



Article

Health outcomes of school-aged children conceived using donor sperm

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KEY MESSAGE

In school-aged children conceived using donor sperm, most aspects of child health and wellbeing are similar to the general population.

ABSTRACT

The use of donor sperm is increasing, yet limited information is available about the health and development of children conceived from donor sperm. This retrospective descriptive study aimed to assess health and development in a cohort of school-aged children who were conceived using donor sperm. Participants included 224 children, aged 5–11 years, who were conceived using donor sperm. Participants' mothers completed a questionnaire comprising validated scales examining their child's current and past physical, psychosocial and mental health, healthcare needs and child development, as well as the mothers' health and wellbeing. At the conclusion of the study, the response rate was 296 out of 407 (72.7%), with a participation rate of 224 out of 407 (55.0%). Compared with the normative Australian population, sperm donor-conceived children had similar physical, psychosocial and mental health and development. A modest increase in healthcare needs was evident. The study concludes that in school-aged children conceived using donor sperm, most aspects of child health and wellbeing are similar to the general population.

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Introduction

Donor sperm has been used in reproductive medicine for more than 100 years, originally in heterosexual couples as a treatment of severe male infertility. In the 1990s, the introduction of intracytoplasmic sperm injection (ICSI) enabled most infertile men to father their own children, and as a result the need for donor sperm declined (Devroey and Van Steirteghem, 2004). More recently, however, use of donor sperm has risen, driven in part by its increased use by single women and same-sex couples (De Wert et al., 2014; Human Fertilization and Embryology Authority, 2014). In Victoria, Australia, the number of births after donor sperm conception more than doubled between 2010 and 2015, and, in 2015, 50% of women accessing donor sperm were single and 35% were in same-sex relationships (Victorian Assisted Reproductive Treatment Authority, 2016). Yet, information about the health, healthcare needs and development of children conceived from donor sperm is still limited (Kovacs et al., 2013). Although studies to date have produced reassuring results (Brewaeyts et al., 1997; Golombok et al., 2002a, 2002b; Kovacs et al., 1993; Murray and Golombok, 2005), most are relatively small and have focused on psychosocial factors and family functioning rather than physical and mental health outcomes. Where health outcomes have been studied, only birth data are available, such as birth weight and the presence or absence of birth defects (Adams et al., 2016).

Child health and development are influenced by a broad range of genetic and non-genetic factors, and we hypothesized that some of these factors will differ between children conceived using donor sperm and the general population. The aim of this study was to describe, in the setting of a changing profile of women accessing donor sperm, the physical, psychosocial and mental health, healthcare needs and child development in a cohort of school-aged children who were conceived using donor sperm. We were also interested in examining the family functioning and the quality of life for the mothers of the donor sperm conceived children.

Materials and methods

Study design

This was a descriptive study of a cohort of children conceived using donor sperm, using a self-completed maternal questionnaire comprising a range of validated scales.

Participants

Participants were singleton children conceived using donor sperm and born between January 2003 and December 2009, and who were at least 5 years of age at the time of questionnaire completion. Potential study participants were sourced from the two clinics that provided the most donor sperm treatment cycles in Victoria, Australia, during the study time period: Melbourne IVF and Monash IVF. All fresh and frozen treatment procedures, including IVF, ICSI, and intrauterine insemination were included. Children who had one or more full siblings conceived using donor sperm during this time period were also included in the study. The study included some children who were half siblings, having been conceived by different mothers using

the same sperm donor; however, the number of these cases is not presented to preserve confidentiality. Children were excluded if their mother did not have adequate English reading skills, had used pre-implantation genetic diagnosis (PGD), used donor eggs in conjunction with donor sperm or had a fetal, infant, child or maternal death.

Recruitment

The mothers of all potential participants were sent a study pack by 'Registered Post' from the director of the relevant IVF clinic, which included documents such as a detailed letter about the study, a consent form, the questionnaire and a reply paid envelope. If no reply was received, a reminder letter was sent 3 weeks after the initial invitation, with a second reminder letter sent 2 months after the initial invitation. Mothers willing to participate were asked to complete the questionnaire and return it with the signed consent form to the study team in the envelope provided.

The questionnaire asked about current and past health and wellbeing of school-aged children conceived using donor sperm, as well as the mothers' health and wellbeing. The seven measures included in the questionnaire have all been shown to have good psychometric properties (Bethell et al., 2002; Chandler et al., 2007; Coghlan et al., 2003; Hawthorne and Osborne, 2005; Hayes, 2007; Kabacoff et al., 1990; Waters et al., 2000). Particular aspects of the treatment cycle were verified by the relevant fertility clinic, such as type of treatment undertaken.

Measures

The questionnaire comprised a number of reliable and well-validated scales.

Health and wellbeing

Health and wellbeing was assessed using the Child Health Questionnaire (CHQ), Australian adaption, short form (Waters et al., 2000). This version of the CHQ comprises 28 items and measures functional health and wellbeing in children aged between 5 and 18 years. It provides summary data in 13 domains: physical functioning, social limitations resulting from emotional, behavioural difficulties, and physical difficulties, bodily pain or discomfort, behaviour, mental health, self-esteem, general health, emotional impact on parent, time impact on parent, family activities, family cohesion and change in health (not used for this study). Australian normative data were from Waters et al. (2000), based on 1033–1044 Australian school-children aged 5–7 years.

Mental health

Mental health was assessed using the Strengths and Difficulties Questionnaire (SDQ), a validated 25-item parent reported measure (Goodman, 1997) that produces five subscale scores (range: 0–10) and a total difficulties score (range: 0–40). The subscales are emotional symptoms, conduct problems, hyperactivity, peer problems and prosocial behaviour. Higher scores indicate more difficulties except for the prosocial subscore (Goodman, 1997). Australian normative data from Hayes (2007) were based on 1899 Australian school children aged 5–10 years.

Child development

Child development was assessed using the Parents' Evaluation of Development Status (PEDS) (Glascoe, 1999), a 10-item parent completed

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