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Embryologist: Working Hands of Fertility Treatment

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Abstract

Embryologists are highly trained professionals, are one of the important factors involved for the success of IVF treatment. Embryologists are the working hands and brain behind the nurturing observation and healthy development of gametes and embryo. An embryologist manages the lab right from the beginning of the treatment of any patient. The embryologist does a close monitoring of the embryos from assessment to grading until transfer. The embryologist may have patient contact to provide first-hand information on the outcomes from the laboratory. The professional embryologists serve the first group of routine clinical practice activity. Considering the psychological health of the embryologist is as important as their physical health, counselling of embryologist should be a part of healthy practice so as to listen to what are the situations and needs of the embryologist working in lab. And therefore this commentary is an attempt to highlight the role of embryologist in IVF and showcase their moral responsibilities and put a light on basic requirements that should not be neglected as on professional front embryologist should be allowed with freedom to perform task with their own skills at performance, mental and physical health should be considered as a priority, adequate technology should be adopted to lower the error and should be allowed to put forth views as and when necessary.

Keywords: Embryologist; Assisted reproductive technology; Artificial intelligence; RI-Witnessing system

Abbreviations

IVF: *In-Vitro* Fertilization; ART: Assisted Reproductive Technology; KPI: Key Performance Indicator; RI: Research Instruments Ltd

Introduction

Assisted Reproduction Technology (ART) in the last 20 years, has undergone tremendous changes which is a result of continuous fertility treatment research and advancement in many fields [1]. An embryologist is an ART lab scientist that has expertise and technical skills needed to carry out the process of IVF treatments and its constantly evolving range of techniques containing assisted techniques of reproduction [2] and are one of the important factors involved for the success of IVF treatment.

Who are Embryologists?

An embryologist is a lab scientist that work alongside fertility specialist that helps to create viable embryos to either be used in IVF right away or to be frozen for later use. They are highly trained professionals, holding a Master's degree or a PhD due to the skilled nature of their work. Embryologists are the working hands and brain behind the nurturing observation and healthy development of gametes and embryo. An embryologist has to manage the lab right from the beginning of the treatment of any patient like culture media preparation and laboratory quality control, oocyte isolation and identification, oocyte maturation, oocyte grading, oocyte insemination, fertilization, zygote assessment, embryo culture and grading, until the transfer procedure or cryopreservation of gametes or embryos [3].

Responsibilities with Embryology

The embryologist does a close monitoring of the embryos from assessment to grading until transfer. The embryologist has the responsibility to update the senior about every procedure. The speed is the important element defining the work ethics, this also means time managing while making sure that the quality is not compromised. The education and practical knowledge are of utmost importance as just the technical knowledge is not sufficient. Every second matters during cryopreservation, so the alertness behind the technique is important. Embryologist keeps updating

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themselves with the upcoming seminars and conferences which help them to know the latest trends in ART. Every footstep from the laminar hood to the incubator matters and embryologist never fail to meet this criterion. Every embryologist has a specific way of performing in the lab to carry out the process less in time and with 0 error, so this should be allowed as the practical hand of every embryologist differ. And so, the views of the embryologist should be considered equally as the clinician.

Efforts to be Taken for Minimalizing Inaccuracy

Any minute mistakes from the embryologist can bring about an obstacle for the couples dreaming of take-home baby. The embryologist needs to get themselves checked up for any infections or bacteria as a precaution while dealing with the living cells. To ensure the work done by the embryologist a method known as witnessing is done. Witnessing helps to ensure that any process done is proper without any negligence. Heavy workload, inadequate staff, i.e., during weekends, and disturbance, namely a telephone ringing, are the main causes of errors in the laboratory, mainly lead to possible mistakes or omissions in the witnessing process [4]. Embryologist at a same time deals with surplus number of embryos of different patients and so to monitor patient-embryo, barcoding with patient detail or manually tagging the culture dish or tubes with the name of the patient of patient code which is unique to every patient.

Cryopreservation requires utmost attention while placing and handling so as to prevent mix-up of samples. And so, to lessen the fear and mental stress to prevent mix-up the labs should be equipped with adequate technology for witnessing, e.g. RI witnessing system. Record keeping is of utmost importance in IVF treatments and is maintained by and recorded by the embryologist. Every step details of every procedure are recorded this enable the embryologist to keep a track about what next procedure is to be carried forward for the individual patient. The upcoming artificial intelligence where in the grading would be performed by the machine rather than the manual grading done by embryologist will reduce any bias performed while grading. But, in near future these machines may even replace the employment of the embryologist which should be inconsiderable because manual experience is always greater than artificial intelligence.

Patient-Embryologist Relationship

The embryologist must have an appreciation that each task in assisted reproduction techniques translates to patient care [5]. In some clinics, the embryologist may have patient contact to provide first-hand information on the outcomes from the laboratory. Sound judgment and the ability to make decisions should develop with experience and the guidance from training with a supportive and knowledgeable team. In addition, in this role, the embryologist must possess the communication skills and empathy that make this interaction productive and beneficial in the mission of the clinic's quality of care and the patient's treatment experience [6]. Patient who comes for IVF treatment has high hopes and all the doubts gets better cleared when the embryologist counsel the patient. So, the patient embryologist relationship should be more enhanced.

Working in Stressful Environment may affect the IVF Treatments

Working in a stressful situation may always lead to mistakes and IVF is all about safe handling, so the management should

make counselling of embryologist also a part of healthy practice so as to listen to what are the situations and needs of the embryologist working in lab. The professional embryologists serve the first group of routine clinical practice activity. There is a fixed amount of work mostly, the quality control to be done by the embryologist to sustain an ART environment, even though no ART cases are conducted [7].

Embryologist works on the living cell and therefore they constantly work on microscopic level and in a claustrophobic environment, keeping in mind all these factors the health management should be prioritised, minimal workload and more manpower should be used in IVF. All relevant data concerning laboratory work must be recorded in a database that allows KPI (Key Performance Indicator) extraction and statistical analysis. Corrections, either written or electronic, should be traceable. Data should include: Morphological characteristics of gametes and embryos. Specific operational details about the scheduling and people concerned all the details required to meet national and international data registry specifications.

Importance of Psychological Health of an Embryologist

Embryologists have a greater responsibility as they deal with the living cell those are going to form the foetus in later stages. Safe handling of the gametes with the emotion of knowing that there is an existing life is what every embryologist knows while dealing with them. There are various practical techniques and tricks which are applied by the embryologist to ensure better results in IVF cycles. More complex techniques, such as those PGS/PGD participation requires much more time for embryologist, it reflects about 20.2 hours of work [8]. Therefore, considering the psychological health of the embryologist is as important as their physical health.

Safety Strategies

The safety of embryologist is as important as the other clinicians working in this field. An embryologist should be trained in advance with all the back-up strategies and emergency plans. If the centre is carrying out an enlarged sample processing at the same time, in this situation the embryologist should be divided according to the work load and alternatively be allowed to perform. An alternative to the main embryologist should always be present as a standby if in case any injury, illness or due to any incident the main embryologist is not present at the moment. Although it is anticipated that efficiency should be improved as more procedures are performed, it is also true that embryologist is faced with increasing responsibility for diligence, comprehensive evaluation of contemporary assisted technology laboratory operations to determine.

Conclusion

Therefore, at professional front embryologist should be allowed with freedom to perform task with their own skills at performance, mental and physical health should be considered as a priority, adequate technology should be adopted to lower the mix-up fear, and should be allowed to put forth views as and when necessary in a particular case.

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