Toward a Public Health Approach to Infertility: The Ethical Dimensions of Infertility Prevention

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While many experts and organizations have recognized infertility as a public health issue, most governments have not yet adopted a public health approach to infertility. This article argues in favor of such an approach by discussing the various implications of infertility for public health. We use a conceptual framework that focuses on the dual meaning of the term ‘public’ in this context: the health of the public, as opposed to that of individuals, and the public/collective nature of the required interventions. This analysis highlights the need for a comprehensive public health approach toward infertility, points to some initiatives that are already in place and demonstrates that prevention is currently a neglected—yet much needed—element. We move on to discuss the sensitive nature of prevention initiatives as a probable explanation for their scarcity. We illustrate the complexity of prevention through an analysis of an infertility prevention campaign previously conducted in the United States, which provoked significant controversy. We use a public health communication ethics framework to expose the strengths and the shortcomings of this campaign, and conclude that prevention initiatives targeting infertility can indeed be conducted in a sensible way that promotes autonomy while improving public health.

Current estimates of infertility rates range between 3.5 and 26.4 per cent worldwide, depending mainly on the various definitions of infertility (Boivin et al., 2007, Bhattacharya et al., 2009, Gurunath et al., 2011). While an increase in these numbers has not been consistently reported in the literature (Stephen and Chandra, 2006, Bhattacharya et al., 2009, Bushnik et al., 2012), the use of assisted reproductive technologies (ART) is becoming more and more common (Practice Committee of the American Society for Reproductive Medicine, 2006, Terava et al., 2008, Macaluso et al., 2010). Infants conceived through ART now represent more than 1 per cent of all births in the United States (Centers for Disease Control and Prevention; American Society for Reproductive Medicine; Society for Assisted Reproductive Technology, 2010) and an even higher percentage in most European countries, with up to 6 per cent in some countries (Andersen 2006). Many experts and organizations, including the World Health Organization (WHO) (Vayena et al., 2001) and the Centers for Disease Control and Prevention (CDC) in the United States (Centers for Disease Control and Prevention, 2010) have recognized infertility as a public health issue. Most countries, however, have not yet adopted a comprehensive public health approach to infertility.

This article aims to demonstrate the importance of a public health approach toward infertility by contextualizing infertility-related issues in a framework for defining public health. This analysis demonstrates that many public health functions are already at work with regard to infertility, while not explicitly stated as such. It also identifies prevention as a neglected function of public health in the context of infertility. The second section of the article therefore targets the potential for prevention initiatives and analyzes one such initiative through the lens of public health communication ethics.

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Infertility as a Public Health Issue

Various factors have been mentioned in previous articles as justifications for including infertility in the public health agenda: the high and potentially increasing prevalence and associated possible threat to social perpetuation; the preventable nature of many causes; the consequences for well-being; the interactions with the fulfillment or nonfulfillment of social expectations; the associated stigma; the close relationship between human immunodeficiency virus (HIV) and infertility and related risk-taking behaviors in developing countries; the mention of reproduction as a human right in various declarations; the involvement of health inequalities; and finally, the potential benefits of various public health tools such as data collection and surveillance, public debate, policy development, education and prevention in decreasing and managing infertility (Heitman, 1995, Fidler and Bernstein, 1999, Brady, 2003, McDonald Evens, 2004, Macaluso et al., 2010).

It could be argued that today, when global health is threatened more by overpopulation than depopulation, infertility should be the least of our public health concerns. However, strong counterarguments have been proposed. First, reproduction is acknowledged as a human right, and the liberty to procreate includes, for most, the liberty to access reproductive technologies to overcome infertility (Robertson, 1996, McDonald Evens, 2004). Second, in developing countries, infertile women and couples suffer a great deal of ostracism and abuse owing to cultural expectations, and behaviors that are detrimental to public health ensue (McDonald Evens, 2004). Third, many developed countries face severe challenges related to negative birth rates. On the backdrop of increasing health care costs for the aging population, the younger working population is struggling to meet the demands. While immigration and international adoption can be part of the solution, they also involve their fair share of complications, and promoting local fecundity remains an important tool (McDonald, 2002). Finally, while adoption is indeed a viable alternative for some infertile couples, the variable degree of its social/cultural acceptability and the challenges surrounding its accessibility make it unfair to put pressure on the infertile to adopt rather than using ART (McDonald Evens, 2004).

These arguments are complex and deserve reflection that goes beyond the scope of this article. Our argument in favor of a public health approach to infertility is based on the assumption that ignoring the needs and suffering of the infertile minority is not the appropriate way to control population growth in overpopulated countries, and that population control measures targeting the general population are much more likely to be effective (McDonald Evens, 2004).

While past publications have argued that infertility is a public health issue, none have grounded their claims in a comprehensive framework for defining public health or what constitutes a public health issue. In this article, we apply such a comprehensive framework to demonstrate that a public health approach toward infertility is indeed justified and required.

Two Meanings of ‘Public’ in ‘Public Health’

Verweij and Dawson offer a fresh outlook on the scope of public health by describing two different meanings for the term ‘public’ as a mean of conceptualizing a dual understanding of ‘public health’. The first focuses on the health of the public (as opposed to that of individuals) and the second on the public (i.e. collective) nature of public health interventions. They suggest that ‘both the interventions and the objectives of public health are “public” and go beyond the level of the individual’ and that ‘the practice of public health (roughly) consists of collective interventions that aim to promote and protect the health of the public’ (Verweij and Dawson, 2007).

The health of the public

The first dimension of ‘public’ refers to ‘the health of the public’, or ‘the health of the population’, as opposed to the health of specified individuals. It implies the ‘aggregate’ health of the individuals in the population, and a fair distribution of health within the population. It also involves the social and environmental determinants that shape the health potential for members of the population (Verweij and Dawson, 2007).

Aggregate health

The link between infertility and the aggregate health of the public can be articulated in two ways. First, the preventable causes of infertility, most of which are already considered public health issues, and second, the population health consequences of an increased use of ART.

Preventable causes of infertility and their impact on aggregate health. The exact proportion of infertility cases arising from preventable causes is unknown, but it is estimated to be substantial (Homan et al., 2007, Dorfman, 2008, Albertini, 2010, Alvarez and Fallet, 2010, Centers for Disease Control and Prevention,
2010, Macaluso et al., 2010) and many of these preventable causes are classic public health concerns. For instance, the American Society for Reproductive Medicine (ASRM) has estimated that smoking is associated with up to 13 per cent of infertility cases (Practice Committee of American Society for Reproductive, 2008). It has also been estimated that sexually transmitted infections (STIs) are causing more than 15 per cent of infertility cases in the United States (Quach and Librach, 2008).

Other modifiable and public health–related factors have been identified and their impact on fertility requires further analysis to be reliably estimated. These are occupational exposure to toxins and chemicals (Petrelli and Mantovani, 2002, El-Helaly et al., 2010), obesity (Loret de Mola, 2009, Norman, 2010), eating disorders (Stewart, 1992), excessive alcohol consumption (Zacur, 1998, Tsujimura et al., 2004), caffeine consumption (Homan et al., 2007), stress (Homan et al., 2007) and even cellular phone (Wdowiak et al., 2007, Agarwal et al., 2008) and wireless internet use (Avendano et al., 2012).

It is hypothesized that the relatively constant infertility rate of the past decades actually hides variations in the distribution of infertility causes. While infertility related to STIs is decreasing owing to public health initiatives, an increased prevalence of male infertility has been demonstrated during the past few decades (Andersen et al., 2000, Stephen and Chandra, 2006, Povey and Stocks, 2010). The decrease in sperm quality is not consistent across populations, but it has been suggested to be associated with environmental factors (Boisen et al., 2001, Petrelli and Mantovani, 2002, Sharpe, 2003, Wdowiak et al., 2007, Agarwal et al., 2008, El-Helaly et al., 2010). The WHO and the United Nations Environment Programme have recently published a joint report with alarming results on the involvement of environmental endocrine disrupters in the apparent decrease in sperm quality in some western populations, as well as in the development of female reproductive problems such as polycystic ovary syndrome, endometriosis and fibroids (World Health Organization and United Nations Environment Programme, 2012).

Public health causes of infertility such as STIs, smoking and environmental pollutants—and prevention endeavors aiming to reduce them—have a direct impact on the health of the public. One could argue that STIs, smoking and environmental pollutants are the threats to public health, not infertility. In this case, infertility is one of the likely outcomes of the said threats. Interestingly, several studies show that there is little awareness of these risk factors in the general public (Quach and Librach, 2008, Bretherick et al., 2010, Daniluk et al., 2012) and there is very little mention of infertility as a likely outcome in prevention endeavors toward smoking and STIs. For instance, the relationship between STIs and infertility is not mentioned in the STI prevention component of the health and physical education curriculum in Ontario (Quach and Librach, 2008). Yet, at least three studies have shown that messages that emphasize the risk of becoming infertile are more persuasive than other types of messages aiming to promote Chlamydia trachomatis screening in young women (National Chlamydia Coalition, 2011). Arguably, a young woman would be more convinced by the risks of not being able to conceive in the next few years than by the threat of cancer years down the road. Greater exposure of the infertility–related component of risky behaviors can therefore benefit public health interventions, and improve the aggregate rate of healthy behaviors.

In developing countries, the mere fear of being infertile leads to behaviors that are also detrimental to the public’s health. For instance, in Nigeria, a WHO polio immunization campaign was suspended because a rumor had spread that the vaccine contained chemicals that render women infertile. As a result, polio has spread in Nigeria and surrounding countries (McDonald Evens, 2004). In addition, infertility is closely intertwined with the HIV epidemics in Africa, with HIV prevalence being more than twice as high in infertile women than in mothers. This phenomenon is attributed to an increase in risk-taking behavior in infertile women and men. Willing to do anything to meet the cultural expectation of becoming a mother, or as a mean to prove their fertility, infertile people tend to have unprotected intercourse with various partners, hence potentially infecting themselves, their spouse and their future children. In turn, HIV infection decreases fertility. Central and Southern Africa has been referred to as ‘the infertility belt’ because of this phenomenon (McDonald Evens, 2004).

**ART and its impact on aggregate health.** Infertility can also be seen as a potential long-term cause of decreased population health in western societies through increased use of assisted reproductive technologies (ART). The use of ART, such as In-Vitro Fertilization (IVF) and Intra Cytoplasmic Sperm Injection (ICSI), has been increasing rapidly and consistently over the last two decades (Terava et al., 2008, Macaluso et al., 2010). While ART is often heralded as the modern-day solution to modern-day infertility issues (Bewley et al., 2005, Balasch, 2010), these technologies carry numerous inherent risks. Women
undergoing in vitro fertilization (IVF) run the risk of ovarian hyperstimulation syndrome, and higher risks of placenta previa, gestational diabetes, preeclampsia, fetal heart variability, placenta accreta and spontaneous abortions, compared with women conceiving naturally (Wang et al., 2004, Esh-Broder et al., 2011, Fortunato and Tosti, 2011). They may also be at higher risk of having various types of cancers years later (Deonandan, 2010).

Common practice has been to transfer at least two embryos (and often many more) to improve implantation rates. This routine practice has led to a dramatic increase in the number of multiple gestations, which are associated with higher risks of preterm delivery and low birth weight (Steel and Sutcliffe, 2009, Fortunato and Tosti, 2011), potentially leading to adverse neurological outcomes such as cerebral palsy or brain damage (Fortunato and Tosti, 2011) and an increased rate of mortality and morbidity in offspring, including cardiovascular disease and diabetes developing later in life (Steel and Sutcliffe, 2009). Multiple gestations are also associated with a significant increase in cost for the health care system (Janvier et al., 2011).

Policies and practices favoring single embryo transfers are now contributing to a decrease in multiple gestations and related morbidity in the jurisdictions that instituted them such as Australia, Belgium and Sweden. However, many other states, including the United States, the UK, Ireland, France and Germany, have chosen not to legislate on this issue, and multiple embryos continue to be transferred (Maheshwari et al., 2011). Deonandan (2010) identifies this as a ‘burden on the public health of a community’, as a consequence of shared health care costs and decreased family functioning, and proposes to implement better education for future parents with regard to the risks associated with multiple gestations.

In addition, studies show that even singleton births resulting from IVF may present an increased risk for various adverse outcomes (Steel and Sutcliffe, 2009). IVF pregnancies carry increased risks of preterm birth, low birth weight (Steel and Sutcliffe, 2009) and stillbirth (Wisborg et al., 2010). Increased risk was also found in the population of individuals born through IVF for a variety of conditions such as major musculoskeletal, cardiovascular, urogenital and chromosomal anomalies and cerebral palsy (Steel and Sutcliffe, 2009, Mozafari Kermani et al., 2012), and defects such as septal heart defects, cleft lip, cleft palate, oesophageal atresia and ano-rectal atresia (Fortunato and Tosti, 2011). It remains unclear whether these outcomes are the direct results of ART procedures and/or of the conditions causing infertility in the first place (Rimm et al., 2012), although for the purposes of our analysis there is little difference between the two.

Deonandan (2010) suggests that the impact of negative health outcomes on families and their support structures also deserves public health attention. He endorses the inclusion of ART statistics on adverse birth outcomes and the economic costs of the additional services needed in the public health profile of a community. While we agree that surveillance measures are needed, we wish to emphasize the importance of preventive interventions that could reduce the prevalence of infertility, thus protecting the health of the public in the long term.

Psychological health has also been shown to be affected in women undergoing ART and their offspring. While women present with increased rates of negative self-image, anxiety and decreased satisfaction with regard to marital and familial functioning, offspring may be subject to increased rates of psychological and behavioral challenges. Deonandan warns about the potential impact of these issues on public education, public health and public mental health systems if ART use continues to increase (Deonandan, 2010).

In addition, failure is more common than success in IVF, and patients’ expectations need to be modulated accordingly, to minimize the adverse psychological outcomes of failure, such as depression (Deonandan, 2010). In fact, while success rates of reproductive technologies decrease dramatically with age (Leridon, 2004, Bewley et al., 2005), many tend to overestimate the ability of these technologies to compensate for reduced fertility (Bewley et al., 2005, Schmidt, 2010, Bretherick et al., 2010, Daniluk et al., 2012). ART success rates after two cycles are estimated to be around 30 per cent for women aged 30 years, 24 per cent for women aged 35 years and 17 per cent for women aged 40 years (Leridon, 2004). Meanwhile, a few studies found that a large proportion of people of reproductive age are unaware of this reduction in treatment efficacy or underestimate it (Lampic et al., 2006, Tydén et al., 2006, Maheshwari et al., 2008).

Patients who are about to commence IVF should obviously be provided with a clear prognostic to facilitate accurate expectations. However, we argue further that women and couples of reproductive age in the general population should also be made aware of ART’s decreasing success rates with age, to promote informed reproductive decision-making and potentially decrease IVF needs in the future.

Concerns have also been raised regarding the fertility of IVF- and ICSI-conceived children. ‘ICSI is a
procedure that in many ways bypasses natural selection by forcing the union of gametes that are otherwise biologically impeded from fertilizing (Deonandan, 2010, p.121). Conditions causing infertility such as Y chromosome micro deletion, polycystic ovarian syndrome and endometriosis can be inherited by offspring (Steel and Sutcliffe, 2009, Deonandan, 2010). The decision to procreate despite these risks clearly belongs with the couple. However, it does have certain public health ramifications relating to the health of future generations. In the past, individuals with these conditions could not reproduce, whereas today ART allows them to pass certain conditions to the next generation, thus increasing the proportion of affected individuals and creating a future dependency on ART (Deonandan, 2010).

Recent literature also suggests that ART might cause various epigenetic variations affecting the health and fertility of offspring (Fernandez-Gonzalez et al., 2008, Sutcliffe et al., 2010, Li et al., 2011) and raises concerns regarding the potential unknown consequences of two individuals conceived by ART with the same epigenetic deleterious variant having a child (Li et al., 2011). The literature highlights the need for longitudinal studies involving ICSI-conceived individuals, to define the public health implications of this fairly recent procedure (Deonandan, 2010, Li et al., 2011).

These issues are likely to affect a relatively large number of people (couples seeking IVF and their prospective children). The means to overcome these challenges involve legislation, surveillance, protection and public education, which are functions of public health.

One could argue that ART constitutes a public health concern, not the underlying infertility, and that limiting or even prohibiting ART use may be a more effective public health approach. However, this would infringe on individuals’ reproductive liberty, grounded in fundamental liberal values of modern western nations. Moreover, the body of data on ART adverse outcomes is conflicting and recent (Deonandan, 2010) and may not justify such drastic measures at this point.

In short, infertility is both the consequence and the cause of issues that affect the aggregate health of the public. A comprehensive public health approach could consist of not only monitoring, surveillance, research, protection and legislation with regard to ART, but also of education and prevention with regard to lifestyle factors that cause infertility and subsequently lead to use of ART. Ultimately, such measures could improve aggregate health by improving the effectiveness of prevention endeavors related to STIs, smoking, obesity, alcohol abuse and chemical pollutants, and by reducing the proportion of individuals who require ART.

Health distribution

Verweij and Dawson’s conceptualization of ‘the public’s health’ also has a ‘distributive’ component that promotes not only a high average population health, but also limited health disparities within the population.

There are clearly demarcated socioeconomic determinants of infertility prevalence and treatment accessibility (Terava et al., 2008, Tulandi et al., 2013). For instance, in the United States, African-American and Hispanic women are more likely to suffer from subfertility than Caucasian women and less educated women are more likely to be subfertile than women with higher levels of education. These differences are attributed to a higher rate of STI in lower socioeconomic groups (Terava et al., 2008, Bell, 2010). However, women in lower socioeconomic groups are less likely to receive treatment than their Caucasian or educated counterparts owing to the exorbitant price of services and the frequent absence of public coverage (Terava et al., 2008, Tulandi et al., 2013).

One cycle of IVF is estimated to cost between $8000 and $12,000 (Hughes and Giacomini, 2001, Macaluso et al., 2010) and most couples require more than one attempt to achieve a pregnancy (Luke et al., 2012). These tremendous costs are imposed either on the infertile individual or on society, depending on policies regarding public funding or insurance coverage of these services. In countries with no public funding, inequity in access can become a grave justice concern (Macaluso et al., 2010).

Additionally, mechanisms of systemic discrimination against women of lower socioeconomic background have been identified even in states that provide coverage for infertility treatment (Bell, 2010). It has been argued that favoring a medicalized approach rather than a public health approach to infertility has disadvantaged women of lower socioeconomic backgrounds in two ways: (i) they do not benefit from prevention programs targeting preventable causes of infertility such as STIs and occupational/environmental exposure, for which they are particularly vulnerable, and (ii) medicalization is used as a ‘form of social control determining who is worthy and not worthy of treatment’, which is reinforced through individual blame with regard to preventable causes (Bell, 2010, p.635).

At the same time, a study conducted in Finland found that educated women are more likely than their less educated counterparts to be subfertile, largely because social convention favors postponing motherhood to
pursue education and establish a career (Terava et al., 2008). A recent meta-analysis of 12 studies that were designed to identify factors affecting women’s decisions to delay childbearing revealed that women choose to postpone childbearing until they reach certain educational and career goals, including academic achievements and job promotions. Women expressed the need to feel that they are in the right point in their lives and that they are sufficiently stable and financially secure before they became mothers (Cooke, 2010). Thus, the decision to postpone childbearing is driven by sociocultural norms and contexts, present in higher socioeconomic groups that promote the establishment of a successful career and a high level of financial stability as prerequisites to becoming parents.

Hence, the distributive dimension demands that socioeconomic groups receive adequate education and information with regard to the preventable infertility causes to which they are vulnerable. Once this has been achieved, public funding of ART could also be considered as a means to reduce inequities among those who do require them (Tulandi et al., 2013).

**Social and environmental determinants of health**

Verweij and Dawson’s framework addresses social and environmental determinants of health. They stipulate that a society that creates environments that enable individuals to avoid health hazards can be considered as achieving a higher level of ‘health of the public’.

Preventing infertility should be achieved through health promotion, by enabling individuals to increase control over their fertility. This involves creating living and working conditions that enable people to make life choices that protect their fertility. Because lifestyle choices do not stem solely from lack of adequate information or appropriate judgment, but also from social circumstances, health promotion initiatives that reduce social inequalities can help promote reproductive health (Yeo, 1993). For instance, smoking and obesity are more prevalent in economically disadvantaged populations (Baum Ii and Ruhm, 2009, Hiscock et al., 2012).

Health promotion interventions that aim to decrease smoking and improve eating habits in poorer populations can therefore indirectly decrease the prevalence of infertility as well. Fertility preservation could be used as an incentive in such interventions.

Another cause of infertility that could be thought of as preventable is advanced maternal age. The effect of maternal age on decreased fertility is well established. For example, a study performed on 782 healthy couples showed that women between the ages of 19 and 26 years with partners of similar age have approximately a 50 per cent chance of becoming pregnant during any one menstrual cycle if they had intercourse 2 days before ovulation. For women aged 27–34 years, the chance was 40 per cent, and for women more than the age of 35 years, the probability dropped to 30 per cent (Dunson et al., 2002). Another study showed that natural conception leading to live birth occurred within a year for 75 per cent of women trying to conceive at the age of 30 years, 66 per cent of women trying to conceive at 35 years and 44 per cent of women trying to conceive at 40 years (Leridon, 2004).

In most Western countries today, increasing numbers of women are making the choice to postpone childbirth until later in life (Liu and Case, 2011, Wyndham et al., 2012). Statistics from the CDC in the United States show that the average age of first-time mothers has risen from 21.4 years in 1970 to 25.1 years in 2008 (Martin et al., 2010). In the 1970s, about 1 in 100 women gave birth to their first child after the age of 35. By 2006, this number has risen to 1 in 12 (Matthews and Hamilton, 2009). This trend is even more pronounced in European countries, with Switzerland showing the highest average age of first-time mothers at 29.4 years (Matthews and Hamilton, 2009).

This widespread Western tendency of delaying childbirth is the result of social and technological development (McDonald, 2002, Hadfield, 2007, Friese, 2008). The push toward gender equality allowed women greater freedom, opening up new options in higher education and professional training and allowing them to occupy a greater place in the work force at higher positions than before. These changes mean that many women find themselves investing considerable time in establishing themselves professionally and financially before considering starting a family (McDonald, 2002, Hadfield, 2007). The work markets and economic systems in which they evolve pressure them to postpone pregnancy (McDonald, 2002). Finally, the improvement of reproductive technologies, and particularly their portrayal in the media, creates a popular conception that women’s reproductive capacity can be extended into older age and that their reproductive autonomy is almost unlimited (Fidler and Bernstein, 1999, Friese, 2008, Wyndham et al., 2012).

When it comes to advanced maternal age, providing means to overcome the social pressures experienced by young professionals and academics may be outside the realm of public health, as this would entail the implementation of various workplace policy modifications. However, public health can certainly encourage governments and industries and educate them regarding the importance of providing
more opportunities to young couples to have children earlier if they wish to do so, and without being thwarted in their career goals and financial stability seeking.

Social and environmental determinants of health also point to the previously mentioned psychological toll of infertility. Most individuals assume that having children will be part of their future. Finding out that conceiving a child may not be possible can constitute a major identity crisis as well as create tremendous stress within a relationship (Fidler and Bernstein, 1999, Moghadam et al., 2011). While this psychological impact on couples may first appear strictly as an issue of individual health, it is definitely exacerbated by predefined social conditions.

Infertility is often associated with a sense of shame or guilt that may be caused or exacerbated by the stigma of infertility, which remains present in modern societies (Centers for Disease Control and Prevention, 2010). In North America, mainstream cultural expectations are that married couples have a desire to procreate and that they do so. The desire to procreate would therefore be, at least in part, socially constructed. In turn, stigma and guilt stem from a sense of ‘failure’ to fulfill socially expected life paths and gender roles. As noted by Whiteford and Gonzalez:

‘As a result of accepting a cultural construction of gender that defines women in reproductive terms, women who fail to reproduce are stigmatized by their failure. Furthermore, the stigma of infertility extends to the social identity of the whole person, polluting her other accomplishments . . . stigma . . . transforms biological infertility into socially defined inadequacy’ (Erving Goffman, as quoted by Whiteford and Gonzalez, 1995, p.30).

Infertility has severe psychological consequences for men as well. Society tends to conflate fertility with sexual potency and ideals of masculinity. Infertile men sometimes perceive themselves as weak and unworthy and view their condition as shameful (Gannon et al., 2004).

As a consequence of these socially constructed views, infertile couples experience significant psychosocial hurdles, including depression, social isolation and decreased productivity (Fidler and Bernstein, 1999, Moghadam et al., 2011). In developing countries, where womanhood is often defined in terms of motherhood, the impact is even more dramatic, with infertile women often being ostracized and abused (McDonald Evans, 2004).

Hence, social and cultural environment shape the experience of infertility. Public health should work through educational efforts toward decreasing stigma and stereotyping, to alleviate the suffering of the infertile population.

The collective nature of public health interventions

Veiweij and Dawson’s second meaning of ‘public’ in ‘public health’ refers to the collective nature of public health interventions. Some interventions require collective participation to be effective and members of the public are expected to partake in them to protect other members of their community (Verweij and Dawson, 2007).

The most common and effective form of collective intervention is conducted by government agencies and public officials. Governments have the power to regulate the use of IVF and other reproductive technologies. Single embryo transfer policies are an example of that. Legislation can protect people by limiting coverage for patients whose little chances of success, based on solid evidence, do not seem to outweigh the burden of treatment (Mladovsky and Sorenson, 2010). Governments can ensure monitoring and surveillance regarding the prevalence of infertility and its various etiologies. They can also fund research on ART’s long-term outcomes and develop surveillance and monitoring of ART practices to protect the public’s health.

Governments also have the power to institute a preventive approach, in addition to the palliative approach currently in place. They have access to the places where young people can be reached in high numbers, such as schools, community centers and universities, and they have access to advertising budgets and public health specialists able to conduct educational campaigns and provide resources for people who wish to engage in behavior modifications.

A preventive approach also means protection from involuntary risks posed by both natural and human-created environmental hazards that threaten fertility. This can be done by invoking the power of the state to legislate and regulate in ways that reduce exposure to products that have been proven to have a detrimental effect on fertility, such as bisphenol A, phthalates and many other industrial chemicals (World Health Organization and United Nations Environment Programme, 2012).

Finally, it has been hypothesized that the medicalization of infertility has emphasized the need for ‘individual solutions to social problems’ (Bell, 2010). In the process, prevention was neglected at the profit of palliation. While we agree with this analysis, we also argue that social stigma and taboo, and a culture that highly values privacy, are also contributing to the challenge
public health faces when it tries to tackle such a sensitive topic.

The 2001 ASRM infertility prevention campaign illustrates this issue well. In the previous sections, we have shown that prevention is an underused yet much needed public health approach toward infertility. In the next section, we aim to focus on this function and its feasibility. We apply a health communication ethics framework to analyze this campaign, as a mean to glean the ethical challenges of prevention campaigns toward infertility and propose some ways to overcome them.

The ARSM Campaign: A Health Communication Ethics Analysis

In 2001, the ASRM launched a modest infertility prevention campaign with the aim of informing men and women between the ages of 18 and 40 years about the adverse effects of smoking, weight problems, STIs and advanced age on fertility (see Figure 1). This limited budget campaign targeted three US cities and consisted of a radio broadcast and posters on public buses (Figure 1). Additional information was available on a Web site and informational leaflets were available for order (Soules, 2003).

The campaign ignited a significant controversy. Feminist groups and infertility associations reacted strongly in the media and on blogs (Soules, 2003, Morris, 2012). Several argued that the campaign used ‘shock tactics’, contributing to the stigmatization of infertility and of the four target populations and unfairly blaming the victims (Soules, 2003, Morris, 2012).

Guttman and Salmon (2004) identify ethical dimensions of public health communication efforts, such as targets of the communication, persuasive tactics used, messages on responsibility and culpability, adverse unintended effects associated with labeling and stigmatization and undesired expansion of social gaps. We will offer a critical examination of the ways in which these dimensions were addressed by the ASRM campaign.

The use of provocative tactics to attract attention may be seen in the use of clever baby bottle images by the ASRM campaign. This design was indeed deemed provocative by some (Soules, 2003) and could be considered a ‘shock tactic’ that applies ‘strong emotional appeals’ (Guttman and Salmon, 2004). From the perspective of the campaign initiator, this provocative dimension was intentional (Soules, 2003). The use of such methods is criticized in public health ethics as the ‘communitarian/utilitarian dilemma’: the need to capture attention with descriptive images is recognized, but these images can also elicit excessive discomfort and fear in the population (Guttman and Salmon, 2004).

Regarding the ‘risk information dimension’, an extensive literature review of the literature that was published before 2001 would be needed to assert that the statistics provided are not inflated. However, some elements may strike as being exaggerated or unclear. For instance, the poster says: ‘Men and women who smoke have decreased fertility’, whereas this may not be true for all men and women who smoke. In addition, the significance of ‘decreased fertility’ is unclear: does it mean that it may take a few more months for smokers to achieve pregnancy, or that they are likely to need reproductive technologies? While statistics are provided for smoking and body weight, none are provided for STIs and maternal age. How much less likely are women in their forties to conceive? Is there a difference between women in their twenties and women in their thirties? Hence, the ASRM campaign could have presented accurate risk information in a better way.

Guttman and Salmon (2004) present the challenge of stigmatization and labeling as follows:

‘How does one reconcile the use of persuasive appeals that on the one hand scare people regarding potential hazards, and thus raise their motivation to avoid it, but on the other hand may present a negative image of those who have the disease?’ (Guttman and Salmon, 2004, p.547).

Although the ASRM poster seems to effectively educate young and healthy people, and may provide additional motivation to avoid STIs, refrain from smoking, achieve and maintain a healthy weight and learn about family planning, it can also have the effect of conveying a stigmatizing message regarding obese people, smokers, people with STIs and even people who wish to become parents at an older age, as well as infertility patients. This stigma can lead to decreased self-esteem and increased self-blame in these populations (Guttman and Salmon, 2004). While informing younger people to help them prevent infertility is intended to benefit them, targeting these specific populations might end up harming them. Campaigns should therefore pay particular attention to protecting these populations from stigma and self-blame.

Special attention was dedicated to the sensitive subject of age, as the poster states that ‘women and their partners must be the ones to decide when (and if) to have children’ before giving the information on the increased risk of infertility with age. Moreover, the text at the bottom of the poster reads as follows: ‘Your decisions now can impact your ability to conceive in the future’. The inclusion of ‘can’, expresses recognition of
Figure 1. Infertility prevention campaign, ASRM, 2002 (Soules, 2003).
the other causes of infertility on which lifestyle choices have no impact. Yet, additional precisions could have been made, such as an explicit recognition of idiopathic causes of infertility. A preamble to the text could have been added as follows: ‘Although many causes of infertility are unfortunately beyond individuals or couples’ control, research now indicates that some lifestyle factors can affect fertility—your decisions now can impact your ability to conceive in the future’.

The issue of ‘targeting’, as discussed by Guttman and Salmon (2004), refers to the idea that targeting small and specific high-risk groups can ultimately be considered either offensive or exclusive because of the tailored message that it requires. By contrast, targeting larger moderate-risk populations seems to be just as effective in eliciting behavior change in both moderate and high-risk population while ‘[promoting] values of solidarity and [reducing] the likelihood of stigmatization and labeling of those considered at “high risk”’ (p.536). The ASRM chose the latter approach, by broad-casting the information through radio stations and displaying the posters in public transportation buses, colleges and community health centers, Planned Parenthood clinics and YMCA’s, and by attempting to use movie theaters and mall kiosks, hence reducing the potential for stigmatization and blame.

Guttman and Salmon (2004) also address the implication of responsibility and culpability in public health messages. Public health initiatives raise ethical concerns when the emphasis on individual responsibility implies blame and fails to recognize structural and social factors that prevent individuals from having a significant control over their own lifestyle (Guttman and Salmon, 2004). The moral and legal attribution of responsibility for health to individuals can lead not only to self-blame but also to possible justifications for higher costs of insurance premiums and for governments not paying for health services for those at ‘fault’ (Guttman and Salmon, 2004).

To address these concerns, we propose to apply Michael Yeo’s conceptual framework of the ethics of empowerment, which distinguishes between retrospective and prospective responsibility (Yeo, 1993). This framework is particularly relevant, because it was designed specifically in the context of health promotion. Assigning retrospective responsibility (responsibility for the problem), means ‘blaming the victim’ and is counterproductive because it places the ‘victim’ in a powerless vulnerable position that does not empower her to act. Prospective responsibility (responsibility for the solution) empowers and therefore promotes an effective management of the situation by the targeted individuals. It is apparent that the ASRM’s awareness campaign was promoting prospective responsibility and did not intend to assign blame. The message could not have been clearer: ‘your decisions now can impact your ability to conceive in the future’.

At the same time, the ethics of empowerment also calls for concrete strategies that allow the target population to take action based on the provided information (Yeo, 1993). To promote prospective responsibility, an awareness campaign should not only provide information about possible risks; it should also provide concrete tools for decreasing those risks. The information provided on the poster may convince a person to quit smoking, but a reference to a smoking cessation program could allow him to act immediately, using the ‘momentum’ generated by the information. In the case of STIs, weight management and smoking, this can be done by providing links to various existing programs for prevention and intervention, e.g. STI testing, promotion of safe sex, smoking cessation programs and support programs for weight management.

The issue of advanced maternal age is, however, more complex. People are already aware of the harmful effects of smoking, STIs and obesity. These are recognized public health issues and prevention and intervention programs for their management exist outside the context of infertility. The same cannot be said for advanced maternal age. Moreover, the current social trend in Western societies toward late childbearing is the product of powerful social and cultural forces that have positive aspects, such as increased gender equality (Malson, 2003, Hadfield, 2007, Friese, 2008). Attempting to prevent the negative effects of this trend is likely to be perceived as offensive and as threatening progress that has been achieved through great efforts (Commission for the Ethics of Science and Technology, 2009).

The meaning and moral dimension of risk-taking is socially constructed (Guttman and Salmon, 2004). While smoking, obesity and unsafe sex are generally viewed as irresponsible risky behaviors, postponing pregnancy to secure better living conditions for one’s family can be seen as praiseworthy risk-taking behavior, especially in communities that value education and financial security. In communities that hold more conservative values, postponing childbirth can be stigmatized as selfish. This inherent moral dimension of risk-taking sets the stage for even more complex ethical debates regarding the justifications of persuasive appeals as well as consideration of cultural particularities in the context of advanced maternal age (Guttman and Salmon, 2004).
Indeed, 99 per cent of the media attention paid to the ASRM campaign focused on delayed childbirth (Soules, 2003). The provision of resources that support the choice of starting a family at an earlier age is clearly beyond the scope of such a campaign and providing links to existing concrete resources cannot be done as in the case of other risks. Promoting people’s autonomy to choose childbearing at an earlier age, while respecting their individual and cultural values, involves major political, legislative, economic and structural social changes. A preventative approach that fully respects the ethics of empowerment may therefore not be realistic in the case of advanced maternal age. Nonetheless, adequate information on the subject is still needed for informed decision-making.

Salmon and Guttman address the risk of exacerbating health disparities between socioeconomic groups by developing initiatives that can only appeal to higher socioeconomic groups, owing to the language used or the availability of necessary resources to implement change. In the context of the ASRM campaign, however, it appears that higher socioeconomic groups are just as disadvantaged as lower ones. Although the fact that the etiology of infertility varies across socioeconomic groups is a health disparity in itself, a campaign that seeks to inform the general population of the various risks does not seem to increase this disparity. Smoking, obesity and STIs are more prevalent in lower socioeconomic groups, and it may be difficult for this population to implement change owing to living circumstances. It is reasonable to expect that higher socioeconomic groups be better equipped to take measures regarding weight, STIs and smoking. However, delaying parenthood is the core preventable infertility cause in this population. These people’s living circumstances also make it difficult for them to choose to become parents earlier in life, as outlined by Peter McDonald;

‘There is a very strong tendency among those in main-stream jobs to protect their rights in the welfare system. The result is an insider-outsider labour market in which the insiders tend to be middle-aged males and the outsiders are women and younger people. The safest strategy for women and young people is to become “insiders” and to delay or eschew family formation. […] in order to protect themselves from risk, individuals must maximize their utility to the market. This means that they need to focus upon the acquisition of saleable skills, work experience and a marketable reputation. At the same time, they need to accumulate savings or wealth as a personal safety net. They also need to maintain flexibility of time and place so that they can react to opportunities as these arise. The risk-averse individual in a world that rewards market production is unwise to devote time or money to social reproduction’ (McDonald, 2002, p.430).

Studies have shown that in young couples’ decision to become parents, education, career, financial security and permanence of employment are significantly more important than the ‘biological clock’ (Tough et al., 2007). Hence, both social groups deal with different issues with regard to infertility causes, but in both cases, fertility related risk-taking is to a large extent socially constructed.

Overall, the ASRM campaign presented a few shortcomings in considering and addressing all the ethical challenges of a public health campaign targeting such a sensitive subject. This may explain the media outcry that followed. However, it was a useful and needed initiative and it provides a good starting point to learn from. Future campaigns should be organized in collaboration with other organizations (e.g. charitable organizations or governments) that can provide tangible resources and present information in an accurate and sensitive manner.

Conclusion

At first sight, infertility may not seem to be a classic public health issue. However, it lies right at the heart of a complex network of factors, all related to public health. Infertility relates to the aggregate health of the public in at least three ways: infertility causes that are recognized as public health issues, the public health adverse effects of ART, and with regard to social determinants involved in the construction of the stigma of infertility, which exacerbates patients’ suffering. Infertility is therefore relevant to the ‘public’s health’ dimension of public health.

In addition, the ‘public intervention’ dimension of public health is also relevant to infertility. A comprehensive approach to infertility calls for measures such as monitoring, surveillance, legislation, education and prevention, which are usually government-mandated public health functions. Research, surveillance and legislation are already initiated by some governments, however not by all and not necessarily as a part of a comprehensive explicit public health approach.
The main dimension that seems to be neglected is infertility prevention. The media outcry that followed the campaign initiated by the ASRM shows that the sensitive nature of such endeavors may explain, at least in part, their scarcity. The ethics of health communication sheds light on the merits and shortcomings of the ASRM campaign, and this could contribute to the creation of future campaigns that build on its strengths and learn from its weaknesses. Future interventions should avoid targeting specific populations, ensure they do not contribute to any increase in health inequalities, minimize the stigmatizing effects by recognizing the existence of idiopathic causes of infertility and stress the ‘prospective’ nature of the responsibility they assign. Future campaigns should also present accurate information and use images that are respectful of the target population, while being effective. Finally, concrete resources should be made accessible so that people can act immediately in response to the information provided.

A comprehensive public health approach to infertility, and in particular greater attention to infertility prevention, has the potential to have significant impact on a problem that affects millions. It is therefore time to move forward and apply the various public health functions that are relevant in this context.

Conflicts of interest
None declared.

References


