



A COMPARATIVE STUDY TO ASSESS THE PERINATAL OUTCOME AMONG SPONTANEOUS CONCEPTION VERSUS IUI/IVF CONCEPTION PRIMI MOTHERS AT NEW LIFE HOSPITAL, CUDDALORE

S.Devi¹, Dr. Sharadha Ramesh², Dr. Rajarajeswari.A^{3*}

¹ Student, M.Sc. Nursing, Department of Obstetrics & Gynecological Nursing, Vinayaka Mission's College of Nursing, Kirumampakkam, Puducherry, Affiliated to Vinayaka Mission's Research Foundation (DU), India

² Professor cum Principal, Vinayaka Mission's College of Nursing, Kirumampakkam, Puducherry, Affiliated to Vinayaka Mission's Research Foundation (DU), India

³ Professor cum HOD, Department of Obstetrics & Gynecological Nursing, Vinayaka Mission's College of Nursing, Kirumampakkam, Puducherry, Affiliated to Vinayaka Mission's Research Foundation (DU), India

Email: ² sharadha.ramesh@avmc.edu.in

Abstract

Every mother's eagerly waiting the pregnancy and its enjoyment, if pregnancy become Spontaneous the outcome is also good. Due to infertility problem the couple adopting an Assisted Reproductive Technique (ART) method will get adverse outcomes. Aims to compare the perinatal outcome among primi-mothers who conceived spontaneously with IUI/IVF treatment conception. A quantitative research approach & descriptive research design was adopted and conducted at New Life Hospital, Cuddalore. The Convenience Sampling technique was used to select 120 mothers among these 60 mothers were conceived spontaneously conception and 60 mothers conceived IUI/IVF conception. Tools helped to collect the Background variables and the Observation scale was used to assess the perinatal outcome. Results shows that good level of maternal outcome deserved 46 mothers of spontaneous conception mothers but 35 mothers in IUI/IVF and Neonatal outcome observed 48 mothers of spontaneous conception neonates & 38 mothers (63.33%) in IUI/IVF conception neonates. The spontaneous conception group had a mean value = 3.62 and SD = 1.30 and the IUI/IVF conception group had a mean value =5.02 and SD = 1.68 and Mean Difference = 1.40 and "t" value was 5.10 and P=0.001 highly significant. The association was found only with Age in years, occupational status & residence of the mothers in the Spontaneous conception group and IUI/IVF group the association was found in the occupational status, monthly income, and residence of the mother. Study Concludes that Healthy life practices will promote natural conception thereby prevent the poor maternal and neonatal outcomes.

Keywords: *Spontaneous conception, Assisted Reproductive Technique, IUI/IVF treatment*

DOI: 10.53555/ecb/2022.11.12.231

1. Introduction

Pregnancy is an enjoyable movement in every life of women. It is an unmemorable event in her life. Every mother expected a healthy baby and for some unfavourable reason, mothers have adverse effects on the outcome of childbirth as well as in the neonates.

Every fertile mother can eligible to produce a healthy baby. Spontaneous conception helps the mother to receive a healthy baby and good maternal and foetal outcomes. Many factors determine normal conception especially maternal age, parity, maternal health status, etc. The adverse perinatal outcomes were common during the pregnancy period especially in developing countries.

Worldwide, every year 3 million neonatal deaths and 3-4 million stillbirths occurred in low-income countries. Among these 40 % of stillbirths occurred during the intrapartum period only. It can prevent by effective emergency obstetric care. The expected death of babies was the first week of the birth of the baby as well as on the first day of birth.

Infertility means when a couple cannot get pregnant regardless of regular unprotected sex. The couples 1:7 may get less chance to conceive and around more than 84% of couples will conceive naturally within a year but probably they have regular unprotected sex (every 2 or 3 days).

Assisted Reproductive Technology helps to treat all infertility problems to cure the problem and get conceive. Many ART methods treat infertility as an assisted conception example in vitro fertilization and non-in-vitro fertilization. The sperm and oocyte fertilized outside of the body are called In Vitro Fertilization. Examples of Non in vitro fertilization are ovulation induction, artificial insemination, and intrauterine insemination.

Assisted conception increases the multiple pregnancies and caesarean section will increase the risk of adverse maternal and neonatal outcomes.

Intrauterine insemination (IUI) infertility treatment is the initiation of treatment for cervical problems, ovulatory disorders, unexplained infertility and male factor infertility.

In IVF (In vitro fertilization), the fertilized zygote directly transfers into the mother's uterus. More than one embryo also can transfer through IVF. The success rate of IUI & IVF treatment fulfils the expectation of infertile couples even though increased chance of multiple pregnancies, foetal loss, ectopic pregnancy, prematurity and low birth weight.

2. Statement Of The Problem

A comparative study to assess the perinatal outcome among spontaneous conception versus IUI/IVF conception primi mothers at New Life Hospital, Cuddalore.

3. Objectives

- ❖ To assess the perinatal outcome among spontaneous conception primi mothers
- ❖ To assess the perinatal outcome with IUI/IVF conception primi mothers
- ❖ To compare the perinatal outcome among spontaneous and IUI/IVF conception primi mothers.

- ❖ To associate the level of outcome among spontaneous conception with IUI/IVF conception primi mothers

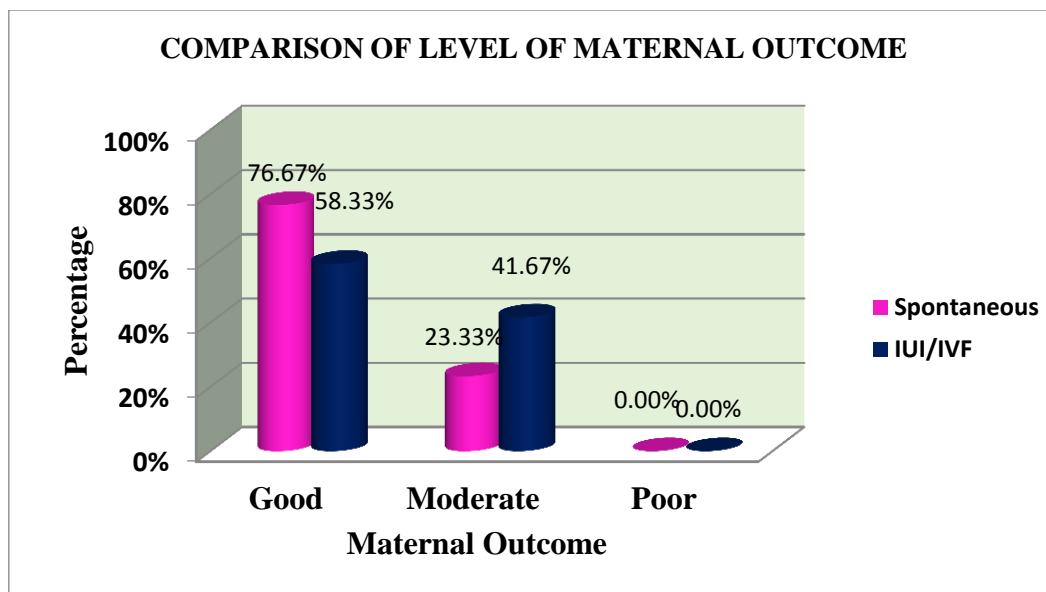
4. Methodology:

The research approach adopted for the study was quantitative with descriptive research design. Totally 120 women were selected based on the convenience sampling technique. This study was conducted for primi mothers as antenatal period to postnatal period (within 7 days of delivery) at New Life Hospital, Cuddalore. The instrument developed and used for the present study consist of two sections: PART I : It consists of 7 items related to demographic variables and obstetric variables, PART II: It consists of Structured questionnaire on assessment of perinatal outcome. It is an Observation Scale; it includes both Maternal and Fetal outcome. Permission was obtained from the Director of New Life Hospital, Cuddalore. A formal written permission is also obtained from the Institution Ethics Committee and Institution Research Committee for conducting research. The informed consent was obtained from the women and assured for the confidentiality throughout the study. The demographic data were collected. The structured questionnaire on assessment of perinatal outcome & Observation Scale was administered for the women. The data collected from subject were compiled and analysis by using descriptive statistics such as number, percentage, mean and standard deviation to demographic variables. Inferential statistics such as chi-square were used it.

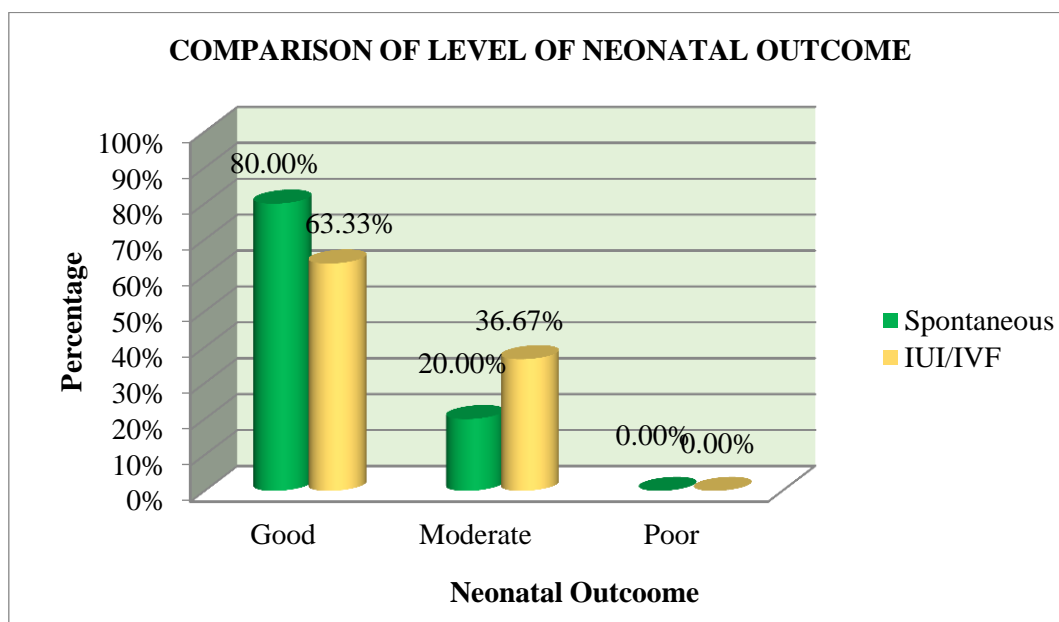
5. Results:

Most of the mothers 30(50%) belongs to 21 – 25 years in the Spontaneous conception group but in the IUI/IVF group, most of them belong to 27 (45%) 26 – 30 years of age group. About the religion, Majority of the mothers were in Hindu religion for both groups (SC: 56(93.34%), IUI/IVF: 52(86.67%)). Most of the mothers, 23 (38.33%) mothers were studied under graduation in SC group & 22(36.67%) mothers were studied under graduation in IUI/IVF groups. In occupational status, 39(65%) of SC mothers and 36(60%) IUI/IVF mothers were house wife. Regarding the monthly income of the family, Majority of mothers 38(63.33%) were getting monthly income >Rs.10000/- in the IUI/IVF conception mothers but in highest 26 (43.3%) spontaneous conception mothers had both Rs. 5000- 10000 and >Rs.10000 income. The type of the family, 31(51.67%) of mothers living as a nuclear family in spontaneous conception mothers and 36 (63.33%) mothers living as nuclear family in other group. In residence status of the mothers, equally they were resided in both rural and urban in spontaneous conception group but in IUI/IVF conception group mothers, 32(53.33%) were resided in Rural area

The comparison of level of maternal outcome among spontaneous conception and IUI/IVF conception primi mothers. There was a Good level of maternal outcome deserved 46 mothers of spontaneous conception mothers but 35 mothers in IUI/IVF mothers. There is moderate level of maternal outcome observed in 14 mothers of SC group but 25 Mothers in IUI/IVF group. None of mothers had poor level of maternal outcome.



The comparison of level of neonatal outcome among spontaneous conception and IUI/IVF conception mothers. There was a good level of neonatal outcome observed in both groups as 48 mothers (80%) in Spontaneous conception neonates & 38 mothers (63.33%) in IUI/IVF conception neonates. Moderate level of neonatal outcome noticed 12 mothers (20%) in spontaneous conception neonates and 22 mothers (36.67%) IUI/IVF conception neonates.



There is a association found between maternal outcome in spontaneous mother with selected demographic variables like age in years and occupational status. There is an association found between neonatal outcome with selected demographic variables like age in years and residence of the mother.

There is a association found between maternal outcome in IUI/IVF mothers with selected demographic variables like occupational status and residence of the mother. There is a association found between neonatal outcome with selected demographic variables like age in years, Occupational status & Monthly income of the family.

6. Discussion:

The first objective of the study was to assess the perinatal outcome among spontaneous conception primi mothers

In SC, 22(36.67%) had miscarriage, 8 mothers had placenta previa. 25(41.7%) had maternal anaemia, 58(96.67%) had singleton pregnancy. 10 mothers had abnormal hydramnios, 13(21.67%) were PIH, 38 (63.33%) had LSCS, 22(36.6%) were SVD, 3 mothers had preterm labour. 31(51.6%) mothers had cephalic presentation, 1 mother had secondary PPH, 4 had puerperal sepsis 2(3.33%) had DVT 4(3.33%). 54 neonates had 7-10 Apgar score within 1 min and 60 neonatal had this score within 5 min. 53 neonates had 2.6-3.0kg weight and 31 mothers initiated breast feeding >1hr. 8 babies had neonatal jaundice and admitted in NICU.

Dwight J. Rouse, Steven J Winner, Steven L bloom 2009 The present highlighted about the maternal and perinatal outcomes and function of second stage of labour. The study results reviewed that out of 5341 participants, 4126 women were reached the second stage of labour while second stage increased the spontaneous vaginal reduced and association was found with the chorioamnionitis (3.9%), third & fourth degree perineal laceration (8.7%), Uterine atony (3.9%) and NICU admission was increased with the increase second stage of labour mothers.

The second objective of the study was to assess the perinatal outcome among IUI/IVF conception primi mothers

About Miscarriage, 24(40%) mothers had early miscarriage, 15(25%) had late miscarriage and 16 had APH, 50(8.3%) had maternal anaemia, 54(90%) had singleton pregnancy, 6(10%) had multiple pregnancy, 17mothers had hydramnios, 37 had PIH. 4 had pre-eclampsia, 48(80%) had LSCS, 3 had instrumental delivery, 17 had preterm labour, 9 had SVD. 54 had singleton babies, 6 Multiple babies, 40 had mal presentation, 5 mothers had PPH. 40 neonates had 7-10 Apgar score within 1 min, but 48 had this score within 5min, 31(51.67%) had <2.5kg. 48 had initiated breastfeeding >1hr. 15 required NICU admission, 21 had neonatal jaundice, 2 had congenital abnormalities.

Sarah McDonald, Kellie Murphy, Joseph Beyene The comparison study conducted to measure the outcome of pregnancy after intra – uterine insemination (IUI) and IVF. The compared the study for 126 IUI mothers with 126 IVF mothers. Results shown that the percentage of mothers above 35years of age was 10.8% in the IUI group and 18.4% in the IVF group. Both the groups underwent caesarean section, 21% of IUI group mothers & 27.8% of IVF mothers. Preterm birth experienced by both groups, 21 (16.7%) & 19 (15.1%).

The third objective of the study was to compare the perinatal outcome among spontaneous and IUI/IVF conception primi mothers.

There was a Good level of maternal outcome deserved 46 mother of spontaneous conception mothers but 35 mothers in IUI/IVF mothers. There is moderate level of maternal outcome observed in 14 mothers of SC group but 25 Mothers in IUI/IVF group.

There was a good level of neonatal outcome observed in both groups as 48 mothers (80%) in Spontaneous conception neonates & 38 mothers (63.33%) in IUI/IVF conception neonates. Moderate level of neonatal outcome noticed 12 mothers (20%) in spontaneous conception neonates and 22 mothers (36.67%) IUI/IVF conception neonates.

Irene Woo, Rita Hindoyan, Melanie Landay, Jacqueline 2005 The study reviewed that perinatal outcomes among the spontaneous conception versus in vitro fertilization in gestational surrogates. Around 494 pregnancies achieved by 124 gestational surrogates. The pregnancy outcomes measured as increased twin pregnancies (33%), increase preterm birth (10.7%), low birth weight (7.8%) and also increases the gestational diabetes mellitus, gestational hypertension, amniocentesis, placenta previa and caesarean section.

The fourth objective of the study was to associate the level of outcome among spontaneous conception with IUI/IVF conception mothers

There was an association found between maternal outcome in spontaneous mother with selected demographic variables like age in years and occupational status. There was an association found between neonatal outcome with selected demographic variables like age in years and residence of the mother.

There was a association found between maternal outcome in IUI/IVF mothers with selected demographic variables like occupational status and residence of the mother. There was an association found between neonatal outcome with selected demographic variables like age in years, Occupational status & Monthly income of the family.

Danielle L Herbert, Jayne C Luke2012 The population-based study conducted to analyses the birth outcome and adverse effects with the age group of 28 – 36 years and compared IVF mothers and spontaneous conception mothers. 18.6% had severe infertility problems. Above 40% of women with the age group of 28 – 36 years are conceived without treatment.

The study was focused on association of assisted reproductive technology was compared with spontaneous conception and its maternal and neonatal outcome. It shows increased perinatal outcome as gestational diabetes, preeclampsia, severe or moderate anaemia, preterm birth, placenta previa, PPH, & CS, congenital abnormalities, etc.,.

7. Conclusion:

The main conclusion harrowed from the study was comparing the perinatal outcome among spontaneous conception versus IUI/IVF conception primi mothers. The spontaneous conception mothers have good level 80% of perinatal outcome than the IUI/IVF conception primi mothers.

References

1. Andrea Madalina Banica, Simona Daniela Popescu, Simona Vladareanu. Maternal and neonatal outcome following in vitro fertilization. A cohort study in Romania. *Experimental and therapeutic medicine*.2022;23(34):1-7.
2. Deepak Chawla. Assisted reproduction and neonatal outcome. *Indian Journal of Paediatrics*. <https://doi.org/10.1007/s12098-022-04368-w>. September 2022. Springer Publications.
3. Wen Tai, Lingmin Hu, Juan Wen. Maternal and Neonatal Outcomes after Assisted reproductive technology. A retrospective cohort study in China. *Frontiers in Medicine*. April 2022; 9. Article 837762: 1-9.
4. Kasiye Shieferaw, Bizatu Mengiste, Tesfaye Gobena, Merga Dheresa. The effects of antenatal care on perinatal outcomes in Ethiopia: A systematic review and meta analysis. *Plus one*. January 2021: 1-9. <http://doi.org/10.1371/journal.pone.0245003>.

5. Virgin Engels Calva, Sara Cruz Melgulizo, Alejandra Abascal Saiz, Laura Forcen Acebal, Amalia Sanchez migalion et.al. Perinatal outcomes of pregnancies resulting from assisted reproduction technology in SARS – CoV -2 – infected women: a prospective observation study. *Assisted Reproduction*. 2021;116(3) :731 – 740.
6. Paul C Magnarelli, IUI versus IVF: comparing the procedures, risks, benefits, costs and success. *CNY fertility*. July 2020;1-4.
7. Ulla –Britt Wennerholm and Christina Bergh. Perinatal outcome in children born after assisted reproductive technologies. *UPSALA Journal of Medical Sciences*. 2020;125(2): 158 – 166.
8. Baruch Felman, Raoul Orvieto, Marine Weisel, Adva Aizer, Raanam Meyer etal. Obstetric and perinatal outcomes in pregnancies conceived after preimplantation genetic testing for monogenetic diseases. *Obstetrics & Gynaecology*. October 2020;136(4): 782 – 791.
9. Diana Rashid, Shahala Alalaf. Maternal and perinatal outcome in twin pregnancies conceived spontaneously and by assisted reproductive techniques: cross sectional study. *East Mediterranean Health Journal*. 2020;26(10): 1285-1293.
10. Giovanni Zanconato, Elena Cavaliere, Olga Mariotto, Nicoletta Zatti. Perinatal outcome of severe obstetric complications findings of a 10-year hospital based surveillance study in Italy. *International Journal of women’s Health*. 2019;11:463 – 469.
11. Ling – Ling lei, Young – Lian Lan, Shu- Yu Wang, Wei Feng, Ahi – Jin Zhai. Perinatal complications and live birth outcomes following assisted reproductive technology: a retrospective cohort study. *Chinese Medical Journal*. 2019; 132(20):2408 – 2416.
12. Yuelin Wu, Yan Chen, Minxue Shen, Yanfeng Guo, Shi Wu Wen etal. Adverse maternal and neonatal outcomes among singleton pregnancies in women of very advanced maternal age: a retrospective cohort study. *BMC pregnancy and childbirth*. 2019. 19(3): 1-9.
13. Hua Chen, Ying Wan, Haitao Xi, Weiju Su, Jing Cheng etal. Obstetric and perinatal outcomes of dizygotic twin pregnancies resulting from in vitro fertilization versus spontaneous conception: a retrospective study. *Peerj*. 2019; 1-11. DOI. 10.7717/peerj.6638.
14. Chun Feng, Wen – Juan Li, Rong – Huan He, Xi – Wen Sun, Gurion Wang etal. Impacts of different methods of conception on the perinatal outcome of intrahepatic cholestasis of pregnancy in twin pregnancies. *Scientific reports* 8 :3985. 1-8 DOI:10.1038/s41598-018-22387-6.
15. Azam Kouhkan, Mohammad E Khamseh, Reihaneh Pirjani, Ashraf Moini, Arezoo Arabi poor etal. Saman Maroufizadeh, Roya Hosseini and Hamid Reza Baradaran Obstetric and perinatal outcomes of singleton pregnancies conceived via assisted reproductive technology complicated by gestational diabetes mellitus. *BMC pregnancy and childbirth*. 2018. 18:495: 1-11.
16. Karien E.A Hack, Marijn E.M.S Vereycken, Helen L. Torrance, Corine Koopman- Esseboom etal. Perinatal outcome of monochorionic and dichorionic twins after spontaneous and assisted conception: a retrospective cohort study. *Acta Obstetricia Gynecologica Scandinavica*. 2018; 97: 717 - 726.
17. Khalid Al – Hathlol. Relationship between In Vitro Fertilization and Neonatal outcomes in very low birth weight preterm infants. *American Journal of Perinatology*. 2018;35(11):1113 – 1118. DOI: 10.1055/s-0038-1641590
18. Barbara Luke. Pregnancy and birth outcomes in couples with infertility with and without assisted reproductive technology: with an emphasis on US Population based studies. *American Journal of Obstetrics and Gynaecology*. September 2017; 217(3): 270 – 281.

19. M Storgaard, A Loft, C Bergh, UB Wennerholm, Soderstrum- Anttila et al. Obstetric and neonatal complications in pregnancies conceived after oocyte donation: a systematic review and meta-analysis. *BJOG An International Journal of Obstetrics and Gynaecology* 2017;124(4):561-572.
20. Barbara Luke, Daksha Gopal, Howard Cabral, Judy E stem, Hafsatou Diop. Pregnancy, birth and infant outcomes by maternal fertility status: the Massachusetts Outcomes study of Assisted Reproductive Technology. *American Journal of Obstetrics & Gynaecology*. 2017;217: 327-e1- 14.
21. Irene Woo, Rita Hindoyan, Melanie Landay, Jacqueline, Sue Ann Ingles et al. Perinatal outcome after natural conception versus in vitro fertilization in gestational surrogates: a model to evaluate IVF treatment versus maternal effects. *Assisted Reproduction*. 2017;108(6):993- 998.
22. Melahat Atasever, Muberra Namli Kalem, Safak Hatirnaz, Ebru Hatirnaz, Ziya Kalem et al. Factors affecting clinical pregnancy rates after IUI for the treatment of unexplained infertility and mild male subfertility. *Journal of the Turkish –German Gynaecological Association*. 2016;7(3): 134-138. DOI: 10.5152/jtgga.2016.16056.
23. Vasavi Kolluru, Anantha Reddy. Study of high risk scoring in pregnancy and perinatal outcome. *Indian journal of obstetrics and Gynaecology Research*. 2016; 3(4): 407 – 409.
24. Daniel Alexander Beyer, Ferial Amari. Maternal risk factors and neonatal outcomes after ART treatment – A German monocentre experiences. *Middle East Fertility Society Journal* February 2016;21, 155 – 160.
25. Bjorn Bay, Hans Jakob Ingerslev, Josephine Gabriela Lemmen, Birte Degn, Iben Anne Rasmussen et al. Preimplantation genetic diagnosis: a national multicentre obstetric and neonatal follow – up study. *Fertility and Sterility*. 2016; 106(6): 1363 – 1369.
26. Anna Lena Weinberg, Signe opdahi, Christina Bergh, Anna – Karina Amaris Henningsen, Mika Gissler et al. Effect of maternal age on maternal and neonatal outcomes after assisted reproductive technology. *Fertility & Sterility*. October 2016. 106(5): 1142 – 1149.
27. W.Ombelet, G. Martens, L.Bruckers. Pregnant after assisted reproduction: a risk Pregnancy is born, 18 years perinatal outcome results from a population based registry in Flanders, Belgium. *Facts views vision OBGYN*, 2016; 8(4): 193 –203.
28. Ashok Agarwal, Aditi Mulgund, Alla Hamada, Michella Renee chyatte. A unique view on male infertility around the globe. *Reproductive biology and endocrinology*. 2015;13(37) : 1-9 DOI 10.1186/s12958-015-0032-1.
29. Mahbod Kaveh, Mahsa Ghajarzadeh, Fatemeh Daivari Tanha, Fatemeh Nayeri, Zahra Keramati et al. Pregnancy complications and neonatal outcomes in multiple pregnancies: A comparison between assisted reproductive techniques and spontaneous conception. *International Journal of fertility and sterility*. 2015;8(4): 367 – 372.
30. Nirmala Ramachandran, Dhivya Sethuraman, Vanathi Nachi Muthu, Thamizhselvi Natarajan. Obstetric and perinatal outcome of elderly mothers aged 35 years above - a comparative study. *International Journal of Research in Medical sciences*. 2015;3(1): 214 – 219.
31. Jerried Noseff. Theory usage and application paper: Maternal role attainment. *International Journal of Childbirth Education*. 2014;29(3): 58 – 61.
32. Jennifer Marino, Vivienne M Moore, Kristyn J Wilson, Alice Rumboid, Melissa J whitlow et al. Perinatal outcomes by mode of assisted conception and sub-fertility in an Australian Data Linkage Cohort. Open access freely available online journal. January 2014;9 (1):1-10(e80398).
33. Linda M. Crawford. Conceptual and theoretical frameworks in research. First Edition. Sage Publication. 35- 47.2003.

34. Martina Derme, Emanuele Leoncini, Giuseppe Vetrano, Lisa Carlo mango, Vincenzo Alendri .Obstetric & perinatal outcomes of teenage pregnant women: a retrospective study” *Epidemiology biostatistics and public health*. 2013;10(4). E 8641- 8647.
35. Sara.S Malchu, Anne Loft, Elizbeth C Larsen, Anna – Karina Aaris Henningsen, Steen Rasmussen etal. Perinatal outcome in 375 children born after oocyte donation: a Danish national cohort study. *Fertility & Sterility. Assisted reproduction*.2013; 99(6): 1637-1643.