

**A Descriptive Observational Study of Correlation
Between Duration of Cohabitation and Adverse
Pregnancy Outcomes in Primigravida-Pre-
eclampsia And Fetal Growth Restriction at A
Tertiary Care Hospital in Belagavi**

By

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Dissertation

Submitted to the
KLE University, Belagavi, Karnataka
In Partial Fulfillment
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Master of Surgery
in
Obstetrics and Gynaecology

**DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY,
JAWAHARLAL NEHRU MEDICAL COLLEGE,
BELAGAVI, KARNATAKA**

APRIL – 2018

**KLE UNIVERSITY, BELAGAVI,
KARNATAKA**

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LIST OF ABBREVIATIONS

Abbreviations	Meaning
adjOR	Adjusted odds ratio
BMI	Body mass index
CCL	C-C chemokine ligand
CCR5	C-C chemokine receptor
CD4	Cluster of differentiation 4
CI	Confidence interval
FGR	Fetal growth restriction
GH	Gestational hypertension
HELLP	Haemolysis, elevated liver enzymes and low platelet
ICSI	Intracytoplasmic sperm injection
IVF	In-vitro fertilisation
LMIC	Low and middle income countries
MHC	Major histocompatibility complex
NCD	Non-communicable diseases
OCP	Oral contraceptive pill
OR	Odds ratio
PIH	Pregnancy induced hypertension
SGA	Small for gestational age
NFHS	National family health survey

NK	Natural killer
TGF	Transforming growth factor
Th2	T helper type 2
Treg	T regulatory cells
USA	United States of America
WHO	World health organization

ABSTRACT

Correlation of cohabitation and adverse pregnancy outcome-Preeclampsia and Fetal growth restriction A descriptive observational study.

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Introduction:

Normal pregnancy is associated with tolerance to fetal (foreign) antigens; there is immunological intolerance in pre-eclampsia. This intolerance to foreign antigens (partner) is reduced with repeated maternal exposure to antigens.

Methods:

Type: Descriptive Observational study

Sample: Sample required 320. (Risk of PE 15% with Cohabitation <3 months)

Primigravida attending to the teaching hospital attached to KLE University.

Time Period:One-year study

Duration between marriage and occurrence of pregnancy (the interval <6months and >6months and occurrence of pregnancy) and its association to PE and FGR is studied.

Selection Criteria:

Inclusion: All primigravidae with singleton pregnancy and with gestational age more than 20weeks without known medical disorder during the study period are enrolled to the Study.

Data Analysis: Using appropriate tests with SPSS software. The possible association between duration of cohabitation and other independent variables such as preeclampsia, FGR etc. was found using a chi-square test and Fishers exact test.

P value <0.05 was considered statistically significant

Results: Incidence of Pre-eclampsia was 11.5% and 4% in less than 6 months and more than 6 months respectively. Fetal Growth restriction of 4% and 3.2% respectively.

Conclusion: Shorter the cohabitation (less than 6 months before pregnancy) is more associated with preeclampsia and there was no significant association between FGR and duration of cohabitation.

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INTRODUCTION

Globally, pregnancy related hypertensive disorders remain as a challenging pregnancy associated complication and contributes to a significant morbidity and mortality¹.

It has been observed that around 5-10 % of pregnancies are complicated by hypertensive disorders¹.

The condition is estimated to account for 10% to 15% of maternal deaths worldwide.¹ Disorders related to high blood pressure are the second leading cause of stillbirths and early neonatal deaths in developing nations.(WHO 2017)³⁹

The exact etiology of pre-eclampsia still remains unknown, identification of potential risk factors of preeclampsia plays an important role in the improvement of the management strategies to reduce the risk.

It has been proposed that the incompetence of the immune system to adapt to the partner's antigens causes preeclampsia among maternal hosts^{3,9,11}

As per the WHO Global Survey on maternal and perinatal health in developing countries including Asia, it has been observed that chronic hypertension, obesity and severe anemia were the major risk factors of preeclampsia^{2,39}.

Pre-eclampsia and its complications occur due to the abnormal trophoblastic implantation³. It has been observed that the placenta and fetus play a vital role in pre-eclampsia owing to the diminishing of symptoms of pre-eclampsia immediately following the delivery. Although a number of hypothesis have been proposed on the

causes and pathogenesis of pre-eclampsia, immunological cause is considered as one of the major cause of pre-eclampsia^{5,6,8}.

During pregnancy, invasion of trophoblast into the endometrium and myometrium of uterus leads to drastic changes in the spiral arteries which supply the inter-villous space. These changes that extend to the inner third of the myometrium and increase the diameter of the spiral arteries to 4-6 times as compared to non-pregnant state. As these large arteries do not respond to circulating vasopressors, ensuring the adequate blood supply to the placenta⁷.

However, in women who destined to develop preeclampsia, these vascular changes do not occur and thereby, the blood vessels that supply the inter-villous space remains narrow. Although the vascular changes that occur during normal and deficient implantation are complete by mid-pregnancy; the symptoms do not occur until late pregnancy⁴.

As the fetus remains as a semi-allograft to the maternal host, a state of tolerance to fetal antigen is induced to prevent fetal rejection. Many hypotheses have been proposed for the maternal tolerance system that occurs during normal pregnancy, while it is definite that maternal T cells have acquired a temporary state of tolerance specific for paternal alloantigens. An inadequate tolerance induction during pregnancy can potentially increase the risk of pre-eclampsia if the cause of pre-eclampsia is due to immune maladaptation⁴.

It has been observed that a continual exposure of paternal soluble MHC (Major histocompatibility complex) class I antigens to vagina may induce tolerance to paternal antigens. As a substantial quantity of antigen exposure can induce type 1

immunity, frequent exposure of paternal antigen in fewer quantities can also induce tolerance⁴.

Current epidemiological data say that seminal priming play a vital role in inducing tolerance to paternal antigens through the induction of T regulatory cells. Although the memory T cells may not be common in the maternal host prior to conception, it may augment following pregnancy. Subsequent to the second pregnancy with the same partner, memory T cells may increase rapidly; however, in a second pregnancy with a new partner, memory T cells may be very scarce. This implies that the change of a partner negatively affects the protective effect of multiparity^{4,5}.

Although semen consists of sperm and seminal fluid, a study by Wang et al studied the risk of pre-eclampsia between intracytoplasmic sperm injection (ICSI) using ejaculated sperm and ICSI using surgically obtained sperm demonstrated that sperm exposure is vital for the induction of tolerance⁵.

Seminal transforming growth factor (TGF) through the stimulation of T regulatory cells or type 2 immune responses toward paternal antigens potentially can inhibit the induction of type 1 responses against the semi-allogeneic fetus. As a result, it has been presumed that the inhibition of the induction of type 1 response against the semi-allogeneic fetus is associated with incomplete placental development and restricted fetal growth. It has also been observed that T helper type 2 (Th2) and Th3 lymphocytes by interacting with the placental trophoblasts and maternal decidual vasculature assist in their modification⁷. With the inhibition of the induction of these T cells, it results in an impaired spiral arterial modification that reduces utero-placental perfusion and predisposes to preeclampsia and SGA^{8,12}.

Prevailing studies suggest that pre-eclampsia and fetal growth restriction entails fetal genetic factor and consequently, paternity can play a vital role in the inheritance of the factor. Hence, genetic and immunological factors of the paternal side are potentially considered important for the abnormal placentation¹⁰.

Several observational studies have demonstrated an association between pregnancy related hypertensive disorders and duration of sexual cohabitation or primipaternity^{9,10,11}. It has been hypothesized that with an increased duration of sexual cohabitation (longer than 6 months) following the change of partner, primipaternity has no effect on the risk of pre-eclampsia¹⁰

In India, well-documented cohort studies are lesser to evaluate the risk factors of pre-eclampsia. Though some studies have reported prevalence rate of pre-eclampsia based on the population-level data, studies that are carried out through 2007 at national level are lacking.

In addition, although the placental pathology overlaps in pre-eclampsia and SGA, the association between duration of sexual cohabitation and SGA perinatal outcome has not been studied among Indian women population. Consequently, the current study is conducted to assess whether shorter duration of sexual cohabitation (<6 months) in primigravidae is associated with an increased risk of developing preeclampsia or SGA¹⁰.

OBJECTIVES

Primary objective:

To find out the correlation between duration of cohabitation and development of preeclampsia.

Secondary objective:

To find out the association between duration of cohabitation and development of fetal growth restriction.

REVIEW OF LITERATURE

Pre-eclampsia, an important public health issue, cause substantial maternal and perinatal morbidity and mortality. Community health care professionals play a vital role to provide prompt care to women with pre-eclampsia. As the prediction of pre-eclampsia is uncertain, an increased risk for pre-eclampsia highlights the importance of routine healthcare during the pre-conception, antenatal, and interconception periods^{8,12}

Globally hypertensive disorders of pregnancy are associated with major burden of illness due to its complications¹.

Hypertension in pregnancy encompasses

- Chronic hypertension,
- Gestational hypertension,
- Pre-eclampsia and Eclampsia
- Chronic hypertension with superimposed pre-eclampsia and eclampsia(ACOG 2013)

Pre-eclampsia, which influence the maternal and perinatal health negatively, remains as a major cause of around one third of a million maternal mortality in developing countries.^{35, 2} In addition, it accounts for >6 million perinatal mortality, ~ 8 million preterm births and ~20 million low birth weight infants.³⁶

As the exact cause of pre-eclampsia is still not known, assessment and identification of the major risk factors is important for screening of high-risk pregnant women in the developing countries for more intensive care and treatment, allocation

of resources, prioritizing interventions and development or improvement of risk management strategies².

Based on a systematic review of controlled studies, nulliparity is a strong risk factor and it increases the risk of preeclampsia three-fold times (odds ratio of 2.91, 1.28 to 6.61). It has been estimated that about 2/3 cases of pre-eclampsia occur in first pregnancies after the first trimester^{3,39}.

New paternity also increases the risk of preeclampsia in the following pregnancy. The association between primiparity and preeclampsia suggests an immunological mechanism that protects against the paternal antigens in the subsequent pregnancies. However, the risk of preeclampsia is higher with the use of barrier contraception, new paternity and with donor spermatozoa insemination³. The protective effect of primipaternity potentially depends on the immunological compatibility of the new partner^{13,18,22,33,61}.

Immunological basis for pre-eclampsia provides evidence that primipaternity and duration of sexual cohabitation as potential risk factors for pre-eclampsia^{9,11,15}

Prevailing evidence suggest the maternal–fetal immune maladaptation as the primary cause of pre-eclampsia. Semen exposure to the female genital tract induces a cascade of cellular and molecular events which is similar to typical inflammatory response. The seminal-vesicle-derived Transforming growth factor 1(TGF1) is a vital seminal factor, which initiates an inflammatory reaction following semen exposure and enhances its ability to identify and process paternal antigens and type- 2 immune reaction. With the induction of type-2 immune response to paternal antigens, seminal

TGF1 possibly inhibit the induction of type-1 responses against the semi-allogenic fetus and thereby, it is associated with poor placentation and fetal development^{5,8,11,21}.

Sperm exposure causes mucosal alloimmunisation and also, concluded that an increased incidence of pre-eclampsia among teenagers is most probably owing to the inadequate sperm exposure⁶⁴.

In a study by Wang et al, it was observed that the risk for pre-eclampsia was 3 times higher in women who conceived through ICSI with surgically obtained sperm (i.e., from men with complete azoospermia) as compared with the standard in-vitro fertilisation and ICSI using sperm obtained by masturbation. This implies that repeated sexual co-habitation with persistent antigen exposure (sperm cell) in the appropriate cytokine environment (i.e., TGF1) is crucial for the partner-specific immune tolerance⁵.

During the initial weeks of gestation, cytotrophoblast cells develop out of the tips of the anchoring villi and enter the trophoblast shell and overlying syncytiotrophoblast to form cytotrophoblast columns that develop into the cytotrophoblast shell. Trophoblast cells continue to migrate into the decidua and eventually colonise the placental bed's myometrium. Trophoblast cells stream into arterial lumina to form intraluminal plugs when the cytotrophoblast shell makes contact with spiral-artery openings. As the endovascular trophoblast cells replace the endothelium of spiral arteries and then invade the media, damage of the medial elastic, muscular, and neural tissue occurs. Trophoblast cells become integrated into the vessel wall and lastly, the endothelial lining is reconstructed^{5,11}.

A study by Zhou et al has shown that endovascular cytotrophoblasts generally alter their adhesion receptor phenotype to be similar to the endothelial cells they substitute, however, pre-eclampsia is associated with a failure of cytotrophoblasts to mimic a vascular-adhesion phenotype. Early vascular changes that appear to occur prior to endovascular trophoblast invasion infer the role of interstitial trophoblast and decidual leucocytes (especially natural-killer cells) in early disruption. As a result, these physiological changes that lead to a low-resistance arteriolar system and no maternal vasomotor control allows the considerable increase in blood supply to the growing fetus. During the initial phases of placental implantation, cytotrophoblast plugs, which potentially act as valves controlling the blood flow in the intervillous space, safeguard the embryo from rigorous maternal blood flow⁶⁵.

The endometrium in the non-pregnant state is usually transformed to the decidua in pregnancy and the most important characteristic of this change is the major leucocyte infiltration which initiates in the luteal phase prior to implantation^{50,54}.

Natural-killer cells in the uterus, which cumulate as a dense infiltrate around the invading cytotrophoblast cells in the early weeks of pregnancy, progressively disappear from mid-gestation onwards concurs with cytotrophoblast invasion as placentation is complete by around 20 weeks of gestation. The uterine natural-killer cells (NK cells), which secrete numerous cytokines that are associated with angiogenesis and vascular stability, affect both trophoblast invasion and vascular changes in the maternal placental bed^{6,7}.

Trophoblast invasion into the decidua with its substantial leucocyte infiltration and the succeeding arterial transformation prerequisites results in close tissue contact between allogeneic cells. Although the syncytiotrophoblasts do not produce classic

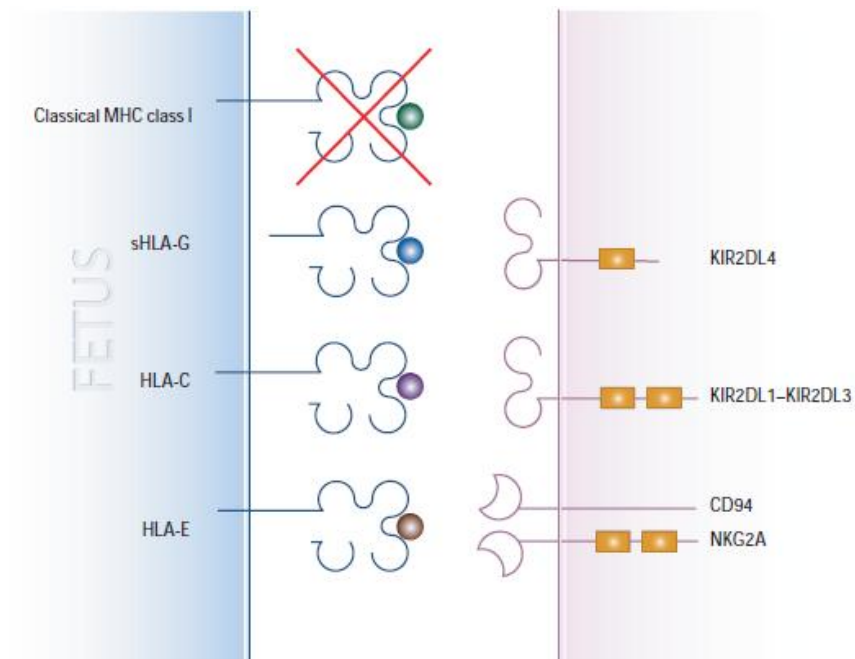
HLA mRNA or HLA protein in their membranes, the invading cytotrophoblast express the nonclassic HLA-G and HLA-E antigens. The HLA-G, a non-polymorphic antigen, plays a vital role in defending the trophoblast from cytotoxic effects of the natural killer cells. However, the activation of the natural-killer cells by HLA-G is potentially very crucial in mediating major vascular changes²⁴.

The decidual natural-killer cells which represent the major population of decidual lymphoid cells express killer activatory and inhibitory receptors which recognize HLA class- I molecules. Although HLA-G is crucial for the activation of uterine natural-killer cells, it cannot deliver any partner-specific signal by being monomorphic in nature. Paradoxically, HLA-C loci are dimorphic for residues and these two groups can interact with different natural-killer cell receptors⁸.

Since HLA-C is polymorphic, a great diversity of haplotypes of killer-cell immunoglobulin-like receptors (KIR) in humans exists and thereby, each pregnancy will have different combinations of paternally-derived fetal HLA-C and maternal KIRs. These new perspectives suggest that pregnancy depends on the unique couple-specific immune interaction that do not involve T-cells, however, involve natural-killer cells which interact with paternal HLA-C residues.^{8,9}

Maternal host lacking most or all activating KIRs (AA genotype) when the fetus had HLA-C (belonging to the HLA-C2 group) were at a considerable risk of developing pre-eclampsia. This effect was present even when the maternal host mothers had HLA-C2, representing that both non-self and missing-self discrimination was not an effect. Therefore, this interaction between maternal KIRs and trophoblast seems not to be a typical immune function, however, it depicts that the cells of the

innate immune system have a physiological role in the development of placenta during the pregnancy^{14,16,68}.



Immune receptors hypothesized to regulate human maternal fetal interaction⁶⁸

Numerous retrospective cohort studies have demonstrated that pregnancy related hypertensive disorders are associated with primipaternity or duration of sexual cohabitation^{8,9,11,12,18}.

The protective effect of primipaternity potentially depends on the immunological compatibility of the new partner¹³. Consequently, many epidemiological studies have demonstrated that preeclampsia might be associated with a change of partner,⁵²⁻⁵⁴

In a case-control study by Marti et al, it has been found that among primiparous women, pre-eclamptic women had significantly less duration of sexual relationship prior to conception as compared with the primiparous controls (60 vs

190, $P < 0.0001$).⁵⁴ This protective influence of a prolonged sexual co-habitation prior to conception among new couples was also demonstrated in a study by Robillard et al.⁹

Immunological basis for pre-eclampsia provides evidence that primipaternity and duration of sexual cohabitation as potential risk factors for pre-eclampsia^{9,52-54}.

A large prospective multicentre study by Kho et al assessed whether women with preeclampsia (131 women) or delivering SGA (263 women) babies are associated with the short duration of sexual co-habitation (6 months, 3 months, or first intercourse) as compared with those who have uncomplicated pregnancies. The study demonstrated that short duration of sexual relationship was more common in women with preeclampsia as compared with uncomplicated pregnancies (14.5% versus 6.9 for 6 months (adjOR 1.88, 95% CI 1.05–3.36); 6.9% versus 2.5% for 3 months (adjOR 2.32, 95% CI 1.03–5.25); 1.5% versus 0.5% for first intercourse (adjOR 5.75, 95% CI 1.13–29.3). SGA was not associated with a shorter duration of sexual relationship; however, the total number of semen exposures was lower in SGA. Following the post hoc analysis, the subgroup of SGA with abnormal uterine artery Doppler at 20 weeks (N= 58) were more frequently have had a short duration of sexual co-habitation as compared with the control group (adjOR 2.33, 95% CI 1.09–4.98 for 6 months; adjOR 3.22, 95% CI 1.18–8.79 for 3 months; adjOR 8.02, 95% CI 1.58–40.7 for first intercourse)¹⁷.

Frequent sexual co-habitation with persistent antigen exposure in the suitable cytokine environment mediated through TGF is considered to be vital in the partner-specific maternal mucosal tolerance^{4,18,20}.

Through the initiation of type 2 or T regulatory cell dominated immune response to paternal antigens, seminal TGF potentially inhibit the stimulation of type 1 responses towards the semi-allogeneic conceptus which is associated with poor placentation and restricted fetal growth. In addition, the T helper type 2 (Th2) and Th3 lymphocytes interact with both placental trophoblasts and the maternal decidual vasculature to support their remodelling^{14,23}.

However, an impaired spiral arterial remodelling results in reduction of the utero-placental perfusion and therefore, predisposes to preeclampsia and SGA⁷.

The timeline of semen exposure potentially is very crucial in modulating the maternal immune response to paternal antigens¹².

The duration of sexual co-habitation and SGA infants has shown that although SGA was associated with the short duration of sexual co-habitation, the effect was not statistically significant following the adjusting for potential cofactors. The study also concluded that further examination of this relationship requires a larger cohort of SGA babies, with a hypothesis regarding the association between the duration of sexual relationship and different SGA phenotypes^{7,20}.

Pre-eclampsia remains as a vital maternal health issue in India. Data from a large national wide sample of Indian women represent that some of the risk factors for pre-eclampsia are modifiable. Considering the Millennium Development Goal as the target, pre-eclampsia should be recognized as a significant area in improving maternal health through the early detection and timely management of pre-eclampsia^{6,35}.

In India, well established population level studies to evaluate the causative factors of pre-eclampsia are very limited. Although the community health care

practice and policy must promote better accessibility to health care earlier and compulsory ANC visit and reduction of social and behavioral risk factors, more epidemiological studies in India should prioritize on revealing the preventable causes of pre-eclampsia. Therefore, the current study is conducted to help in assessing the association of the duration of sexual co-habitation and pre-eclampsia and SGA in the southern region of the country.

METHODOLOGY

The present study is conducted in department of obstetrics and gynaecology at teaching hospital attached to KLE University`s J.N.Medical College.Belagavi

Study design: A descriptive observational study

Timeline of study:

PHASE	TIME PERIOD	OUTLINE
I	June 2015 to December 2015	1.Identification of problem 2.Review of Literature 3.Development of data collection instrument 4.Submission of Synopsis
II	January 2016 to December 2016	1.Enrolment 2.Data Collection
III	January 2017 to August 2017	1.Analysis of collection data 2.Discussion
IV	September 2017	1.Submission of dissertation

Source of data:

- All primigravida with singleton pregnancy admitted in labour room and postnatal wards in department of obstetrics and gynaecology at teaching hospital attached to KLE University`s J.N.Medical College.Belagavi

Selection criteria:

- Inclusion criteria:
 - Primigravida
 - Single gestation
 - Age above 18 years
 - Gestational age >20weeks
- Exclusion criteria:
 - Pre-existing renal disease
 - Miscarriages
 - Known Diabetes
 - Known hypertension

Study period:From January 2016 –December 2016

Sample size:

The sample size is calculated assuming an alpha of 0.05, alpha and beta of 0.20(power80%) and the prevalence of preeclampsia with duration of cohabitation <3 months estimated at 15%⁸.

Calculated using formula

$$n=4pq/d^2$$

p=prevalence

$$q=100-p$$

d=relative error


$$n=4 \times 12 \times 85 / 16$$

320

Method of collection of data:

Ethical clearance:

The ethical clearance was obtained from institutional Review Board of KLE University's teaching hospital attached to Jawaharlal Nehru Medical College, Belgaum. (MDC/DOME/17) dated on 18/11/2015.

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NEHRU NAGAR, BELAGAVI-590010 (KARNATAKA-INDIA)
(Accredited 'A' Grade by NAAC)**

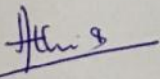
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
Ref: MDC/DOME/ 412 Date: 18/11/2015

To,
[Redacted]
PG student in OBG,
J.N.Medical College,
BELAGAVI.

Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled
**"CORRELATION BETWEEN DURATION OF COHABITATION (POSTMARITAL)
AND ITS EFFECTS ON DEVELOPMENT OF PREECLAMPSIA AND OTHER
ADVERSE OUTCOMES IN PRIMIGRAVIDAE: ONE YEAR CROSS SECTIONAL
STUDY AT KLE HOSPITAL JNMC BELAGAVI"**, is ethical and justifiable. The proposed
research project has been cleared by the JNMC Institutional Ethics Committee on Human
Subjects Research.


(Dr. Arathi Darshan)
Member Secretary
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.


(Dr. Ganga Pilli)
Chairman,
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

Screening and enrolment:

All primigravida who are admitted to the labour room and postnatal wards were screened for eligibility based on selection criteria.

After obtaining informed consent, all primigravida were interviewed following delivery and obtained data on demographics characteristic and the duration of sexual cohabitation.

All primigravidae who came to labour room were interviewed and enrolled and those in postnatal wards were interviewed and data collected from antenatal records.

Date of marriage and LMP confirmed by the patient with interview.

Ultrasound details are collected from antenatal records for confirming fetal growth restriction,

Duration between marriage and LMP noted (duration of cohabitation) and it is correlated with pregnancy outcome (Preeclampsia and FGR).

Cohabitation is defined as a state of living together in a conjugal relationship

In Indian scenario postmarital period is considered.

- Shorter duration of cohabitation is taken as less than 6 months
- Longer duration of cohabitation is taken as more than 6 months

If the women were on contraception, data on the type of contraception used and the time interval between contraceptive discontinuation and conception were collected.

Duration of sexual cohabitation for less than 6 months and more than 6 months is correlated with the pregnancy adverse outcomes (pre-eclampsia and fetal growth restriction). Ultrasound image data from antenatal records were used to detect fetal growth restriction. Additionally, birth weight of the baby following the delivery was also observed.

SGA was used as an alternative for fetal growth restriction and defined as a birth weight at or below the 10th percentile for the mean birth weight for gestational age according to the sex specific Indian fetal growth curve.

Other variables like gestational hypertension, eclampsia, hypothyroidism, anemia and abruption are taken into consideration with relation to duration of cohabitation.

Data analysis

The collected data was entered into MS Excel followed by the analysis using Spss version 21.

The demographic characteristics were represented using Arithmetic mean, Standard deviation and percentages. Bar diagrams as well as Pie charts were used to represent the data graphically.

The possible association between duration of cohabitation and other independent variables such as preeclampsia, FGR etc. was found using a chi-square test* and Fishers exact test.

Using multiple logistic regression, the risk is calculated with other variables like hypothyroidism, anemia, preterm, abruption against duration of cohabitation

P value <0.05 was considered statistically significant

*Pearson's chi square test

The following variables were measured:

- Average age
- Average BMI
- Coitus/week
- Contraceptive methods
 - Oral contraceptives
 - Barrier methods
 - Not on any contraceptives
- Hypertension related disorders
 - Pre-eclampsia
 - Eclampsia
 - Gestational hypertension
- Other factors
 - Hypothyroidism
 - Anemia
 - Preterm
 - Abruption
- Duration of sexual co-habitation
 - Less than 6months of cohabitation
 - More than 6 months of cohabitation
- Adverse outcomes
 - Development of preeclampsia
 - Development of fetal growth restriction



Introduction



Objectives



Review of Literature



Methodology



Results



Discussion



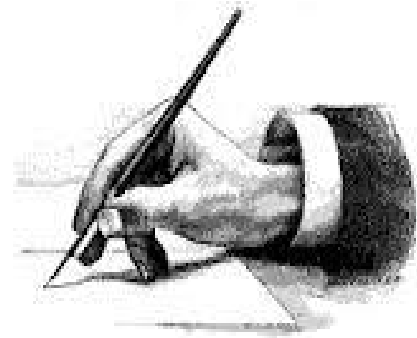
Conclusion



Summary



Bibliography



Annexure-I



Annexure-II



Annexure-III



Annexure-IV



Annexure-V

RESULTS

This descriptive observational study was conducted in Department of Obstetrics and Gynaecology at teaching hospital attached to KLE University's J.N. Medical College. Belagavi

Total no of deliveries-6236

Total no of women with preeclampsia -597(9.57%) including both primigravida and multigravida.

Total no of primigravida admitted to labour room and postnatal wards-1158

Total no of primigravida screened-360

Total no of primigravida who are eligible-349

Ineligible-11

Total no of primigravida screened during Antepartum period-88

Total no of women screened during Postpartum period in postnatal wards-272

During the study period, a total of 349 pregnant women who fulfilled the inclusion criteria were enrolled in the study.

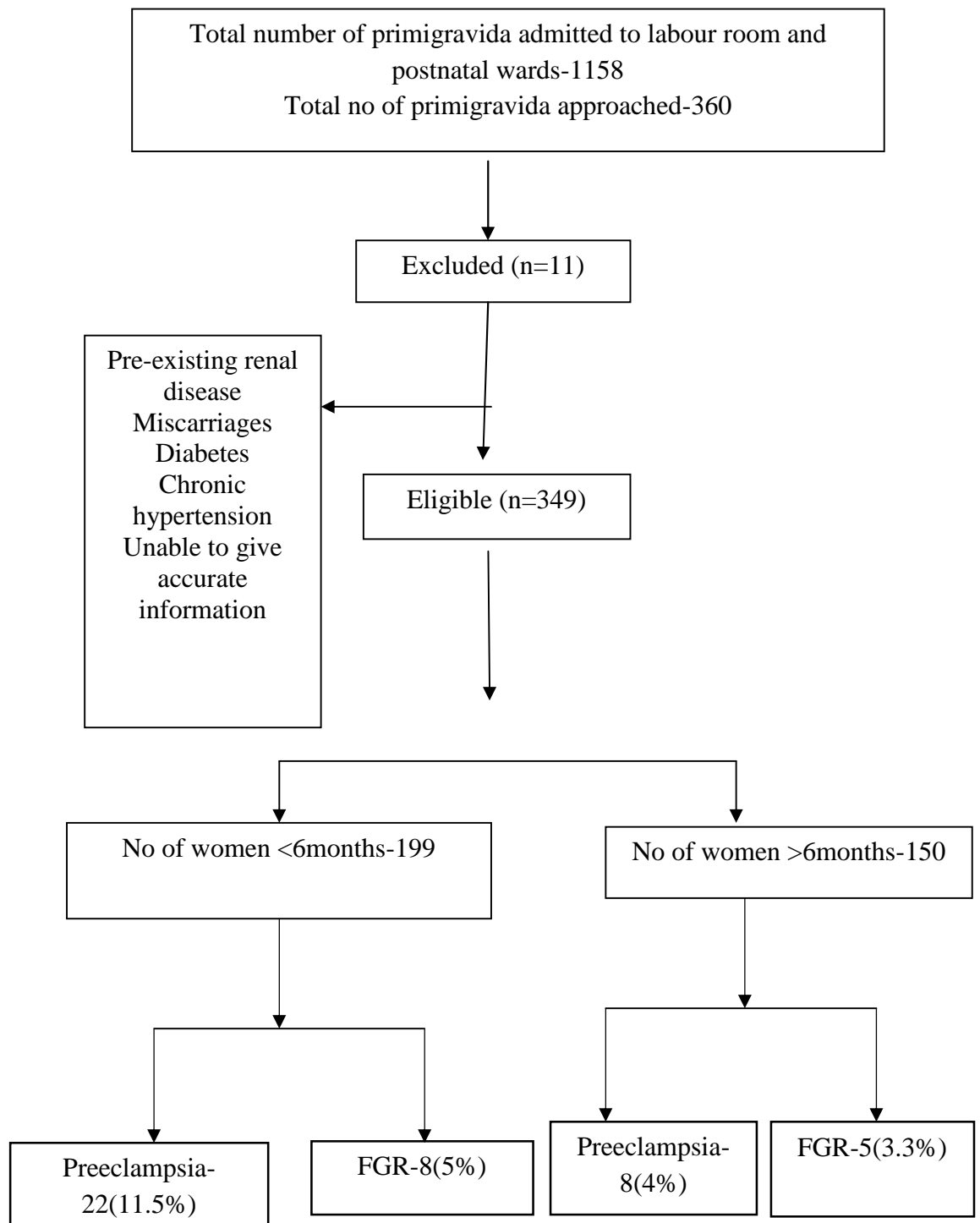
Total primigravidae with duration of cohabitation less than 6 months-199

Total primigravidae with duration of cohabitation more than 6 months-150

Among those with duration of cohabitation less than 6 months 22(11.4%) developed preeclampsia and 8(5%) developed fetal growth restriction.

Among those with duration of cohabitation more than 6 months 8(4%) developed preeclampsia and 5(3.2%) developed fetal growth restriction.

CONSORT DIAGRAM:



Statistical Analysis

The collected data was entered into MS Excel followed by the analysis using Spss version 21.

The demographic characteristics were represented using Arithmetic mean, Standard deviation and percentages. Bar diagrams as well as Pie charts were used to represent the data graphically.

The possible association between duration of cohabitation and other independent variables such as preeclampsia, FGR etc. was found using a chi-square test* and Fishers exact test.

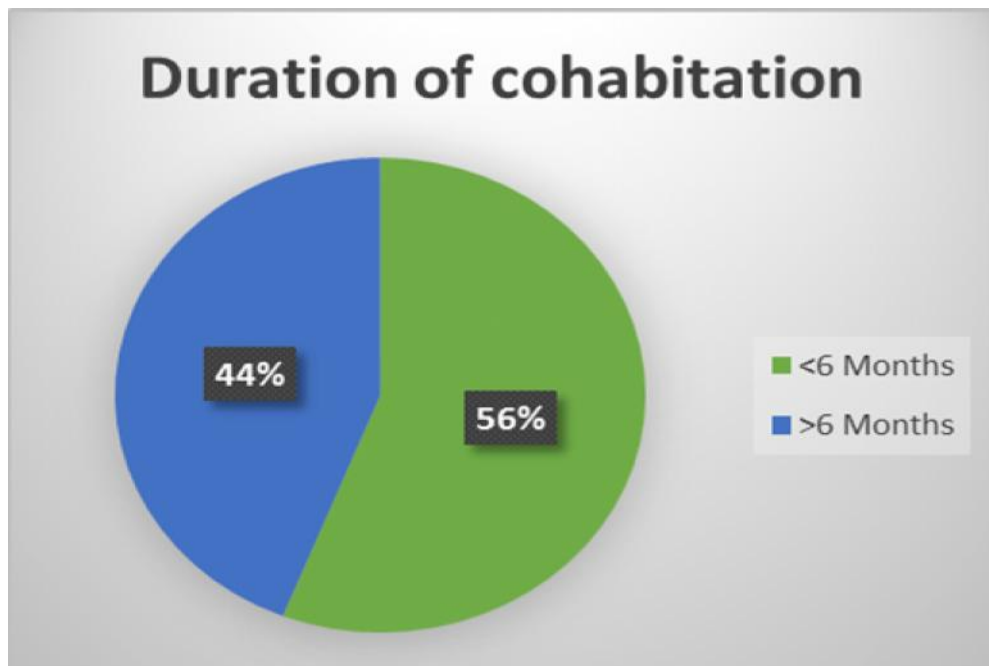
Using multiple logistic regression, the risk is calculated with other variables like hypothyroidism, anemia, preterm, abruption against duration of cohabitation

P value <0.05 was considered statistically significant

*Pearson's chi square test

Table: 1 Total no of Primigravidae Enrolled.

Duration of cohabitation	Frequency	Percent
<6 Months	199	57.1
>6 Months	150	42.9
Total	349 350	100.0



Total primigravidae who were screened in the study-360

11 met the exclusion criteria and were excluded

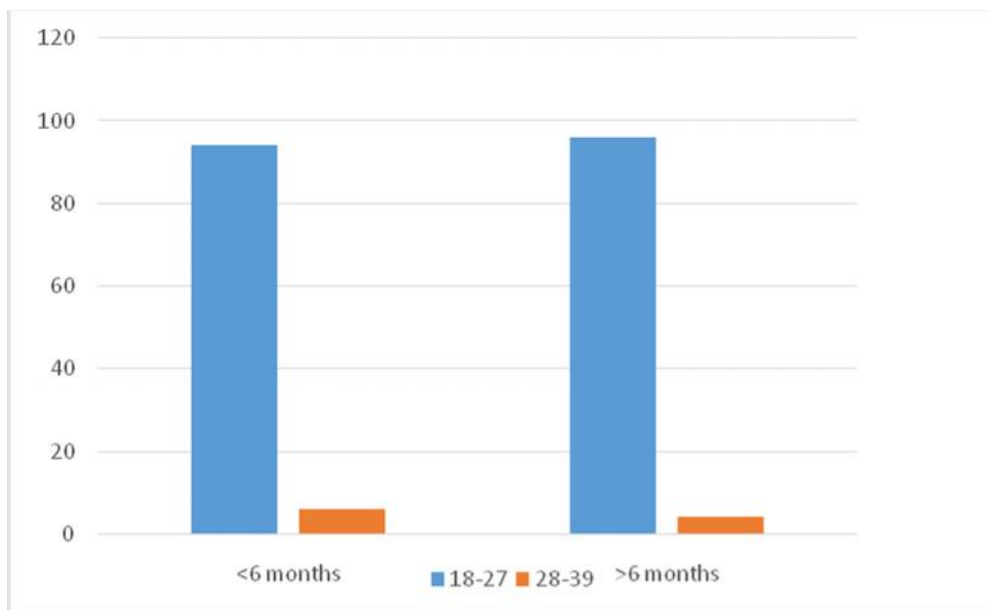
Total primigravidae enrolled in the study were 349

Total no of primigravidae with less than 6 months of cohabitation-199(56%)

Total no of primigravidae with more than 6 months of cohabitation-150(46%)

Table: 2 Age groups

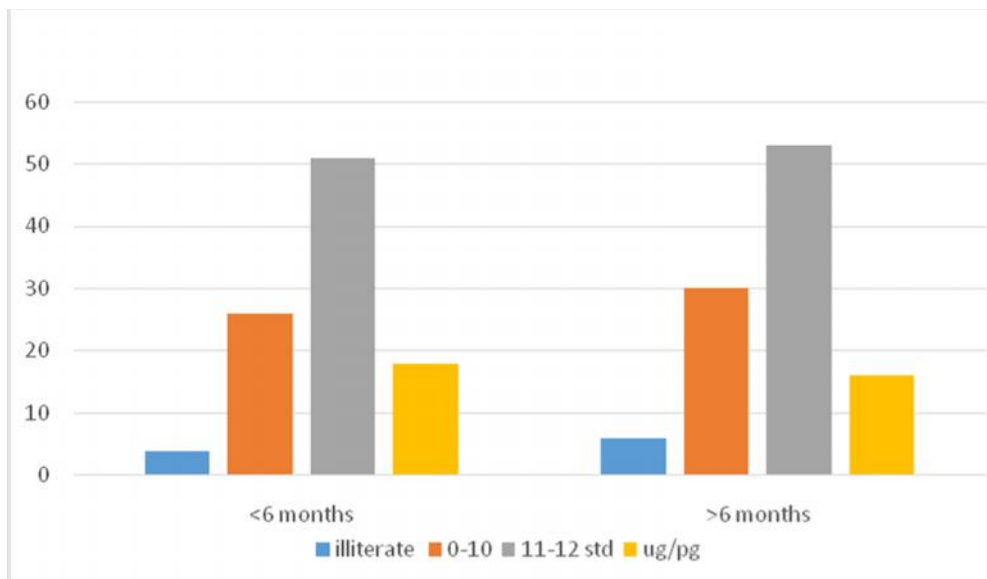
Duration	Age group	Frequency	Percent
<6 Months	18-27	188	94
	28-39	10	6
	Total	199	100.0
>6 Months	18-27	144	96.0
	28-39	6	4.0
	Total	150	100.0



As per the above-mentioned table total primigravidae were more between age group of 18-27 years as compared to 28-40 years in both less than 6 months and more than 6 months duration of cohabitation

Table: 3 Education

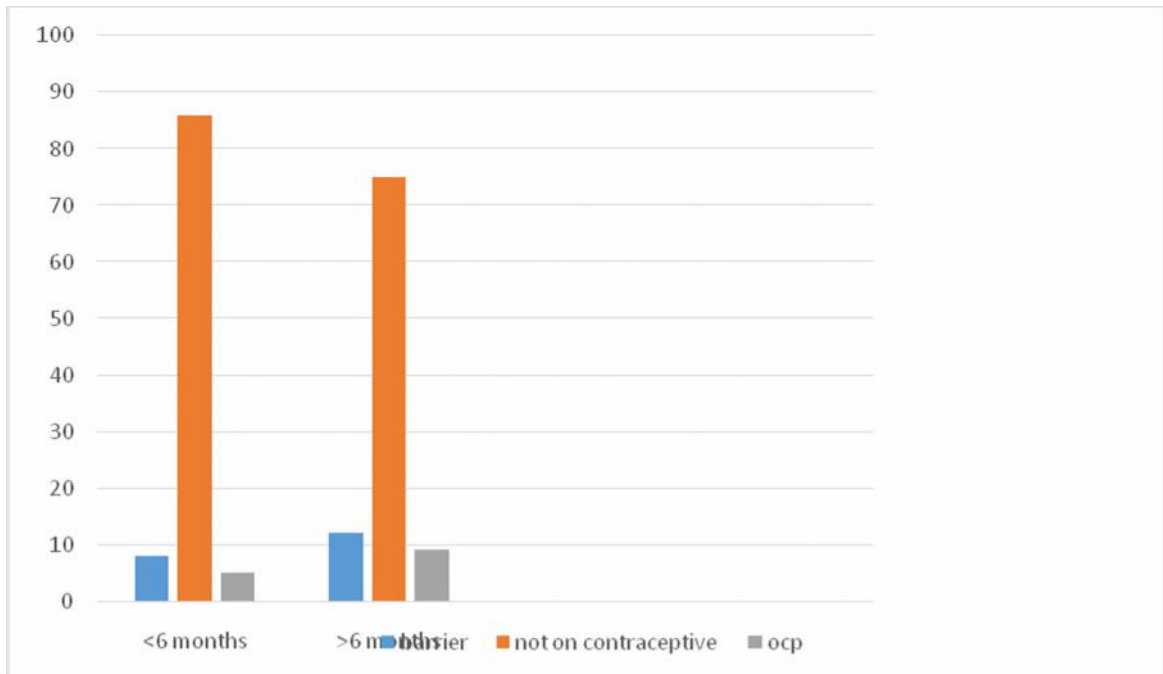
Categories	<6 months		>6 months	
	n	%	n	%
Illiterate	8	4	10	6
1 st to 10 th	52	26.1	45	30
11 th to 12 th	103	51	80	53
UG/PG	36	18	25	16



Most of primigravida with both less than 6 months and more than 6 months duration of cohabitation perceived education between 11-12th standard

Table: 4 Use of Contraceptives

Duration	Method	Frequency	Percent
<6 Months	Barrier	16	8
	Not on contraceptive	173	86
	Oral contraceptive	10	5
	total	199	
		199	100
>6 Months	barrier	18	12
	not on contraceptive	113	75.3
	Oral contraceptive	13	8.6
	Total	150	100



Contraceptive methods in relation to duration of cohabitation and adverse pregnancy outcomes

Not on contraception	Duration of cohabitation	Preeclampsia %		Fetal growth restriction. %	
Total no-173	<6 months	9	4	3	1
Total no-113	>6 months	3	2	1	0.8

Barrier method	Duration of cohabitation	Preeclampsia	%	Fetal growth restriction	%
Total no-16	<6months	5	30	4	10
Total no-18	>6 months	2	10	2	10

Ocp	Duration of cohabitation	preeclampsia	%	Fetal growth restriction	%
Total no-10	<6 months	2	20	0	
Total no-13	>6 months	1	7	2	10

From the above tables, it is found that the incidence of preeclampsia and FGR is more in less than 6 months duration of cohabitation in those who used barrier method as compared with ocp and not on contraceptives.

Table: 5 Frequency of coitus with duration of cohabitation

Duration of cohabitation	Mean	Std.Deviation
<6 months	3	1.83
>6 months	4	1.81

The Average coital frequency in less than 6 months duration of cohabitation was 3 times.

The Average coital frequency in more than 6 months duration of cohabitation was 4 times

Result Part 2

Table: 6 Association between duration of Cohabitation and Preeclampsia

Duration of cohabitation		preeclampsia		Total
		Present	Absent	
<6 Months	Count	22	177	199
	%	11.5%	88.9%	100.0%
>6 Months	Count	6	144	150
	%	4.0%	96.0%	100.0%
Total		28	321	349

P value=0.016,

Chi square value=5.66 df=1

A statistically significant association was found between duration of Cohabitation and preeclampsia. The preeclampsia was more prone to affect those who had a cohabitation of less than 6 months. (11.5% of the total 199 subjects were affected in the <6 months category whereas only 4% got affected in the >6 month category)

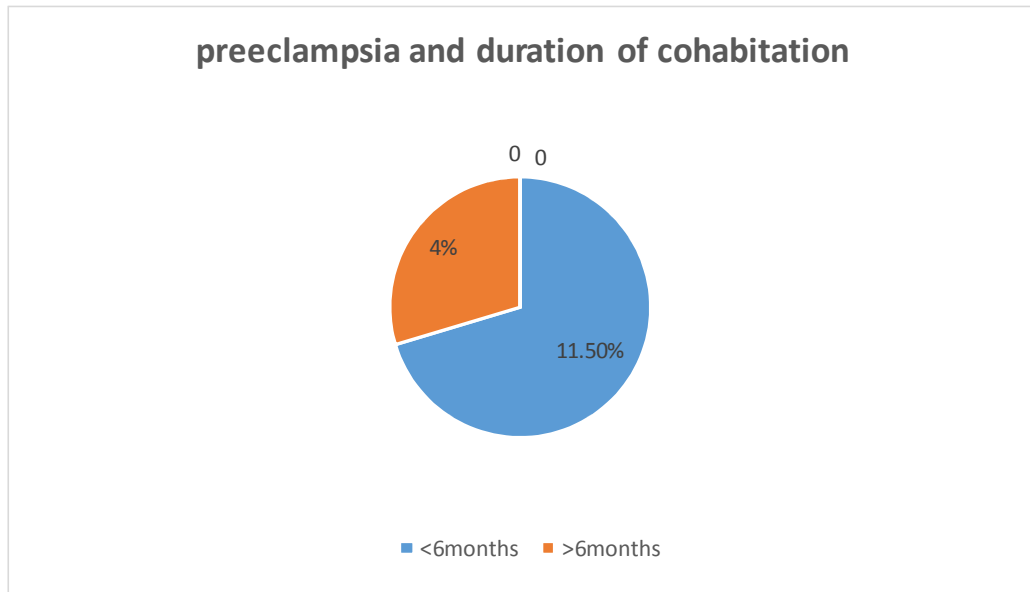


Table: 7 Association between duration of Cohabitation and Gestational hypertension

Duration of cohabitation		GH		Total
		Yes	No	
<6 Months	Count	6	193	200
	%	3.0%	97.0%	100.0%
>6 Months	Count	4	146	150
	%	2.7%	97.3%	100.0%
Total		Count	10	339
				349

Fishers exact test P value=0.847,

Chi square value=0.037 df=1

The association between Duration of cohabitation and GH was not found to be statistically significant. (P value=0.847)

Table: 8 Association between duration of Cohabitation and Eclampsia

Duration of cohabitation		Eclampsia		Total
		Present	Absent	
<6 Months	Count	4	195	199
	%	2.0%	98.0%	100.0%
>6 Months	Count	1	149	150
	%	0.7%	99.3%	100.0%
Total		5	344	349

Fishers exact test P value=0.296,

Chi square value=1.09 df=1

The association between Duration of cohabitation and eclampsia was not found to be statistically significant. (P value=0.296)

Table: 9 Association between duration of Cohabitation and FGR

Duration of cohabitation		FGR		Total	
		Present	Absent		
<6 Months	Count	8	191	199	
	%	4%	95%	100.0%	
>6 Months	Count	5	145	150	
	%	3.3%	96%	100.0%	
Total		Count	13	336	349

P value=.662,

Chi square value=.191 df=1

The association between Duration of cohabitation and FGR was not found to be statistically significant. (P value=.662)

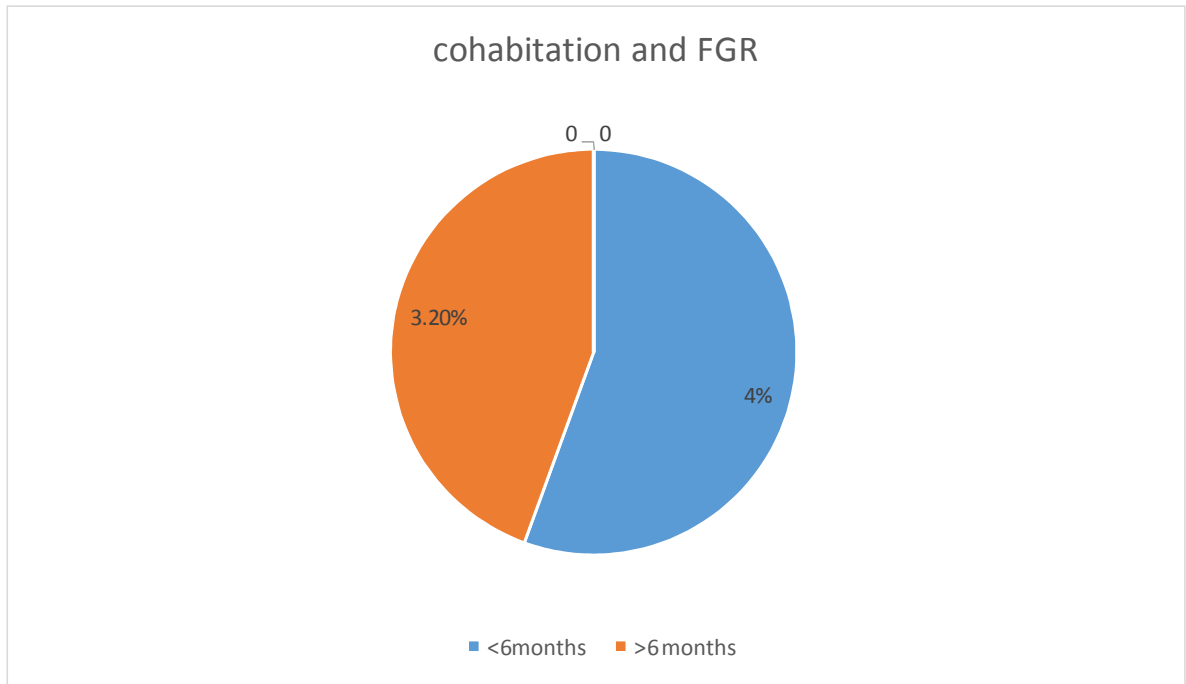


Table: 10 Association between Duration of cohabitation and Anemia

Duration of cohabitation		Anemia		Total
		Present	Absent	
<6 Months	Count	14	185	199
	%	7.0%	92%	100.0%
>6 Months	Count	8	142	150
	%	5.3%	94%	100.0%
Total		22	327	349

P value=0.105

Chi square value=1.0 df=1

No statistically significant association was found between Duration of cohabitation and Anemia

Table: 11 Association between Duration of cohabitation and Hypothyroidism

Duration of cohabitation		Hypothyroidism		Total
		Present	Absent	
<6 Months	Count	9	190	199
	%	4.5%	95%	100.0%
>6 Months	Count	11	139	150
	%	7.3%	92%	100.0%
Total		Count	20	329
		%	5.7%	79.9%

P value=.110, Chi square value=2.5 df=1The association between Duration of cohabitation and hypothyroidism was not found to be statistically significant. (P value=.110)

Table: 12 Association between Duration of cohabitation and Preterm birth

Duration of cohabitation		Preterm		Total	
		Yes	No		
<6 Months	Count	4	195	199	
	%	2.0%	98.0%	100.0%	
>6 Months	Count	9	141	150	
	%	6.0%	94%	100.0%	
Total		Count	13	336	349

P value=0.71,

Chi square value=3.26 df=1

The association between Duration of cohabitation and preterm birth was not found to be statistically significant. (P value=0.71)

Table: 13 Association between Duration of cohabitation and Abruption of placenta

Duration of cohabitation		Abruption		Total
		Yes	No	
<6 Months	Count	4	195	199
	%	2.0%	98.0%	100.0%
>6 Months	Count	2	148	150
	%	1.3%	98%	100.0%
Total		6	343	349

P value=0.561,

Chi square value=.337 df=1The association between Duration of cohabitation and abruption was not found to be statistically significant. (P value=0.561)

TABLE : 14 Logistic regression analysis

Less than 6 months of cohabitation is considered as the reference category for the analysis

I Anemia**Variables in the Equation**

Duration of cohabitation	B	S.E.	Wald	df	P value	Odds ratio
>6months	-.771	.279	7.607	1	.006	.463
Constant	2.622	.455	33.279	1	.000	13.769

OR=.463

Protective effect for getting affected by anemia for those who had a duration of cohabitation >6 months

II Hypothyroidism

Variables in the Equation							
Duration of cohabitation		B	S.E.	Wald	df	P value	Odds ratio
	>6 months	.427	.268	2.530	1	.112	1.533
	Constant	1.153	.191	36.352	1	.000	3.167

OR=1.53

Primigravida who had >6 months of cohabitation are 1.53 times at the risk of getting affected by Hypothyroidism compared to the <6 months category.

OR>1 is risk, OR<1 is protective effect

III Preterm**Variables in the Equation**

Duration of cohabitation	B	S.E.	Wald	df	P value	Odds ratio
>6 months	.818	.463	3.119	1	.077	2.266
Constant	2.355	.290	65.852	1	.000	10.538

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Primigravida who had >6 months of cohabitation are 2.26 times at the risk of getting affected by preterm as compared to the <6 months respectively

IV Abruptio**Variables in the Equation**

	B	S.E.	Wald	df	P value	OR
Duration >6	.296	.512	.335	1	.563	1.345
Constant	2.876	.363	62.659	1	.000	17.750

Primigravida who had >6 months of cohabitation are 1.3 times at the risk of getting affected by abruptio as compared to the <6 months respectively.

DISCUSSION

The prevailing evidence strongly suggest the crucial role of the paternal antigen in causing pre-eclampsia^{2,11,12,18}

Normal pregnancy is associated with the immunological tolerance to semi-allogeneic fetus, in women with pre-eclampsia, there is immunological intolerance¹⁴.

In the present study, primigravida who have had a sexual co-habitation for <6 months were associated with an increased risk of pre-eclampsia (11.5%) as compared to >6 months of sexual co-habitation (4%).which was statistically significant (p value-0.01)

There was no statistically significant association between preeclampsia and fetal growth restriction (p value-0.1)

In a case-control study by Einarsson et al, 113 primigravida pre-eclamptic women were compared with 226 primigravida women without preeclampsia, demonstrated that duration of sperm exposure impacts the risk of preeclampsia. The study concluded that <4 months of co-habitation among the users of barrier methods of contraception was associated with a statistically significant increased risk for pre-eclampsia.⁵⁵

A large prospective multicentre study by Kho et al assessed whether women with preeclampsia (131 women) or delivering SGA (263 women) babies are associated with the short duration of sexual co-habitation (6 months, 3 months, or first intercourse) as compared with those who have uncomplicated pregnancies. The study demonstrated that short duration of sexual relationship was more common in

women with preeclampsia as compared with uncomplicated pregnancies (14.5% versus 6.9 for 6 months (adjOR 1.88, 95% CI 1.05–3.36); 6.9% versus 2.5% for 3 months (adjOR 2.32, 95% CI 1.03–5.25); 1.5% versus 0.5% for first intercourse (adjOR 5.75, 95% CI 1.13–29.3). SGA was not associated with a shorter duration of sexual relationship; however, the total number of semen exposures was lower in SGA. Following the post hoc analysis, the subgroup of SGA with abnormal uterine artery Doppler at 20 weeks (N= 58) were more frequently have had a short duration of sexual co-habitation as compared with the control group (adjOR 2.33, 95% CI 1.09–4.98 for 6 months; adjOR 3.22, 95% CI 1.18–8.79 for 3 months; adjOR 8.02, 95% CI 1.58–40.7 for first intercourse).⁸

Studies which assessed the association of the duration of sexual co-habitation and the incidence of pregnancy-induced hypertension (PIH) have demonstrated that the incidence of PIH was above 30% for <4 months duration of sexual co-habitation, while for >12 months of sexual co-habitation, the rates of PIH was <10%. This implies a negative association between the duration of sexual co-habitation and the rates of PIH^{9,13,19}

It has also been observed that women with co-existing anemia and inadequate intake of vegetables and fruits were at an increased risk of pre-eclampsia. In developing countries, women with severe anemia (hemoglobin <7 g/dL) was associated with three times increased risk of pre-eclampsia. In these countries, the lack of antenatal care and less than secondary-level education was considered as the appropriate risk factors for the development of pre-eclampsia.⁴⁴

The current study also found a statistically significant association between the duration of cohabitation and anemia with a P value of 0.005. Anemia was more common in women who have had <6 months of co-habitation (7%) as compared with those who had >6 months of co-habitation (5.3%).

The study which also assessed the association of duration of co-habitation and other variables including FGR, hypothyroidism, GH, eclampsia, pre-term birth and abruption of placenta demonstrated no statistical significant association between them.

A study by Mostello et al, which estimated the recurrent risk of preeclampsia based on birthweight in the first pregnancy, found that low birthweight defined as prior SGA new-born has no impact on the recurrence of risk. It has been proposed that the past history of an SGA newborn in association with preeclampsia reveals the severity of pre-eclampsia with a deficient endovascularization by the trophoblast into maternal vessels and the subsequent reduced placental perfusion. However, the results of the study suggest that SGA or an associated co-morbid condition like oligohydramnios or fetal distress potentially induce delivery at an early gestational age. Therefore, the preterm delivery can obscure the effect of SGA as a risk factor⁶⁹.

Moreover, nearly 96% of the women enrolled in the current study belong to the age group of 18-27 years. Although women in the two groups of who have had <6 months and >6 months of sexual co-habitation, frequency of coitus was numerically higher for >6 months (n=4) than <6 months of sexual co-habitation (n=3).

The current study also found that women who have not used any contraceptive measures were numerically higher in the group in which the duration of sexual co-habitation is <6 months rather than >6 months group.

It was also observed that the development of preeclampsia was higher in primigravida with less than 6 months duration of cohabitation who were on barrier contraceptives.

In the present study, pre-eclampsia was more common among the study population as compared to other hypertensive related disorders including gestational hypertension and eclampsia.

No statistical difference was seen between duration of cohabitation and gestational hypertension and eclampsia in primigravida.

There was no statistical difference between less than 6 months and more than 6 months duration of cohabitation in primigravida with the following

- Anemia
- Hypothyroidism
- Preterm
- Abruptio

Primigravida who have had a short duration of sexual co-habitation (<6 months) were more likely to be associated with pre-eclampsia as compared to >6 months duration of sexual co-habitation.

The results of these studies suggest that the exposure to semen diminishes the risk of pre-eclampsia. Seminal fluid which has the soluble MHC class I antigens as

taken up by vaginal epithelial cells or uterine epithelial cells potentially induce immunological tolerance to the paternal antigens. As semen stimulates an inflow of antigen-presenting cells into the women reproductive tract, the exposure to semen possibly augments the number of T cells that are tolerant to the paternal MHC class I antigens prior to pregnancy.

To conclude, this study supports the previous evidence that pre-eclampsia in primigravida women is more common with the duration of sexual cohabitation less than 6 months.

LIMITATIONS OF THIS STUDY

Small sample size

There was a recall bias

RECOMMENDATIONS

The findings of this study can be endorsed by a larger sample size.

CONCLUSION

From this study it is evident that primigravida with duration of cohabitation less than 6 months have more incidence of preeclampsia than those with duration of cohabitation more than 6 months.

There was no statistical significance between duration of cohabitation with fetal growth restriction in both less than and more than 6 months duration of cohabitation.

SUMMARY

A Descriptive observational study was performed on 349 consenting Primigravida fulfilling the eligibility criteria. The study is being conducted in Department of Obstetrics and Gynaecology, at teaching hospital attached to KLE University's Jawaharlal Nehru Medical College, Belgaum.

Primary objective was to see the correlation between duration of cohabitation and preeclampsia. secondary objective being correlation between duration of cohabitation and FGR.

The possible association between duration of cohabitation and other independent variables such as preeclampsia, FGR etc was found using a chi-square test* and Fishers exact test.

In this study, of the 360 women screened, 349 were eligible to participate in the study. Total no of primigravida with less than 6 months of cohabitation were-199 out of which 22 developed preeclampsia, more than 6 month of cohabitation were 150 out of which 6 developed preeclampsia.

22(11.5%) of the total 199 subjects were affected in the <6 months category whereas only 6(4%) got affected in >6 month category

A statistically significant association was found between duration of Cohabitation and preeclampsia. Preeclampsia was more prone to affect those who had a cohabitation of less than 6 months.

In women with less than 6 months of cohabitation. Number of Primigravida who developed FGR were 8(4%) compared to those with more than 6 months duration of cohabitation 5(3.3%) developed FGR. It was not statistically significant.

Other independent variables like hypothyroidism ,preterm, anemia, abruption was compared and there was no statistical significance was seen between duration of cohabitation and these variables.

In the present study, The Incidence of pre-eclampsia was more common among the study population as compared to other hypertension related disorders including gestational hypertension and eclampsia.

Women who have had a short duration of sexual co-habitation (<6 months) were having higher incidence of pre-eclampsia as compared to >6 months duration of sexual co-habitation.

The results of these studies suggest that the exposure to semen diminishes the risk of pre-eclampsia. Seminal fluid which has the soluble MHC class I antigens as taken up by vaginal epithelial cells or uterine epithelial cells potentially induce immunological tolerance to the paternal antigens.

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ANNEXURE-I

CONSENT FOR PARTICIPATION IN RESEARCH STUDY

Mrs _____ we are requesting you to enroll yourself in study titled **“CORRELATION BETWEEN DURATION OF COHABITATION AND ITS EFFECTS ON DEVELOPMENT OF PREECLAMPSIA AND OTHER ADVERSE OUTCOME IN PRIMIGRAVIDAE-A CROSS-SECTIONAL STUDY”**. conducted by Dr. _____, Post Graduate in M.S. Obstetrics And Gynaecology under the guidance of Dr. _____ Professor , Department of Obstetrics And Gynaecology , J.N. Medical College, Belgaum under KLE university, Belgaum.

Respected Madam we request you to enroll yourself to participate in our study as you are eligible for participating in the study. During the study you will be asked some questions regarding your present complaint and you are supposed to answer to the best of your knowledge.

Your participation in research is voluntary. Your decision whether or not to participate in the study will not affect your relationship with J.N. Medical College. If you decide to participate you are free to withdraw at any time.

The purpose of research is to assess the relationship of duration of cohabitation on development of adverse pregnancy outcomes.

Procedure Involved:

If you agree to enroll yourself in my study, you will be interviewed regarding your married life,time period between marriage and conception, consanguinity, LMP, then you will be clinically examined in detail and investigated accordingly and you will be followed till delivery/termination and looked for any of the adverse pregnancy outcomes like preeclampsia and fetal growth restriction and correlated with duration of

cohabitation

Risks and Benefits

There are no observable risks and benefits associated with the study.

Voluntary Participation/Withdrawal:

Taking part in the study is voluntary. You may choose not to enroll yourself in this study. Your decision will not change present or future health care services offered to you at K.L.E.S hospital.

Alternatives:

Even if you decline the participation in the study, you will get the routine line of management.

Privacy and Confidentiality:

The only people to know that you are a research subject are members of the research team. No information about you or information provided by you during the research will be disclosed to other without your written permission except:

1. In emergency to protect your rights and welfare.
2. If required by law.

Authorization to Publish Results:

When the results of the research are published or discussed, in a conference, no information will be displayed that would disclose your identity. Any information that is obtained in connection with this study and that can be identified with you will remain confidential.

Financial Incentives for participation:

No financial incentives are being offered to enrolled patients. It is purely being done with the idea of research and all the cost of the study will be borne by the investigator.

Compensation:

In the event of injury related to the study, treatment will be made available through KLES Hospital & MRC, Belgaum. There is no compensation or payment for such medical treatment by law. If you are injured you may contact Dr. _____, at Department of Obstetrics And Gynaecology, KLES Hospital& MRC or by Ph. No:

Questions:

In case you have any questions related to the study, in future or in case of study related injury or illness, you can contact Dr. _____, Department of Obstetrics And Gynaecology, KLES Hospital and MRC, Ph. No. _____ or phone number: _____ or Dr.M.B.Bellad, Professor, Dept. Of Obstetrics And Gynaecology, KLES Hospital and MRC, Belgaum Ph.: _____or phone number: _____.

If you have any queries about your rights as a study subject, you may call Dr. _____, Prof. & Head of Pathology as Chairman of J. N. Medical College Institutional Ethics Committee on Human Subjects Research, Phone No. J. N. Medical College, Belgaum or phone number: _____

Correlation between duration of cohabitation and its effects on development of adverse pregnancy outcome - observational study

Subject id-

1. Is the woman willing to participate in the study

- 1. Yes
- 2. No

2. Has she signed the informed consent form?

- 1. Yes
- 2. No

3. How old are you? (Years)

4. Is it a multiple pregnancy?

- 1. Yes
- 2. No

5. What is the level of schooling?

- 1. illiterate
- 2. Literate
- 3. Schooling in years-
- 4. Don't know

6. What was the first day of your last menstruation period (LMP)?

- -
dd mm yyyy

7. Were your previous cycles regular?

- 1. Yes
- 2. No
- 3. Don't know

8. Record estimated date of delivery by LMP

- -
dd mm yyyy

9. Gestational age as per LMP

- -
dd mm yyyy

10. Has the participant had an ultrasound done at any time during this pregnancy?

- 1=yes
- 2=No(if no skip to question no 16)

11. Estimated delivery date by ultrasound

- -
dd mm yyyy

12. Date of ultrasound performed

- -
dd mm yyyy

13. Gestational age at that ultrasound

Weeks Days

14. Is the scan suggestive of fetal growth restriction?

- 1. Yes
- 2. No

15. If yes at what gestational age

Weeks Days

16. Date of marriage

- -
dd mm yyyy

17. Duration between marriage and conception

- 1.0-3 months
 2.4-6 months
 3.7-9 months
 4.10-12 months
 5.>12 months

18.Consanguineous marriage

1. Yes
 2. No

19.If yes degree of consanguinity

20. Whether contraceptives used

1. Yes
 2. No (if no skip to question 24)

21.Type of contraceptive method used

- 1.Oral contraceptives
 2.Condoms
 3.Others

22.Duration of usage
 mm

23.Duration of cohabitation free of
 contraception
 mm

24.Frequency of coitus per week

25.Did mother have any antenatal care?

- 1.Yes
 2.No

26.If yes, how many antenatal visits did she
 have?

27.Was she diagnosed with high blood
 pressure at any time during her pregnancy?

1. Yes
 2. No(if no skip to q 41)

28. If yes at what gestational age

Weeks Days

29. Was she on any antihypertensive
 medication?

- 1.Yes
 2. No

30.Was she admitted to the hospital

- 1.Yes
 2.No

Examination:

31.BMI

32.Systolic blood pressure mm hg

33. Diastolic blood pressure mm hg

34. Any imminent signs?

- 1.Yes
 2.No

35.Spectrum of the disease

- 1.Gestational hypertension
 2.Pre-eclampsia
 3.Eclampsia
 4.Chronic hypertension
 5.Chronic hypertension with preeclampsia

36.Was the scan done?

1. Yes
 2. No(if no skip to question 38)

37. If yes at what gestational age?

Weeks Days

38. Any complications developed?

1. Yes
 2. No

39. If yes specify the complication-

40. Does the mother have any pre-existing disease

1. Yes
 2. No

41. If yes, mention the disease-

DELIVERY DETAILS

42. Date of delivery

- -
 dd mm yyyy

43. Mode of delivery-

44. Birth weight of baby following delivery

gms

45. Any congenital anomalies

1. Yes
 2. No

46. Was the baby small for gestational age

1. Yes
 2. No

If adverse pregnancy outcomes present

47. Correlation between duration of cohabitation and development of fetal growth restriction

1. 0-3 months
 2. 4-6 months
 3. 7-9 months
 4. 10-12 months
 5. >12 months

48. Correlation between duration of cohabitation and development of hypertensive disorder

1. Less than 3 months
 2. 4-6 months
 3. 7-9 months
 4. 10-12 months
 5. >12 months

Ip no	age	Literacy	gestational age	date of marriage	LMP	duration of cohabitation	type of contraception	duration of contraception	duration of cohabitation free of contraception	consanguinity	birth weight	BMI	preeclampsia	fetal growth restriction	anemia	hypothyroidism	GDM	gestational hypertension	eclampsia	preterm	abruption	duration between cohabitation and preeclampsia	duration between cohabitation and FGR	Other	frequency of coitus
814971	25	10	29weeks 4 days	11/12/2016	12/10/2016	1	not on contraceptive			2	1200	24	1	2	2	1	2	2	2	1	2	1			2
814872	23	11	38 weeks 4 days	2/11/2015	10/4/2016	16	not on contraceptive			2	2540	26	2	2	2	2	2	2	2	2	2				4
833224	21	8	38weeks	7/26/2016	9/30/2016	2	not on contraceptive			2	2300	28	2	2	2	2	2	2	2	2	2				3
811234	24	12	39weeks 4 days	6/22/2016	8/3/2016	2	not on contraceptive			2	2890	25	2	2	2	2	2	2	2	2	2				3
815631	21	bca	35 weeks 6 days	5/13/2016	11/7/2016	5	not on contraceptive			2	1700	22	2	1	2	2	2	2	2	2	2		5		3
815335	23	12	40weeks 5 days	1/29/2016	9/25/2016	8	not on contraceptive			2	3240	24	2	2	2	2	2	2	2	2	2				3
815153	24	mcom	39 weeks 3 days	5/22/2016	10/3/2016	5	not on contraceptive			2	2470	23	2	2	2	2	2	2	2	2	2				3
814823	23	12	40 weeks 3 days	4/30/2016	9/22/2016	5	barrier	1	4	2	2700	24	2	2	2	2	2	2	2	2	2				3
814397	23	10	37 weeks 1 day	7/20/2015	10/19/2016	15	not on contraceptive			2	3300	24	2	2	2	2	2	2	2	2	2				3
814379	23	12	38weeks 3 days	6/26/2016	10/9/2016	4	not on contraceptive			2	2400	26	2	2	2	2	2	2	2	2	2			ASD	3
815062	25	7	40 weeks 3 days	5/2/2016	9/28/2016	4	not on contraceptive			2	3100	28	1	2	2	2	2	2	2	2	2	2			3

815993	23	bcom	38weeks	1/6/2016	10/29/2016	9	not on contraceptive			2	2840	23	2	2	2	2	2	2	2	2	2				2
816048	22	12	37weeks 2 days	4/1/2014	5/29/2016	25	ocp	4	21	2	2600	28	2	2	2	2	1	2	2	2	2				3
896086	23	ba	39weeks 3 days	5/4/2016	10/9/2016	5	not on contraceptive			2	2800	22	2	2	2	2	2	2	2	2	2				2
816287	30	7	38weeks 4days	3/16/2015	10/14/2016	17	not on contraceptive			2	2900	24	2	2	2	2	2	2	2	2	2				2
816426	19	7	37weeks	6/6/2016	11/4/2016	5	not on contraceptive			1	2800	23	1	2	2	2	2	2	2	2	2	2	2		2
816771	20	10	38weeks 2 days	9/20/2016	10/17/2016	1	not on contraceptive			2	2780	25	2	2	2	2	2	2	2	2	2				2
816747	25	ba	37weeks 2 days	5/23/2013	10/28/2016	29	barrier	4	25	2	2100	27	2	2	2	2	2	2	2	2	2				2
816793	22	12	39weeks	7/13/2016	10/12/2016	3	not on contraceptive			1	2790	23	2	2	1	2	2	1	2	2	2				3
816679	25	bca	41weeks 5days	5/5/2015	9/16/2016	16	not on contraceptive			2	2800	25	2	2	2	2	2	2	2	2	2				3
813914	23	12	40weeks 4 days	8/21/2015	9/25/2016	13	barrier	2	11	2	2900	27	1	2	2	1	2	2	2	2	2	5			3
815283	22	m com	38weeks 6days	5/1/2016	10/7/2016	5	not on contraceptive			1	2800	28	2	2	2	1	2	2	2	2	2				3
815166	22	10	41 weeks	5/9/2015	9/22/2016	16	not on contraceptive			2	3100	25	2	2	1	2	2	1	2	2	2				3
813957	23	10	41week	4/8/2016	9/16/2016	5	not on contraceptive			2	3100	27	2	2	2	2	2	1	2	2	2				2
813237	22	12	38weeks	5/13/2015	9/19/2016	16	not on contraceptive			2	2900	25	2	2	1	2	1	2	2	2	2				4
815328	24	12	39weeks 3 days	2/18/2016	10/4/2016	8	not on contraceptive			1	2800	26	2	2	2	2	1	2	2	2	2				2

814061	23	10	38weeks 2 days	4/8/2016	10/5/2016	6	not on contraceptive			2	1900	24	2	2	2	1	1	2	2	2	2				2
841241	23	12	35weeks 2 day	10/2/2015	10/27/2016	17	not on contraceptive			2	2700	25	2	2	2	2	1	2	2	2	2				2
875435	22	10	39weeks	5/15/2015	10/1/2016	16	not on contraceptive			1	2900	24	2	2	2	2	2	2	2	2	2				2
815485	20	7	38weeks 5 days	4/27/2016	11/9/2016	7	not on contraceptive			2	2100	23	2	1	2	2	2	2	2	2	2		2		2
816090	29	bsc	39weeks 6 days	4/26/2016	10/5/2016	6	not on contraceptive			1	2780	22	2	2	2	2	2	2	2	2	2				3
816321	30	bsc	37weeks 4 days	2/15/2016	10/24/2016	8	not on contraceptive			2	2800	24	2	2	2	2	1	2	2	2	2				4
817102	24	10	38weeks	5/11/2015	11/27/2016	18	not on contraceptive			2	2800	27	2	2	2	2	2	1	1	2	2				2
817203	23	12	39weeks 4 days	5/1/2015	10/10/2016	17	not on contraceptive			2	3120	24	2	2	2	2	2	2	2	2	2				3
816876	30	11	40 weeks	11/12/2012	10/7/2016	44	ocp	8	37	2	2800	22	2	2	2	2	2	2	2	2	2		pituitary macroade		2
817249	21	ma	41weeks 2 days	1/3/2016	10/12/2016	9	not on contraceptive			2	3000	24	2	2	2	2	2	2	2	2	2				3
817173	22	25	40weeks 5 days	6/24/2014	10/4/2016	26	barrier	4	22	2	2700	22	2	2	2	2	2	2	2	2	2				3
817482	24	10	40weeks 2 days	5/31/2016	10/8/2016	5	not on contraceptive			1	2800	24	1	2	2	2	2	2	2	2	2		2		3
817666	22	12	38weeks 1 day	5/15/2016	10/14/2016	5	not on contraceptive			2	2650	22	2	2	2	2	2	2	2	2	2				3
817954	23	10	40weeks 3 days	3/29/2016	10/6/2016	7	not on contraceptive			2	2850	26	2	2	2	2	2	2	2	2	2				4
817341	22	11	32 weeks	12/23/2012	12/6/2016	34	barrier	3	31	2	1438	24	2	2	2	2	2	2	2	1	2				4

818322	30	B ed	35weeks 5 days	5/18/2016	11/13/2016	6	not on contraceptive			1	2670	26	1	2	2	2	2	2	2	1	2	2				4
818245	20	12	38weeks 1 day	5/9/2016	10/27/2016	5	not on contraceptive			2	3120	24	2	2	2	2	2	2	2	2	2					3
818485	22	Mca	40weeks 5 days	4/17/2016	10/10/2016	6	not on contraceptive			2	2800	23	2	2	2	2	2	2	2	2	2					3
818510	23	bsc	37weeks 4 days	9/30/2016	10/16/2016	1	not on contraceptive			2	2900	24	2	2	2	2	2	2	2	2	2					3
817985	24	10	39weeks 3 days	9/10/2016	10/20/2016	1	not on contraceptive			2	2800	23	2	2	1	2	2	2	2	2	2					3
818165	26	12	37weeks 4 days	4/14/2015	11/3/2016	21	barrier	3	18	2	2100	22	2	1	2	2	2	2	2	2	1		5			3
818433	24	12	39weeks 2 days	4/4/2016	10/21/2016	6	not on contraceptive			1	2900	24	2	2	1	2	2	2	2	2	2					2
818494	25	12	34weeks 3 day	7/11/2013	11/20/2016	40	ocp	8	32	2	2130	25	2	2	2	2	2	2	2	1	2					5
818264	23	10	26weeks 3days	4/19/2015	1/6/2017	24	not on contraceptive			1	813	23	2	2	2	1	2	2	2	1	2					2
818432	26	12	39weeks 4 days	3/17/2015	10/18/2016	12	not on contraceptive			2	2640	24	2	2	2	2	2	2	2	2	2					2
812645	25	12	39weeks 4days	5/14/2016	10/29/2016	5	not on contraceptive			1	2400	25	2	2	2	2	2	2	2	2	2					2
9E+06	24	10	40weeks 1 day	5/31/2015	10/18/2016	13	not on contraceptive			2	2100	22	2	2	2	1	2	2	2	2	2					2
819506	23	12	39weeks 2 days	4/29/2016	10/26/2016	6	not on contraceptive			2	2800	23	2	2	1	2	1	1	2	2	2					2
819000	24	10	33weeks 4days	8/10/2015	12/2/2016	14	not on contraceptive			1	1800	21	2	2	1	2	1	2	2	1	2					2
819325	23	12	39weeks 5day	4/1/2016	10/20/2016	6	not on contraceptive			2	2600	25	2	2	1	2	2	2	2	2	2					3

813642	24	11	40weeks 5 days	4/28/2016	10/12/2016	6	not on contraceptive			2	2500	23	2	2	2	2	2	2	2	2	2					3
819353	23	12	22weeks 1 day	5/20/2015	2/22/2016	12	not on contraceptive			1	380	21	2	2	1	2	2	2	2	1	2					3
812462	24	10	24weeks 2 day	12/12/2015	3/2/2016	1/9/1900	not on contraceptive			1	580	24	2	2	2	2	2	2	2	1	2					3
819534	23	12	39weeks	5/20/2016	10/29/2016	5	not on contraceptive			2	2120	23	2	1	2	2	2	2	2	2	2		2			3
819746	24	10	38weeks 3 days	8/10/2016	11/1/2016	3	not on contraceptive			2	2600	23	2	2	2	2	1	1	1	2	2	1				4
818393	23	12	37weeks	7/17/2016	11/16/2016	3	not on contraceptive			2	2390	23	2	2	2	2	2	2	2	2	2					2
818824	25	12	39weeks	5/10/2016	10/11/2016	5	not on contraceptive			1	2400	24	2	2	2	2	2	2	2	2	2					3
812440	30	bca	39weeks	5/12/2016	10/10/2016	5	not on contraceptive			2	1900	26	2	2	2	2	2	2	2	2	2					4
814080	24	6	38weeks	4/10/2016	10/12/2016	6	not on contraceptive			2	2700	27	2	1	2	2	2	2	2	2	2					4
814812	25	12	39weeks	6/18/2016	10/10/2016	4	not on contraceptive			1	2400	30	2	2	2	2	1	2	2	2	2					4
820116	23	mca	37weeks 4 days	3/10/2016	10/7/2016	7	barrier	1	6	2	2680	25	2	2	1	1	2	1	2	2	2	3				4
820243	21	10	39weeks 2 days	9/10/2016	10/17/2016	1	not on contraceptive			2	1800	23	2	2	2	2	2	2	2	2	2					2
820049	24	10	41weeks	5/7/2015	10/20/2016	12	ocp	3	9	1	2200	24	2	1	2	2	2	2	2	2	2		3			3
812242	23	MCA	40weeks 2 days	9/21/2016	8/18/2016	1	not on contraceptive			2	2400	26	2	2	2	2	2	2	2	2	2					3
814238	21	12	39weeks 3 days	9/28/2016	4/23/2015	14	barrier	3	11	2	2600	24	2	2	2	1	1	1	2	2	2					3

814566	24	bca	38weeks 4 days	11/9/2016	4/27/2016	7	not on contraceptive			2	3100	22	2	2	2	2	1	2	2	2	2				3
814080	25	12	38weeks 1 day	10/20/2016	4/20/2016	6	not on contraceptive			1	2200	24	2	2	2	2	2	2	2	2	2				3
820935	24	11	39weeks 5 days	4/30/2016	10/30/2016	6	not on contraceptive			2	2.6,2.4	28	1	2	2	2	2	2	2	2	2	2			1
820871	28	12	40weeks 1 day	4/3/2016	10/24/2016	6	not on contraceptive			2	2890	24	2	2	2	2	2	2	2	2	2				2
821054	27	12	41weeks	5/2/2015	10/22/2016	17	barrier	4	13	2	2700	23	2	2	2	2	1	2	2	2	2				2
821120	24	11	27weeks 6 day	4/18/2015	1/23/2017	18	not on contraceptive			2	650	25	2	2	1	2	2	2	2	1	2				2
821140	23	10	38weeks 2 days	5/10/2016	11/9/2016	6	not on contraceptive			2	2100	24	2	2	2	2	2	2	2	2	2				2
820789	23	12	40 weeks	10/28/2014	10/28/2016	18	not on contraceptive			1	1900	25	2	1	2	2	2	2	2	2	2				2
822419	25	12	38weeks 4 days	4/3/2016	10/24/2016	6	not on contraceptive			2	2900	24	2	2	2	2	2	2	2	2	2				2
821207	26	12	37weeks 4 days	10/19/2016	11/18/2016	1	not on contraceptive			2	2500	23	1	2	2	2	2	2	2	2	2	1			3
821421	24	7	37week 1 day	8/10/2016	11/20/2016	3	not on contraceptive			2	2600	30	2	2	2	2	2	2	1	2	2				4
821432	23	12	40weeks	5/12/2014	10/31/2016	21	ocp	5	17	2	2800	24	2	2	2	2	2	2	2	2	2				4
821271	27	10	39weeks 2 days	2/25/2011	11/5/2016	32	barrier	8	24	2	2800	26	2	2	1	2	2	2	2	2	2				4
820826	23	8	39weeks 5 days	5/12/2016	10/30/2016	5	not on contraceptive			2	2780	24	2	2	2	2	2	2	2	2	2				4
821427	24	12	39weeks	4/17/2016	10/4/2016	6	not on contraceptive			1	2600	23	2	2	1	2	2	2	2	2	2				4

821432	23	12	40weeks	5/15/2016	10/31/2026	5	not on contraceptive			2	2800	24	2	2	2	2	2	2	2	2	2				4
821207	24	10	37weeks 3 days	10/13/2016	11/18/2016	1	not on contraceptive			2	2900	24	2	2	2	2	1	2	2	2	2				4
821509	23	mca	39weeks 6days	12/13/2015	10/30/2016	9	not on contraceptive			2	2800	23	2	2	2	1	2	2	2	2	2				4
821826	22	12	38weeks 6 days	6/6/2016	10/8/2016	4	not on contraceptive			2	2920	24	1	2	2	2	2	2	2	2	2	2			3
821716	23	12	39weeks 4days	5/30/2016	11/5/2016	6	not on contraceptive			2	2820	22	2	2	2	2	2	2	2	2	2				4
812345	21	10	39week 5day	5/27/2016	11/4/2016	6	not on contraceptive			2	2400	21	2	2	2	2	2	2	2	2	2			RHD	4
821706	22	12	41weeks 3 day	5/1/2016	10/23/2016	5	not on contraceptive			1	2100	22	2	2	2	2	1	2	2	2	2				4
820789	23	11	40weeks	5/16/2015	10/28/2016	13	ocp	3	10	2	2390	23	2	2	2	2	2	2	2	2	2				2
820919	22	10	36weeks 2 days	6/10/2016	11/20/2016	5	not on contraceptive			2	1500	21	2	2	2	2	2	2	2	2	2				2
820973	21	12	39weeks 1 day	7/18/2016	11/3/2016	4	not on contraceptive			2	2600	22	2	2	2	2	2	2	2	2	2				2
821088	22	11	38weeks	1/31/2016	12/5/2016	11	not on contraceptive			2	2700	24	2	2	2	2	1	2	2	2	2				2
818685	21	12	39weeks	4/10/2016	10/13/2016	6	not on contraceptive			2	2700	23	2	1	2	2	2	2	2	2	2			2	4
812242	22	11	40weeks 3 days	8/18/2016	21-Sep	1	not on contraceptive			2	2400	24	2	2	2	2	2	2	2	2	2				4
822812	23	10	38weeks 6days	10/20/2016	11/15/2016	1	not on contraceptive			1	2900	28	2	2	2	2	2	2	2	2	2				4
823388	24	bca	37weeks	4/25/2012	12/5/2016	>12 month	ocp	3		2	2800	23	2	2	2	2	1	2	2	2	2				4

823483	23	10	39weeks 4 days	8/18/2015	11/13/2016	14	barrier	2	12	2	2600	24	2	2	2	2	1	2	2	2	2				4
823486	22	10	40weeks 1 day	4/27/2016	11/9/2016	5	not on contraceptive			2	2590	23	2	2	2	2	1	2	2	2	2				5
822492	23	10	40weeks 4 days	8/12/2016	11/1/2016	3	not on contraceptive			2	3300	21	1	2	2	2	2	2	2	2	2	1	pulmonary sten		2
823344	24	10	40weeks 1 day	5/13/2013	11/9/2016	>12 month	not on contraceptive			2	2450	22	2	2	2	2	2	2	2	2	2				3
822512	22	10	41weeks	1/30/2015	10/21/2016	8	not on contraceptive			2	3100	24	2	1	1	2	2	2	2	2	2				3
822512	21	12	40weeks 6day	5/14/2016	10/24/2016	5	not on contraceptive			1	2800	23	2	2	2	2	2	2	2	2	2				3
821325	21	10	38weeks 2 days	5/20/2015	10/12/2016	13	not on contraceptive			2	2900	22	2	2	2	2	2	2	2	2	2				3
821743	22	12	38weeks 4 days	7/6/2016	11/7/2016	4	not on contraceptive			2	2800	23	2	2	2	2	2	2	2	2	2				4
821421	23	12	37weeks 1 day	3/12/2015	11/20/2016	9	not on contraceptive			2	2450	22	2	2	2	2	2	2	2	2	2				4
821905	23	mca	38weeks 4days	4/10/2016	11/13/2016	7	not on contraceptive			1	2200	24	2	2	2	1	2	2	2	2	2				4
821365	23	12	40weeks 4 days	5/1/2016	10/20/2016	5	not on contraceptive			2	2500	25	2	2	2	2	2	2	2	2	2				4
822498	24	11	38weeks 2 days	4/17/2016	11/17/2016	7	not on contraceptive			2	2360	23	2	2	2	2	2	2	2	2	2				3
822379	23	10	41weeks	4/13/2016	10/29/2016	6	not on contraceptive			2	3500	24	2	2	2	2	2	2	2	2	2				3
822306	22	11	38weeks 1 day	14/2/203	11/17/2016	>12months	ocp	4		2	2600	23	2	2	2	2	2	2	2	2	2				3
822482	23	10	40weeks	2/11/2016	11/5/2016	8	not on contraceptive			2	2690	22	2	2	2	2	2	2	2	2	2				3

811516	24	12	40weeks	5/13/2016	10/29/2016	5	not on contraceptive			2	2450	22	2	2	1	2	2	2	2	2	2				3
821344	27	8	37weeks 4 days	8/11/2015	11/5/2016	12	not on contraceptive			2	3100	25	1	2	2	2	2	2	2	2	2	5			4
822344	25	11	35 weeks 6 days	8/11/2016	12/3/2016	4	not on contraceptive			2	1450	23	2	2	2	2	2	2	2	1	2			3	
831124	23	12	39weeks	6/22/2016	11/20/2016	5	not on contraceptive			2	2780	24	2	2	2	2	2	2	2	2	2			3	
831124	24	12	39weeks 2days	5/22/2016	11/5/2016	6	not on contraceptive			1	2900	23	2	2	2	2	2	2	2	2	2			3	
822256	24	11	37weeks	4/22/2016	1/2/2017	8	not on contraceptive			2	2500	22	2	2	2	2	1	2	2	2	1			2	
832455	26	mcom	39weeks 5 days	6/21/2016	11/20/2016	5	not on contraceptive			2	2900	25	2	2	2	2	2	2	1	2	2			4	
833426	27	bca	38weeks	8/22/2016	11/28/2016	3	not on contraceptive			2	2680	24	2	2	2	2	2	2	2	2	2			5	
823422	24	mba	39weeks 2 days	5/22/2016	11/20/2016	6	not on contraceptive			1	2900	26	2	2	1	2	1	2	2	2	2			3	
822417	21	12	37weeks 4 days	4/20/2015	12/6/2016	>12 month	ocp	3	9	2	3100	24	2	2	2	2	2	2	2	2	2			3	
881154	22	10	39weeks	7/22/2016	11/5/2016	4	not on contraceptive			2	2100	24	2	2	2	2	2	2	2	2	2			3	
811216	21	12	38weeks 4days	5/12/2016	11/22/2016	6	not on contraceptive			2	2890	25	2	2	2	2	1	2	2	2	2			3	
821143	22	12	39weeks	4/20/2016	11/21/2016	7	not on contraceptive			2	2900	24	2	2	2	1	2	2	2	2	2			3	
823341	24	10	37weeks 4 days	1/20/2016	11/8/2016	9	not on contraceptive			2	3100	26	2	2	2	2	1	2	2	2	2			2	
822445	23	12	39weeks	4/22/2015	11/24/2016	>12 month	ocp	3	18	2	2900	24	2	2	2	2	1	2	2	2	2			2	

833455	24	11	38weeks 4 days	2/11/2016	11/22/2016	9	not on contraceptive			2	2780	23	2	2	2	2	2	2	2	2	2	2				2
811412	23	12	40weeks	4/11/2016	10/29/2017	6	not on contraceptive			2	2240	24	2	2	2	1	2	2	2	2	2				2	
822426	24	11	41 weeks	7/10/2016	10/22/2017	3	not on contraceptive			2	3100	23	1	2	2	2	2	2	2	2	2	1			2	
834451	23	12	39weeks 2days	3/7/2016	11/18/2016	8	not on contraceptive			1	2890	22	2	2	2	2	2	2	2	2	2				2	
822415	22	12	40weeks	8/9/2016	11/28/2016	3	not on contraceptive			2	2560	21	2	2	2	2	2	2	2	2	2				4	
833412	24	11	37weeks	2/10/2016	11/9/2016	9	ocp	2	7	2	2780	23	2	2	2	2	1	2	2	2	2				3	
822443	23	12	39weeks	9/12/2016	11/20/2016	2	not on contraceptive			1	3100	23	2	2	2	2	2	2	2	2	1				2	
821143	24	8	38weeks	4/21/2016	11/28/2016	7	not on contraceptive			2	2900	24	2	2	2	2	2	2	2	2	2				2	
833456	23	9	37weeks 6 days	1/20/2015	11/6/2016	>12 month	not on contraceptive			1	3200	27	2	2	2	2	1	2	2	2	2				2	
821345	22	10	37weeks	5/20/2016	11/16/2016	6	not on contraceptive			2	2600	23	2	2	2	2	2	2	2	2	2			RHD	2	
822344	24	10	39weeks	5/22/2016	11/20/2016	6	not on contraceptive			2	2900	22	2	2	2	2	2	2	2	2	2				2	
832412	23	12	40weeks	4/21/2016	10/29/2016	6	not on contraceptive			2	2760	23	2	2	2	2	2	2	2	2	2				2	
822214	21	10	39weeks 3 days	2/20/2016	11/17/2016	9	ocp	2	7	2	2200	23	2	2	2	2	2	2	2	2	2				2	
811231	22	8	35weeks	1/20/2016	12/5/2016	11	ocp	3	8	2	1700	24	2	1	2	2	2	2	2	2	2				3	
822432	21	11	36weeks 2 days	6/22/2016	18-Nov	5	not on contraceptive			2	2340	22	2	2	2	2	2	2	2	2	2				4	

822345	22	12	39weeks	8/11/2015	10/9/2016	>12	not on contraceptive			2	2800	26	2	2	2	2	1	2	2	2	2					2
832451	21	12	37weeks	3/12/2016	10/18/2016	7	not on contraceptive			1	2450	27	2	2	2	2	2	2	2	2	2					3
811512	20	bcom	38weeks	7/12/2016	10/2/2016	3	not on contraceptive			2	2720	26	2	2	2	2	2	2	2	2	2					3
823442	23	12	37weeks 5 days	5/18/2016	10/23/2016	5	not on contraceptive			2	2300	25	2	2	2	2	2	2	2	2	2					3
882244	24	mca	39weeks	4/24/2014	10/9/2016	>12	ocp	6	12	2	3100	24	2	2	2	2	2	2	2	2	2					3
811513	23	12	40weeks	7/25/2016	9/22/2016	2	not on contraceptive			2	2900	22	1	2	2	2	1	2	2	2	2	1				3
823342	23	12	41weeks	8/24/2016	9/27/2016	1	not on contraceptive			1	2570	25	2	2	2	2	2	2	2	2	2					4
833433	21	bcom	38weeks 4 days	3/11/2016	10/4/2016	7	not on contraceptive			2	2890	28	2	2	2	2	2	2	2	2	2					1
822432	24	12	39weeks 3 days	5/4/2016	10/9/2016	5	not on contraceptive			2	2900	23	2	2	2	2	2	2	2	2	2					3
811514	23	11	38weeks 4days	3/16/2015	10/14/2016	>12	ocp	5	10	2	2780	24	2	2	2	2	2	2	2	2	2					3
823341	22	10	35weeks	6/6/2016	11/4/2016	5	not on contraceptive			2	3100	27	2	2	2	2	2	2	2	2	2					3
832222	24	8	38weeks 2 days	9/20/2016	10/17/2016	1	not on contraceptive			2	2700	25	1	1	2	2	2	2	1	2	2	1	1			3
822340	23	bcom	36weeks 2 days	5/23/2013	10/28/2016	5	not on contraceptive			1	2450	23	2	2	2	2	2	2	1	2					4	
813240	24	12	39weeks	7/13/2016	10/12/2016	3	not on contraceptive			2	2600	22	2	2	2	2	1	2	2	2	2					2
822420	23	12	41weeks 5days	5/5/2015	9/16/2016	>12	barrier	4	11	2	2670	21	2	2	2	2	2	2	2	2					2	

832121	25	12	34weeks 3 day	5/6/2016	10/7/2016	5	not on contraceptive			2	2790	24	2	2	2	2	2	2	2	1	2					4
822146	26	12	40weeks 5 days	5/25/2016	9/23/2016	4	not on contraceptive			2	2500	24	2	2	2	2	2	2	2	2	2					3
822143	28	12	40weeks 3 days	4/3/2016	10/4/2016	6	not on contraceptive			2	2700	26	1	2	2	2	2	2	2	2	2	2		2		3
811322	24	12	40 weeks 2days	5/21/2014	10/2/2016	29	barrier	4	25	2	3200	25	2	2	2	2	2	2	2	2	2					3
866112	23	12	38weeks 5 days	5/21/2016	10/8/2016	23	ocp	3	20	2	3309	26	2	2	2	2	2	2	2	2	2					3
822123	24	10	41weeks 5 days	5/22/2013	10/1/2016	32	barrier	6	27	2	1900	22	2	2	2	2	2	2	2	2	2					4
833211	22	bca	38weeks 5 days	5/10/2016	10/9/2016	5	not on contraceptive			2	2800	24	2	2	2	2	2	2	2	2	2					3
856612	23	12	41weeks 1 day	5/27/2016	10/5/2016	5	not on contraceptive			2	3100	25	2	2	2	2	2	2	2	2	2					3
812340	21	12	38weeks	5/2/2015	10/12/2016	5	not on contraceptive			2	3200	23	2	2	2	2	2	2	2	2	2					4
838224	20	7	38weeks 6 days	5/10/2015	10/10/2016	14	ocp	3	11	2	2890	27	2	2	2	2	2	2	2	2	2					4
838226	24	12	39weeks 4 days	1/22/2016	8/8/2016	7	not on contraceptive			1	2780	27	2	2	2	2	2	2	2	2	2					3
811231	26	12	37weeks 4 days	2/19/2016	10/24/2016	8	not on contraceptive			2	2800	23	2	2	2	2	1	2	2	2	2					3
823411	24	10	39weeks 6 days	9/10/2012	10/11/2016	38	ocp	6	32	2	3100	21	2	2	2	2	2	2	2	2	2					3
886420	23	8	37weeks	5/1/2016	10/29/2016	5	not on contraceptive			2	3000	20	2	2	2	2	2	2	2	2	1					4
812246	22	12	35 weeks 6 days	5/1/2015	11/5/2016	14	barrier	3	11	2	2360	25	2	2	2	2	2	2	2	2	2					3

