



## Comparative study of transferring frozen embryo with short culture vresus overnight culture and also assess prevalence rate of psychological distress amongs infertility patient

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### ABSTRACT

Frozen embryo transfer is a procedure which is widely preferable technique to transfer of embryos obtained in assisted reproductive technology. The transfer of cryopreserved embryos transfer which is less expensive than the second fresh cycle, fertility treatment costs, can get an increased implantation rate, and an increased rate of pregnancy. The primary negative emotional reaction to both infertility and assisted reproductive therapy is typically either anxiety or depression. To compare serum  $\beta$ -hCG value in fresh frozen-thawed embryo transfer with overnight cultured frozen-thawed embryo transfer. And prevalence rate of psychological distress. 52 FET Cycles performed in between June to December 2018 among these embryos transfer 36 were performed within 1 hour after thawing and 16 were performed after overnight incubation. We observed that patient in 1 hour incubation has higher  $\beta$ -hCG level than overnight culture patients and there is worse psychological status in infertile women and nearly half of our infertile sample (51.9%) displayed mild to extreme depressive symptoms. Obstetricians should consider that reducing the mental and social issues will lead to greater happiness and productivity.



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### INTRODUCTION

Frozen embryo transfer is a procedure which is widely preferable technique to transfer of embryos obtained in assisted reproductive technology. Due to advancement and improved laboratory conditions globally, more good quality embryos are obtained after in vitro fertilization, it has been seen that better synchronization of embryos and endometriosis in frozen embryo transfer cycles. Therefore, Frozen embryo transfer has drastically

increased and contributing to more than 50% of embryo transfers in assisted reproduction centers (Le *et al.*, 2019). Embryo cryopreservation is useful in IVF cycles for surplus embryos and provides an opportunity to perform an additional embryo transfer if required without again to go into a full in vitro fertilization (IVF) cycle. Frozen-thawed embryo transfer (FET) versus fresh embryo transfer (ET) is being performed everywhere almost worldwide. The transfer of cryopreserved embryos transfer which is less expensive than the second fresh cycle, fertility treatment costs, can get an increased implantation rate, and an increased rate of pregnancy (Basirat *et al.*, 2016; Hur *et al.*, 2016).

Psychological distress is often associated with infertility, which can be both a cause and a trigger of the disorder (Greil, 1997). The primary negative emotional reaction to both infertility and assisted reproductive therapy (ART) is typically either anxiety (a sense of danger, stress, worry), or depression (a sense of loss, frustration, lack of control). (Matthiesen *et al.*, 2011) Ramdas Sarjerao Ransing *et. al* showed for clinician in clinical practice interpreted and compared macrocytosis, the hematological parameters in patients with psychosis and depression are important (Ransing *et al.*, 2018). Psychosis poses high risks of non-compliance with medications. They are related to patient, related to disease, and related to doctor. To strengthen enforcement and quality of life these problems, such as rejection of disability or financial challenges, need to be handled judiciously (Kalucha *et al.*, 2017).

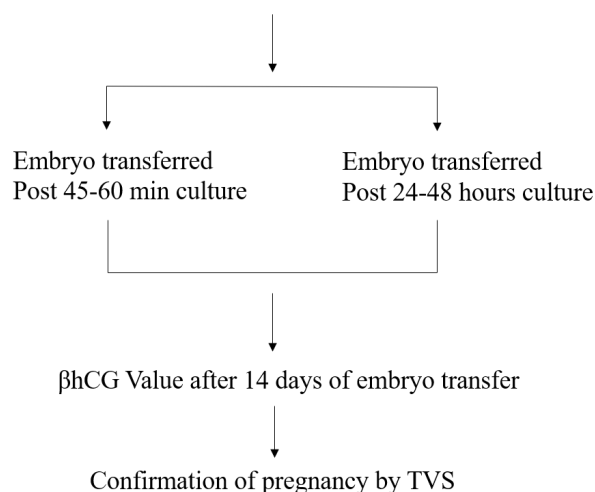
## AIM & OBJECTIVE

1. To compare serum  $\beta$ -hCG value in fresh frozen-thawed embryo transfer with overnight cultured frozen-thawed embryo transfer
2. To assess prevalence rate of psychological distress among patients with infertility, such as anxiety or depression.

## MATERIAL AND METHODOLOGY

This study is done in Wardha test tube baby centre, AVBRH, Sawangi, (Datta Meghe Institute of Medical Sciences), and Wardha. Relevant data will be recorded. All participants will be stimulated using a short antagonist protocol. Positive pregnancy is defined as a  $\beta$ -hCG level > 100 mIU/mL on 14 days following embryo-transfer and clinical pregnancy will be identified by the appearance of a gestational sac approximately 4 weeks after embryo implantation by transvaginal ultrasonography.

## FET Cycle



**Figure 1: FET Cycle**

We used the following questionnaires that is in Hamilton Anxiety Rating Scale (HAM-A) and Shortened Beck Depression Inventory (BDI), to assess the psychological distress among patients with infertility, such as anxiety or depression Figure 1.

## Inclusion Criteria

Couples who are suffering from primary and secondary infertility along with history of previous cycle fresh embryo transfer failure which is defined for the purpose of the study as those patients who had undergone treatment with IVF and fails to conceive after first cycle fresh embryo transfer.

## Exclusion Criteria

1. Patients not giving consent for IVF.
2. Patients having uterine agenesis.
3. Patients not fit for IVF having viral infections like HIV, HBsAG etc.
4. Patients who want to undergo fresh embryo transfer.

## Observation

Table 1 shows, statistically significant difference in  $\beta$ -hCG level between overnight incubation and 1 hour incubation. In this study, it has been observed that  $\beta$ -hCG levels are significantly higher in 1 hour incubation.

Table 2 shows substantially worse psychological status in infertile women and nearly half of our infertile sample (51.9 per cent) displayed mild to extreme depressive symptoms.

**Table 1: To assess if there is any statistically relevant difference after application of T-test**

Group	$\beta$ -hCGlevel (Mean $\pm$ SD)	P – value
A (1 hour incubation)	370.9 $\pm$ 327.95	0.0063
B (overnight incubation)	121.875 $\pm$ 176.15	

**Table 2: To assess psychological status in infertile women sample**

Psychological disorder	N=52	%
Depression	11	21.15%
Anxiety disorders	16	30.77%

## DISCUSSION

Frozen embryo transfer is an indispensable procedure in assisted reproductive cycles (Le *et al.*, 2019; Basirat *et al.*, 2016; Hur *et al.*, 2016). Embryo being vitrified-thawed and subsequently undergoing embryo transfer or overnight post-thaw culture may provide more information for predicting the possibility of clinical pregnancy. As in our study, there is Significant difference was noticed between FET's made with transfer of embryos with 1 hour incubation vs overnight culture. Several studies proposed that freeze-all i.e. all embryos are frozen in stimulation cycle and transferred following artificial preparation of endometrium. It seems that can be increase embryo and endometrial synchronicity by opting this method, so that there may be more chances of decrease the number of transferred embryos so that subsequent multiple pregnancies also (Sadeghi, 2011). The effectiveness of the evaluation of prolonged culture of the embryos after thawing remains controversial worldwide.

There is one study by Shi *et al.* (2013) revealed that the pregnancy rate was significantly higher in the overnight culture group (51.1%) than 2- to 4-h transfer after thawing (28.2%). (Shi *et al.*, 2013) One more study by Veleva *et al.* reported that there was no significant difference between overnight culture or short culture with good quality frozen and thawed embryos (Veleva *et al.*, 2013). Another researcher i.e. Joshi *et al.* also revealed that pregnancy results were equivalent between the two groups, 24.3% in overnight culture and 20.3% in 2-hour culture (Joshi *et al.*, 2010).

A researcher Le *et al.* (2019) reported that a short post-thaw culture period is associated with significantly higher biochemical pregnancy and implantation rate per FET cycle than prolonged post-thaw culture, 39.5% and 16.5% vs. 25.9% and 11.0% which goes in favor with our finding.

Our research showed substantially worse psychological status in infertile women and nearly half of our infertile sample (51.9 per cent) displayed mild to extreme depressive symptoms. This finding offers more support for earlier Hungarian reports of substantial depression (moderate to extreme rates of depression up to 27% and 32% among infertile women) (Cserepes and Bugan, 2015; Szigeti and Thege, 2012). Depression is preventable and can be treated and it will help reduce the social and internal stigma associated with the disorder and help reduce disease-related morbidity and mortality (Behere *et al.*, 2017).

In a study by Lakatos *et al.* (2017) from Hungary observed that infertile women had significantly worse psychological well-being than fertile women. Depressive symptoms and anxiety of infertile women were associated with sexual concern, social concern and maternal relationship stress. They also observed that 58% of the variance of depressive symptoms and 62% of the variance of trait anxiety.

In another study from Ghana it was observed that women with primary infertility also presented with high depression scores and prevalence of depression among the women was 62.0% with the level of depression showing a significant positive correlation with age of the women and the duration of infertility (Alhassan *et al.*, 2014).

Cross-sectional research in India showed that 23% of infertile women encountered anxiety disorders.our study almost depicting the same finding. Another research published similar results, indicating that gynecological anomalies were among the top three factors for depression and anxiety in infertile women (Ramezanzadeh *et al.*, 2004).

## CONCLUSIONS

Significant difference was noticed between FET's made with transfer of embryos with 1-hour incubation then in overnight culture. We observed that patient in 1-hour incubation has significantly higher  $\beta$ -hCG level than patients in overnight culture that may provide more information for predicting the possibility of clinical pregnancy. Obstetricians should consider that reducing the mental and social issues will lead to greater happiness and productivity. If depression and anxiety are chronic, it can affect care adversely.

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