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Physicians and patients' motivations to perform elective single or double-embryo transfers: A nationwide survey

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ABSTRACT

Objectives: To evaluate motivations to perform an elective single embryo transfer (e-SET).
Methods: Cross-sectional surveys to reproductive medicine specialists and to infertile patients undergoing assisted reproductive treatments.
Results: In the physician's survey (n=278), we found that the main reasons for not offering e-SET were the physicians' belief that patients prefer optimizing the pregnancy rates regardless of the potential complications (57.1%). Regarding the decision making process, 76.7% of physicians thought that patients and doctors should make these decisions together and 93.3% would like to have a more formal decision-aid to help with counseling. In the patients' survey (n=100), 21.3% chose e-SET, while 33% mentioned that complications associated to multiple pregnancies were insufficiently discussed. Among those patients, none chose to have e-SET, while 30% of those who had a full discussion selected e-SET (p=0.05).
Conclusions: Most physicians did not offer e-SET based on potential patients' negative feelings. Also, almost 30% take important decisions without the patient's participation. Patients that discussed more thoroughly this topic, more frequently selected e-SET. Almost all the physicians surveyed agreed that decision-aids could help in this important shared-decision process.
Practice implications: Decision aids about e-SET vs DET are needed to help patients in the decision making process.

1. Introduction

During the last decade in the USA, a huge increase in elective single-embryo transfers (e-SET) has been observed since publication of the 2004 guidelines, where e-SET was strongly recommended [1]. Nowadays, legislation related to reproductive medicine in certain countries does not mention limits in the number of embryos to be transferred, while in others, a limit between one and three embryos was established [2–4]. An increasing number of guidelines promoted the reduction in the number of embryos to be transferred, as it is seen in USA, UK, Canada and Australia [5–7]. In Argentina, there is no specific limit mentioned in the Reproductive Medicine National Law, but our specific ART program promotes eSET in those patients with good prognosis [2]. The Society for Assisted Reproductive Technology (SART) reported that, in 2014, 21.8% of the cycles with embryo transfer had e-SET, with a higher rate in women below 35 years old (32.5%) and a lower rate in women above 40 years old (10.7%). However, in the same year, 10.4% of the embryo transfers in women below 35 years old had twins and 0.3% triplets or more, while in women above 40, only 1.8% had twins and 0.1% had high-order multiple pregnancies [8].

Deciding on the number of embryos to be transferred, is a relevant decision to be made prior to transfer, and both, pros and cons coexist in each of the options. If e-SET is chosen, a lower live birth per transfer is achieved, compared to performing double-embryo transfer (DET) [9]. However, when DET is performed, the multiple pregnancy rate is higher and as a result, maternal and perinatal complications are increased [10–13,6]. There is low-quality evidence coming from a systematic review published in 2013, showing that sequential e-SETs got a cumulative live-birth rate that did not show statistically significant differences from a DET [9]. Based on this information, one can infer that sequential e-

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SET does not offer a lower live-birth rate per cycle, but it could generate a longer time-to-pregnancy and, be a bit more expensive process, due to the higher number of embryo transfers performed [9]. Of course, e-SET has the advantage of a lower incidence of multiple pregnancies and, therefore, a potential reduction in maternal and perinatal complications, such as preeclampsia, gestational diabetes and preterm birth, which are associated to a higher mortality and long-term morbidity, both for the mother and the newborn [14–16].

A Danish Health Technology Assessment [17] showed a better cost-effectiveness profile for e-SET, while a Spanish economic evaluation [18] showed similar effectiveness and costs for both interventions. The controversy about any superiority among both interventions suggests that the choice of strategy to be adopted, should be determined by the context of the health care system and the individual prognosis and preferences [18].

Despite the above-mentioned increment in e-SETs, it seems that the growth in the number of these procedures is not moving fast enough. There are physicians and patients that still prefer to transfer more than one embryo, accepting the risk of having a multiple gestation [19]. A recent study by Rai et al. showed that in one of the UK's largest independent fertility clinic, there was a high proportion of female patients that had a positive attitude toward having twins [20]. Also of significance, the patients undergoing their first IVF cycle had a more positive attitude towards e-SET (and negative toward having twins) than patients with several prior IVF failures.

Patient-centered decision-making is a paradigm that is gaining ground during the last decades. Both physicians and patients play a big role in this paradigm. Physicians have the responsibility to provide the information needed for the patients to make a properly informed decision. Patients have the opportunity to incorporate their values and preferences, and decide which option they like best.

To investigate further the motivations leading to the performance of e-SET vs DET, and if a process of share-decision making about the number of embryos to be transferred is usually followed, we performed a nationwide survey among reproductive medicine specialists in Argentina, and also among patients at a large university-affiliated fertility center in Buenos Aires.

2. Materials and methods

This is a cross-sectional study that includes two separate surveys: one for physicians and one for patients. The specific STROBE statement was followed for reporting [21]. Institutional Review Board (IRB) approval was obtained from our institution.

2.1. Survey for physicians

All physician-members of the Argentine Society for Reproductive Medicine (SAMER) received a survey through email in June 2016. They are all infertility specialists that perform ART procedures. It was an anonymous survey that included the following domains: personal data, routine practice, barriers for performing e-SET, decision making process, knowledge about the patients preferences, and decision aid tool. A total of 676 e-mail addresses were contacted using Survey Monkey. After the first surveys were delivered, 3 weekly reminders were sent to those physicians that did not answer the survey, or to those that sent incomplete reporting.

2.2. Survey for patients

A survey was conducted in a University-affiliated infertility clinic in Buenos Aires, Argentina, between May/2016 and July/2016. This survey was given to all patients undergoing a controlled ovarian hyperstimulation for an ART procedure, or an endometrial preparation for a frozen-embryo transfer or an egg-donor cycle. Patients received the survey during their first monitoring appointment. The IRB for the study was approved by the Institution Ethics Committee. The domains included in the survey were personal data, intention about the number of embryos to be transferred, preferences about having a singleton or a twin gestation, time spent during the consultation discussing the number of embryos to be transferred, knowledge of complications associated with multiple pregnancies, satisfaction on the information received about making a decision on the number of embryos to be transferred. For an estimated e-SET election of 20%, based on a pilot study, 95%CI and a precision of ±8%, we calculated a sample size of 96 patients. As we expected some incomplete responses, we administered these surveys until 100 patients completed them.

We used proportions and 95% confidence interval to describe each of the evaluated parameters. To test differences between proportions we used chi square test with Fisher's exact test. For statistical analysis we used software STATA 11.2.

3. Results

3.1. Infertility specialists

A total of 676 e-mails were sent to the whole database of physicians/members of the Argentine Society for Reproductive Medicine (SAMeR). A total of 279 (45.1%) responded to the anonymous survey. See Table 1 for the sample characteristics.

In Table 2, the survey shows that physicians do e-SET more frequently in younger patients and, especially, when a blastocyst is transferred. It can be seen that embryos stage of development was the most relevant variable helping them make a decision, but female age also played an important role. Participants were also asked if they offered all their patients e-SETs, and 76% (200/263) responded negatively.

The main reason, given by 57.1% (109/191) of these physicians, was their belief that "ART patients value more positively a pregnancy, than their negative perception of a potential complication". A total of 46.9% (89/190) of the responders also thought that "patients feel frustrated when they need to repeat embryo transfers" and 42.4% (81/191) assumed that "cumulative

Table 1
Doctors' characteristics (n=279).

	Mean% (n)
Gender	
Female	49.8% (138)
Male	50.2% (139)
Time in reproductive medicine	
<10%	3.2% (9)
10–50%	23.9% (66)
50–80%	35.9% (99)
>80%	37% (102)
Working position	
Staff at an infertility clinic	62.2% (171)
Own office	37.8% (104)
Clinic's characteristic (IVF cycles per year)	
<100	17.7% (48)
100–300	18% (49)
300–1000	31.6% (86)
>1000	32.7% (89)
Doctor's experience (number of ET per year)	
<20	20.6% (56)
20–50	37.1% (101)
50–100	22.4% (61)
>100	19.9% (54)

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