matter.

2. The Medical Research and Ethics Committee (MREC), Ministry of Health Malaysia (MOH) has provided ethical approval for this study. Please take note that all records and data are to be kept strictly **CONFIDENTIAL** and can only be used for the purpose of this study. All precautions are to be taken to maintain data confidentiality. Permission from the District Health Officer / Hospital Administrator / Hospital Director and all relevant heads of departments / units where the study will be carried out must be obtained prior to the study. You are required to follow and comply with their decision and all other relevant regulations, including the Access to Biological and Benefit Sharing Act 2017.

3. The investigators and study sites involved in this study are:

    JABATAN KESIHATAN NEGERI PERAK
    Dr Vanitha A/P Thurairasu (Principal Investigator)

4. The following study documents have been received and reviewed with reference to the above study:

Documents received and reviewed with reference to the above study:
1. Study Protocol Version 4, dated 22-March-2021
2. Study Clinical Report Form (CRF) / Data Collection Form Version 2, dated 21-March-2021.
3. Investigator's documents : Declaration of Conflict of Interest (COI), IA-HOD-IA, and CV:
a) Dr Vanitha A/P Thurairasu (Principal Investigator)

5. Please note that ethical approval is valid until **25-March-2022**. The following are to be reported upon receiving ethical approval. Required forms can be obtained from the National Medical Research Registry website.
    i.   **Continuing Review Form** has to be submitted to MREC within 2 month (60 days) prior to the expiry of ethical approval.
    ii. **Study Final Report** upon study completion to the MREC.
    iii. Ethical approval is required in the case of **amendments / changes** to the **study documents/ study sites/ study team**. MREC reserves the right to withdraw ethical approval if changes to study documents are not completely declared.

6. This study involves the following methods:

    i.   **Retrospective**
    ii. **Secondary Data**