Conceiving of change: a brief intervention increases young adults' knowledge of fertility and the effectiveness of in vitro fertilization

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Objective: To examine the effectiveness of an educational intervention in increasing knowledge of fertility and the effectiveness of IVF among university students in Australia.
Design: Two-group, pretest–posttest design.
Setting: A large metropolitan university in Queensland, Australia.
Patient(s): One hundred thirty-seven male and female undergraduate students.
Intervention(s): Online information brochure on fertility (intervention group), or an online information brochure on home ownership (control group).
Main Outcome Measure(s): Knowledge of fertility, knowledge of IVF effectiveness, and desired age at commencement and completion of childbearing, assessed immediately before and after exposure to the brochure.
Result(s): Exposure to the brochure resulted in significant increases in knowledge of fertility and knowledge of IVF effectiveness in the intervention group and significant decreases in desired age at commencement and completion of childbearing. No changes were observed in the control group.
Conclusion(s): Educational intervention is a worthwhile endeavor that can increase knowledge of fertility and IVF effectiveness in the short-term. Further research is needed to evaluate whether increased knowledge persists and affects intentions in the longer-term. Because the determinants of timing of childbearing are highly multifactorial, fertility education should be paired with policies and practices that support men and women to make informed decisions about the timing of childbearing. (Fertil Steril® 2013;100:523–9. ©2013 by American Society for Reproductive Medicine.)
Key Words: Fertility awareness, delayed childbearing, IVF, intervention, education

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There is a growing body of evidence in Australia and internationally that young people want, and plan, to delay childbearing, despite the potential implications for fertility (1–4). Although a multitude of personal, socioeconomic, and cultural factors contribute to the desire to delay childbearing (5–9), research has indicated that many individuals do so without awareness of the effect of age on fertility. Young people in several countries—most often university students—have been found to overestimate a couple's likelihood of conceiving a child at various maternal ages (1–3, 10–13). Poor knowledge of the effect of age on fertility has also been identified in community samples of childfree women aged 20–50 years in Canada (14), and women aged >35 years in Australia who, themselves, were affected by difficulties conceiving (5). Population-based, nationally representative surveys in Germany (15) and Australia (16), too, have reported poor knowledge of the effect of age on fertility.

Compounding the problem of poor knowledge of natural age-related fertility decline, assisted reproductive technology treatments such as IVF may

Received February 6, 2013; revised March 7, 2013; accepted March 29, 2013; published online April 28, 2013.
A.M.W. has nothing to disclose. R.T. has nothing to disclose.
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Fertility and Sterility® Vol. 100, No. 2, August 2013 0015-0282/$36.00

http://dx.doi.org/10.1016/j.fertnstert.2013.03.050

also instill in individuals a false sense of confidence regarding the ability to safely delay childbearing (8, 17, 18). The Australian *Fertility Decision-Making Project* found that 60% of the partnered men and women surveyed believed that they would be likely to conceive if they were to use IVF treatment (9). Only 8% believed this outcome to be unlikely, and participants aged in their late 30s were as likely as participants aged in their early 20s to believe they could conceive as a result of IVF. Similarly, Daniluk et al. (14) found that more than 90% of the childfree women they surveyed in Canada believed it was possible that, before menopause, assisted reproductive technologies such as IVF "can help most women to have a baby using their own eggs." Daniluk et al. (19) later replicated this finding among a sample of childfree men. Many university students also exhibit unrealistically optimistic perceptions of IVF effectiveness and, unsurprisingly then, report an intention to seek IVF treatment in the event of infertility (1, 2, 12). That university students overestimate the likelihood of successful IVF is particularly concerning, given that those who pursue higher education are especially likely to delay childbearing (12, 20).

Altogether, evidence suggests that individuals currently have limited capacity to make informed decisions about the timing of childbearing and, accordingly, may be at risk of failing to achieve their reproductive aspirations. The potential negative implications of unmet reproductive aspirations for individuals' health and well-being (21, 22) makes salient the importance of better supporting individuals to understand age-related fertility decline and the effectiveness of IVF, and to make informed decisions about reproductive timing. In line with this, interventions to increase knowledge of fertility and inform individuals of the benefits and risks of delaying childbearing have been repeatedly called for by academics and health professionals (3, 5, 6, 10, 12, 14, 23–28).

Calls for interventions to support informed decision making about reproductive timing also appear consistent with the needs and preferences of target groups. Maheshwari et al. (29) surveyed pregnant and subfertile women in the United Kingdom and found that 94% of pregnant women and 95% of subfertile women expressed a desire for information about fertility and the consequences of delaying childbearing. The early 20s was reported to be the optimal time to receive this information. These findings are fortuitous, given that educational interventions during young adulthood may have the greatest capacity to minimize uninformed decision-making about the timing of childbearing.

Despite a shared interest in facilitating informed decision-making about reproductive timing by academics, health professionals, and the general public, to our knowledge there have been no formal evaluations of interventions designed to achieve this goal. In this article we describe the findings of a study that sought to address this gap in research. Specifically, we conducted a nonrandomized (alternate allocation) controlled trial to examine the impact of a novel, brief educational intervention on Australian male and female university students' knowledge of fertility, infertility, and the effectiveness of IVF. We hypothesized that exposure to an educational brochure about fertility and IVF effectiveness would result in increases in knowledge of fertility and infertility and knowledge of IVF effectiveness, whereas exposure to a control brochure would have no such effects. Furthermore, although this intervention did not aim to affect reproductive aspirations in any particular direction, the impact of exposure to the brochure on desired reproductive timing was also examined.

MATERIALS AND METHODS

The study was approved in accordance with the ethical review processes of the relevant university board, within the guidelines of the Australian National Statement on Ethical Conduct in Human Research.

Participants

Participants were undergraduate students from a large metropolitan university in Queensland, Australia. Eligibility criteria required that participants be enrolled in an introductory psychology course at the university and not already have children. Participants were recruited via an advertisement that was posted on the psychology department research participation Web site. The study was advertised as the "You and Your Future" study to limit self-selection into the study on the basis of a particular interest in, or knowledge of, fertility and reproduction. Participants received course credit in return for participation. Participants were aware that they could discontinue the study at any stage and that course credit would still be granted. Because of the recruitment method adopted in this study, it was not possible to determine the number of men and women who were exposed to the study advertisement, and therefore the overall response rate cannot be determined.

Intervention

An educational brochure on delayed childbearing, age-related fertility decline and IVF effectiveness was developed by the first author. To develop the content of the brochure, existing literature on the definition (30, 31) and prevalence (32) of infertility, the ages at which fertility declines for men and women (33), and the percentage of IVF treatments in Australia and New Zealand that result in a live birth for women aged 35, 40, and 45 years (34) was consulted. Evidence on effective design of written health information materials was also applied, including techniques derived from cognitive psychological theory to increase the coherence of texts (35, 36). A "control" brochure on home ownership was also developed and provided information on the rising costs of living in Australia, challenges associated with borrowing money to buy a house, and information on the amount owing on an average home loan after 2 years elapsed, 15 years elapsed, and 25 years elapsed. The two brochures were equivalent in the number of words, design, colors, layout, language, tone, and picture usage and placement and adhered to a Flesch-Kincaid readability grade level of 7.5 (37).

Measures

An online survey was developed using items adapted from Lampic et al. (1). A paper-and-pen version of the survey was pilot tested among 55 undergraduates at the same university,