

Age-discriminated IVF Access and Evidence-based Ageism: Is There a Better Way?

Science, Technology, & Human Values

2022, Vol. 47(5) 986-1010

© The Author(s) 2021



Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/01622439211021914

journals.sagepub.com/home/sth

Giulia Cavaliere¹ and James Rupert Fletcher² 

Abstract

Access to state-funded fertility treatments is age-restricted in many countries based on epidemiological evidence showing age-associated fertility decline and aimed at administering scarce resources. In this article, we consider whether age-related restrictions can be considered ageist and what this entails for a normative appraisal of access criteria. We use the UK as a case study due to the state-funded and centrally regulated nature of in vitro fertilization (IVF) provision. We begin by reviewing concepts of ageism and age discrimination in gerontological scholarship and contend that it is analytically useful to differentiate between them when considering age-restricted health services. We then argue that criteria to access IVF could be considered indirectly ageist so far as they rely on an age-related evidence base that manifests ageist categorizations of persons. Lastly, we

¹Faculty of Science and Technology, Medical School, Lancaster University, United Kingdom

²Department of Global Health and Social Medicine, Institute of Gerontology, King's College London, United Kingdom

Corresponding Author:

James Rupert Fletcher, Room 3.12, Bush House (NE), 30, Aldwych, London WC2B 4BG, United Kingdom.

Email: james.fletcher@kcl.ac.uk

examine whether there could be more normatively desirable alternatives to devise criteria to access fertility treatment, considering “lifestyle” as a potential candidate. We conclude, however, that lifestyle-based discrimination is problematic because, unlike age-based discrimination, it risks exacerbating existing socioeconomic and ethnic inequalities.

Keywords

fertility, reproduction, gerontology, assisted conception, epidemiology, ageing

Introduction

Since the birth of the first child conceived through in vitro fertilization (IVF), the number of children conceived globally through this technology is estimated to be over 8 million (European Society of Human Reproduction and Embryology [ESHRE] 2018). While fertility treatment provision varies significantly across different countries, an interesting and under-explicated facet of such provision is that several countries rely on age restriction to regulate access to state-funded treatment (Berg Brigham, Cadier, and Chevreul 2013). Indeed, a recent survey on the regulation and funding of assisted reproductive technologies in Europe has shown that twenty-eight of the twenty-nine countries that place additional limits to legal limits for accessing state-funded fertility treatment rely on maximum female age as a criterion for access (Calhaz-Jorge et al. 2020). Age restrictions range between thirty-six and forty-nine years for women, while male’s maximum age is rarely considered (with the exception of countries such as Germany and Austria where the age limit is set at forty-nine, Sweden where it is set at fifty-five and Finland where it is at sixty, among few other exceptions). Such trends can be observed beyond European countries: a recent International Federation of Fertility Societies’ survey found that 78 percent of countries offering funded IVF imposed age restrictions (Allan et al. 2019). Broadly conceived, age restriction is based on epidemiological evidence indicating that fertility decline is age-associated (van Loendersloot et al. 2010; Sharma, Allgar, and Rajkhowa 2002).¹ However, age is only a partial predictor of women’s fertility and of IVF success rates (Akande et al. 2002; Sabatini et al. 2008; te Velde and Pearson 2002). In this article, we explore sociological, epidemiological, and ethical considerations surrounding age discrimination to access fertility treatment using the UK as a case

study. We believe that the UK system lends itself to scrutiny because it is both centrally regulated (with some regional differences in treatment provision and criteria for accessing treatment) and, largely, based on state-funded treatments. Decisions concerning resource allocation and access to treatments are made centrally by the National Institute of Care Excellence (NICE), with specific decisions about service provision made locally by clinical commissioning groups (CCGs).

In 2013, NICE guidelines (revised in 2017) recommend offering three cycles of IVF for women aged up to forty years old, and one cycle for women aged between forty and forty-two. For both age groups, the guidelines advise that referrals for treatment are made after two years of regular unprotected intercourse. Despite this, IVF provision in the UK often differs markedly from national guidelines. Several CCGs restrict access to IVF treatment to women under thirty-five, offer only one cycle to women younger than forty, and only accept referrals after three years of regular unprotected intercourse. In 2017, only 12 percent of CCGs offered three cycles of IVF to women meeting the NICE eligibility criteria, contra 24 percent of CCGs in 2013 (Fertility Fairness 2017). Male age features remarkably less often as a discriminating criterion, with only 8 percent of CCGs restricting access to men younger than fifty-five (Pidd 2018). IVF provision in the UK is hence remarkably different and stricter than national guidelines. Discrepancies between national guidelines and IVF provision in the UK are marked by three main factors: the age limits imposed on treatment access for people affected by subfertility,² the number of cycles offered by fertility clinics, and the years of unprotected intercourse required before referral.

Especially relevant among these factors are discrepancies between provision and guidelines regarding age, which can span seven years. From a clinical perspective, fertility treatments *can* be successful during these seven discrepant years. Restricting access to women aged thirty-five or forty is not due to the impossibility of successfully establishing a pregnancy in women who are aged thirty-six or forty-one.³ Rather, it is based on the estimated chance of success. As such, considerations concerning clinical efficacy are paired with considerations concerning resource allocation. Without resource limitations,⁴ IVF could be offered to a larger pool of older women, many of whom would successfully become pregnant.

Assisted reproductive technologies (ARTs) and practices have garnered much attention in Science and Technology Studies (STS) generally, and this journal specifically, as they catalyze several fraught intersections of technoscience and values. As Salter (2021) notes in a study of local and global

moral economies governing these technologies and practices, these economies may “find their cultural values translated into institutional rule form or they may not” and “[e]ven where state institutions provide rule frameworks, these may be challenged by unresolved cultural tensions in society and the changing balance of power between competing ART interests” (p. 12). It is very much in this spirit and at the intersection of cultural values and rule frameworks that we approach questions concerning age, subfertility, and access to (fertility) treatment in this article. More generally, STS scholars have studied the mundane practices of IVF across legislative (Jasanoff and Metzler 2020), clinical (Kroløkke and Kotsi 2019), and scientific (Helosvuori 2019) contexts, charting the many ambiguities that various stakeholders must navigate in the realization of IVF. In this article, we maintain this attentiveness to moral, scientific, and legislative ambiguity. However, we diverge from more popular debates to explore a relatively under-explicated intersection of fertility treatment and values, one that explores epidemiological generalizations vis-à-vis individual persons in reference to age and access to fertility treatment. We consider whether age-discriminated IVF access is *ageist* and whether there could be alternative criteria for restricting access in line with resource limitations. Through this discussion, we hope to highlight the relevance of gerontological scholarship and the issue of ageism for normative and empirical discussions of fertility treatment provision and for STS scholarship more generally.

To begin, we review critical gerontological scholarship on ageism and age discrimination, contending that it is analytically useful to distinguish the two when considering age-restricted health services. We then show that the age discrimination of IVF is not directly ageist per se but can be considered indirectly ageist so far as it relies on an age-related evidence base that manifests ageist categorizations of persons. We argue that such ageism cannot be simplistically equalized with crude forms of bigotry (indeed, we find comparisons with sexism and/or racism unhelpful). Rather, we define ageism as the assumption of intra-category similarities and inter-category dissimilarities beyond the date of birth. We unpack the significance of this definition below. Nonetheless, from a normative perspective, it might be desirable to investigate whether ageist discrimination should be replaced with other criteria to regulate IVF access. We consider whether “lifestyle” factors could be preferable in regulating access to state-funded fertility treatment. Our contention is, however, that lifestyle-based discrimination is problematic because, unlike age-based discrimination, it risks exacerbating existing socioeconomic and ethnic inequalities. We hence conclude that it would be problematic to pursue such policies in the present context.

Disambiguating Ageism and Discrimination

Ageism ranks among the most widely used concepts in gerontology, but gerontological work on ageism is yet to be applied to the institutional age discrimination of IVF access. This is surprising given that fertility and childlessness are predominant concerns in ageing research (Connidis and Barnett 2018; Koropecj-Cox, Pienta, and Brown 2007). The lack of gerontological work on IVF is likely a consequence of the typical age range of childbearing, with gerontology traditionally focusing on people at substantially older ages (Friese, Becker, and Nachtigall 2008). We argue that fertility treatments should receive greater gerontological attention given broader trends concerning declining fertility rates, reproductive ageing, rising childlessness, technoscientific advancements, and social norms that frame genetic parenthood as desirable. These factors lead to less reproduction, later in the lifecourse, mediated through technologies, providing *prima facie* reasons to reflect on the age-related restriction of IVF provision. How access to reproductive technologies is regulated via age is seemingly at odds with reproductive ageing in industrialized countries.

While gerontological engagements with IVF and ageism are wanting, a tangential psychological and sociological literature deals with older motherhood and age norms. Friese, Becker, and Nachtigall (2008) observe that new reproductive technologies are transforming traditional lifecourse boundaries of parenthood and pushing motherhood into later life. Older motherhood remains stigmatized but may become normalized as it becomes increasingly common. Ylänne and Nikander (2019) note that older parents negotiate their transgression of moral imperatives of “chrononormativity” that constrain “good” and “bad” parenthood. Despite notable demographic transformations regarding reproductive ageing, chrononormative appraisals of the reproductive lifecourse are slow to adapt. This norm-focused scholarship on reproductive ageing depicts a symbolism in flux, wherein the bio-social and technological transformation and fragmentation of the reproductive lifecourse come into conflict with traditional age norms denoting the deviance of older parenting in industrialized countries.

The concept of ageism has become increasingly popular in gerontology over the past several decades. It has also gained political currency, with anti-ageism campaigns and associated legislation emerging in several countries (Macnicol 2006). However, ageism is conceptually nebulous, having proliferated through poorly explicated operationalizations (Higgs and Gilleard 2019). Broadly speaking, age-based “prejudice,” “stereotypes,” and “discrimination” are among the most recurrent descriptions, denoting

dual notions of ageism as symbolism and action (see Iversen, Larsen, and Solem 2009).

We suggest that it is analytically useful to separate ageism and age discrimination when examining aged-restricted access to services in line with Macnicol (2006). Age discrimination is typically conflated with ageism to argue that discrimination is unjust and/or unjustified, and by extension that it should be stopped, without sufficient attention to what it is specifically about such discrimination that makes it unjust and/or unjustified. In this article, we reject this dichotomy as neither analytically nor normatively useful. Rather, we argue that the criteria that inform IVF provision in the UK are not directly ageist, that is, prejudicial and/or arbitrary restrictions based on old people qua old people but that they do manifest ageist assumptions. We also depart from normative discussions on statistical discrimination (see, for instance, Lippert-Rasmussen 2014), which present rarified categories such as unjustified/justified, instead of acknowledging the complex realities in which discrimination is imagined, developed, and enacted.

The issue of age discrimination is pivotal to our analysis of IVF restrictions as potentially ageist. Age discrimination denotes the unequal treatment of different people based on their *chronological* age (years since birth). It is an important subject because chronological age is integral to the governance of modern populaces. Amid demographic ageing and improved record keeping, the lifecourse has been institutionalized via age over recent centuries, separated into numerically defined stages, for example, education, work, and retirement (Anderson 1985; Bytheway 2005; Hacking, Hacking, and Hacking 1990). Age-restricted IVF is thus one facet of relatively ubiquitous sociopolitical age discrimination.

“Ageism” was first introduced by Butler (1969) as “a form of bigotry we now tend to overlook: age discrimination or ageism, prejudice by one age group toward other age groups” (p. 243). Butler noted that later life was culturally reviled as a period of decay and infirmity, that older people were disproportionately affected by certain crimes, and that ageing garnered 3 percent of federal mental health research funding despite older people making up 25 percent of mental hospital admissions. This initial iteration of ageism depicts a prejudicial culture of derogatory stereotypes about older people, akin to sexism and racism. Importantly, Butler (1975) casts ageism and age discrimination as comparable concepts, noting that ageism entails “a process of systematic stereotyping of and discrimination against people because they are old” (p. 12).

Introducing nuance, Bytheway (2005) dissected gerontological ageism literature into two types. The first describes generalized derogatory beliefs about older people. The second denotes discrimination against people because of their age. Bytheway pursues the former (symbolic) understanding as the most theoretically fruitful for gerontology. He presents this form of ageism as “a coherent set of shared ideas and beliefs that constitute a particular justification of the interests of dominant groups” (Bytheway 1995, 116). To Bytheway, ageism is an ideology, wherein the individual and institutional actions described by Butler are not ageism *per se*, but such discrimination may imbibe ageism in specific circumstances.

Macnicol (2006) also rejects mainstream confluences of ageism and discrimination, noting that it is useful to separate the two. He defines ageism as “the application of assumed age-based group characteristics to an individual” (p. 6), whereas discrimination is literally differentiation between groups or individuals, which may or may not be just and/or justified. Macnicol observes that widespread belief that ageism is inherently unjustified (i.e., based on fatuous stereotypes) seeps from ageism into age discrimination when the two are conflated, so that the latter is commonly considered equally unjustified. In response, he questions whether age discrimination might sometimes be “essentially ‘rational’, based upon the use of crude age proxies which are correct in the aggregate (even if there are individual cases of injustice)” (p. 30). However, he notes that this simplistic approach ignores the subtle ways that prejudices inform seemingly neutral discrimination, an observation that we unpack below.

Higgs and Gilleard (2019) go further in critiquing gerontological depictions of ageism as an ideology underpinning various ills experienced by older people. They “challenge the ubiquity of ‘ageism’ as a catch-all concept capable of explaining the discrimination faced by older people” (p. 2), contending that poorly defined notions of ageism have become uncritically normalized and conceptually totalizing in ageing research, being used to explain all negative experiences of all older people and obscuring other considerations.

Collectively, Bytheway, Macnicol, Higgs, and Gilleard caution against positioning ageism as inherently tied to, or a root cause of, age discrimination. We adopt these unusually critical approaches to ageism in this article. This reveals that age-discriminated IVF might not necessarily be ageist, warranting greater analysis of the rationales underpinning age-related guidance. An example of potentially non-ageist age discrimination is the age stratification of universal phenomena across a bounded time frame. For instance, each September in the UK, children aged from four years to four

years and 364 days are enrolled into their first year of state schooling (discounting special dispensations). This practically delineates access to a public service so that the requirements placed upon the service, and its consequent quality, can be kept relatively stable across cohorts. Here, ageism and age discrimination should be decoupled.

An Age(ism)-related Evidence Base

In delineating ageism and age discrimination, we are particularly concerned with the status of the age-related evidence base in guiding institutional decision-making. In this section, we argue that the age discrimination of publicly funded fertility treatment can be interpreted as ageist because it relies on epidemiological generalizations that assume the existence of meaningfully different categories of homogenous persons in reference to age. Thus, ageism subtly enters into age discrimination via discrepancies between population-level and person-level analyses, and the ways that age is scientifically naturalized as a biosocial marker of categorical differences and similarities.

Reliance on age categorization manifests inherent tensions between the study of populations and persons. Generally, age-related health policies, such as IVF allocation, are informed by population-level research that is not directly applicable to persons, but which instead depicts the imagined *epidemiologic subject*. This epidemiologic subject represents the average characteristics of a select category of persons, within which there will be considerable heterogeneity across various salient attributes (Bunge 1999).

For example, studies have shown that women aged below thirty have a 3.2 times greater chance of conceiving via IVF than women aged between thirty-nine and forty-five (Sabatini et al. 2008). However, these chances relate to the epidemiologic subject. In practice, a given twenty-nine-year-old may have less chance than a given thirty-nine-year-old of conceiving through IVF due to various individually relevant factors. In this scenario, the situation of the unusually fertile thirty-nine-year-old *person* is seemingly unjustifiably, and hence unjustly, constrained by the thirty-nine-year-old *epidemiologic subject*. This attribution of epidemiologic imaginings to real-world persons can appear insensitive to individual's circumstances, and personal cases therefore often contradict population traits. Moreover, the epidemiologic subject can sometimes reflect the circumstances of no person whatsoever. Sabat (2001) gives the example of US family size:

Just as there is no American family that actually has 2.3 children, or 1.7 automobiles (characteristics of the “average family”), what is described by statistical averages may not be true of any individual person. (p. 11)

Here, the 0.3 child and the 0.7 automobile are methodological artifacts. They would not exist were it not for particular approaches to data collection, analysis, and presentation. Likewise, the 3.2 times greater chance of IVF conception for women aged below thirty compared with women aged between thirty-nine and forty-five may not exist in any specific person-to-person comparison. The artificial attributes of an epidemiologic subject may be relatively alien to the persons they are imagined to represent.

In practice, chronological age is a complex variable that intersects socio-cultural, politico-economic, psychological, and physiological conditions and acts as a proxy for various phenomena. It is often used as a key epistemic criterion in biosocial research, but it does suffer drawbacks. Age categories often contain substantial intra-category diversity, relative to inter-category diversity, undermining their usefulness to robust empirical research (Nelson and Dannefer 1992; Dannefer 1987). While the flaws of chronological age as a biosocial variable have been well-explicated, it nevertheless remains a useful analytic concept through which to explore various societal phenomena as the influence of chronological age throughout human life renders it an accessible medium for empirical engagements with society. Just as age has become a valuable political means of governing populations (e.g., regulating service access), it has similarly become a practicable empirical means of rendering populations amenable to analysis. This has promoted a chronologic epistemology in social analysis that is largely naturalized and unexplicated. Though flawed, this epistemology usefully facilitates research that can advance particular knowledges with positive consequences. For example, twentieth-century research highlighting age-associated socioeconomic disadvantages inspired welfare and employment policies that improved the circumstances of many older people (Macnicol 2006).

This naturalization of age as a variable relies on an assumption that chronological age denotes meaningful similarities and differences between categories of person. This informs biosocial research into the causes of infertility and subsequently informs formal guidelines. We intuitively “know” that older people and younger people are meaningfully distinct in many ways, including reproductive potentials. Research similarly applies categorizations based on assumptions that those applications reveal important differences. The evidence base regarding age-associated fertility exists

because researchers “know” that age is an important axis of biosocial stratification and that they should therefore study it. The value of such conventional biosocial variables is grounded in precedent (Cruz 2017). The availability of an age-related evidence base regarding fertility thus relies on researchers “knowing” to collect data on age, analyze that data in relation to fertility, and disseminate the results in familiar tropes of relationships between variables. In turn, these categories ground health policy, especially when resources are limited. IVF guidelines hence imbibe assumptions that age is epistemically meaningful.

Here, the boundaries between age-related evidence and ageism become blurred. As noted, while embedded in value-laden assumptions, age variables usefully reveal new and influential knowledges. When distributing limited resources, knowing that efficacy is age-correlated, however loosely, is probably more useful than not knowing. However, the *assumption* that age provides meaningful categories is ageist, for it constrains biosocial research into static generalizations modeled along age-lines, generating group-based similarities and differences. Purportedly neutral scientific analyses of age are to some extent ageist, for the simple act of looking imputes a symbolism to age as a biosocial differentiator, denoting later life and older people as exceptional (Bytheway 1995; Higgs and Gilleard 2019; Macnicol 2006).

Unfortunately, amid the naturalization of chronological age, the assumption of meaningful difference between categories is often used to ascribe meaningful similarities within categories. All members of an age-group, who are homogenous in terms of similar birth years, can be made homogenous in terms of imagined fertility, irrespective of actual fertility. Such depictions of the ageing woman’s fertility are hence simultaneously stereotype- and evidence-based. The criteria used to dictate IVF access in the UK manifests ageism, but the age limit imposed on women simultaneously represents a form of evidence-based practice, maximizing effectiveness. Thus, simplistic ageism/age-discrimination connotations, and justified/unjustified binaries, are incompatible with real-world complexities of fertility research and governance.

What Alternatives for IVF Provision?

As IVF access criteria are informed by age-related research, some women, for whom fertility treatments may well be successful, are excluded from treatment. This exclusion is based on imagined women “like her” and couples “like them.” Rather than being discriminated by comparable

fertility, IVF access is discriminated by comparable dates of birth. From the perspective of individual subjects, their exclusion may seem arbitrary, grounded in categories inapplicable to them. To the fertile individual, it matters whether alternative eligibility criteria would be better suited. One could argue that there might be other criteria that are not as value-laden as age discrimination and that rely on less fraught categories. The remainder of this paper considers alternative and more desirable criteria for regulating access to state-funded fertility treatment.

Other things being equal, crude forms of discrimination and arbitrary exclusion are normatively contentious and should be avoided. They risk to exacerbate existing biases on certain types of people (poor, black, disabled, and female) and, in turn, curtail their access to advantages that are typically within reach for others (wealthy, white, able, and male). But other things are not equal: in real-world political-economic resources are finite and access criteria need to maximize the chances of success of fertility treatments.⁵ Therefore, to evaluate whether the age discrimination of IVF is normatively problematic, one does not only need to establish whether such provision relies on ageist assumptions in the way we have outlined above. Rather, a normative assessment of criteria to access fertility treatment must consider whether other criteria for discriminating access are more normatively acceptable.⁶ Moreover, in line with feminist scholarship on the regulation and provision of fertility treatment and the role of women therein, we note that while sperm quality and quantity decrease significantly with age, discourses on subfertility and the treatment thereof still heavily focus on women, *their* inability to have children, *their* postponement of conception, and on advanced *maternal* age. Discriminating access to fertility treatment based on women's rather than men's age is once again grounded in and justified by epidemiological considerations. But, as we have argued above, such considerations are influenced by cultural values and understandings and, in turn, mediate further conceptualizations of age, gender, and reproductive ideals. These are often internalized by women, who self-identify as having sole responsibility for subfertility and the success of fertility treatment (Greil, McQuillan, and Slauson-Blevins 2011).

In outlining predictors of IVF success, NICE (2013) guidelines delineate several characteristics that affect treatment efficacy. Besides age, "lifestyle" factors such as body mass index (BMI), smoking, and caffeine and alcohol consumption are considered predictors of IVF success (NICE 2013). Of these factors, only BMI has been formally implemented as a criterion to restrict access in the UK (see Tremellen, Wilkinson, and Savulescu 2017, for other countries), where only women who have a BMI

between 19 and 30 can access IVF (and, in 27 percent of CCGs, men's BMI has been employed as a criterion too; Pidd 2018). Besides BMI, other "lifestyle" factors, for example, smoking (Freour et al. 2008; Lintsen et al. 2005; Crha et al. 2001) and caffeine and alcohol consumption (Klonoff-Cohen, Lam-Kruglick, and Gonzalez 2003; Rossi et al. 2011), have been shown to negatively affect IVF success rates (and fertility more generally). One could thus reasonably ask whether criteria that inform IVF provision in the UK should move from age-based discrimination to lifestyle-based discrimination, because age-based discrimination can appear unfair for some women. For example, a thirty-six-year-old subfertile woman with a BMI of 22, who does not smoke, drink alcohol or coffee, who exercises regularly, and has a healthy "lifestyle" and good nutrition, could be excluded if, in her region, fertility treatments can only be accessed by women aged up to thirty-five. Conversely, a thirty-four-year-old woman who smokes, does not exercise, consumes alcohol, and has an unhealthy diet, despite being within the acceptable BMI range, would be able to access fertility treatments in the same area.⁷

This happens for two reasons. Firstly, on average, women aged thirty-four have better chances of becoming pregnant following fertility treatment than women aged thirty-six. Secondly, NICE guidelines are modeled on the epidemiologic subject's fertility, which may or may not capture women's actual fertility. From the perspective of the thirty-six-year-old with the epidemiologically ideal "lifestyle" and health, shifting criteria from chronological age to criteria more sensitive to her personal health status would be an improvement of current IVF provision. This would move provision from being concerned with chronological age as a crude proxy for fertility, to being concerned with more tailored and physiologically sensitive assessments of the chances of success for each patient.

From Age Discrimination to "lifestyle" Discrimination (and Back)

Shifting criteria from chronological age to "lifestyle" factors could be advantageous for some individual women who do not conform to the fertility categories to which they are ascribed by virtue of their age (and who are therefore denied access). Moreover, it would make fertility treatments accessible to women who have a reasonable chance of becoming pregnant with IVF who are hitherto excluded from accessing treatment. Moving from age to a combination of "lifestyle" characteristics could better reflect the overall health and chances of conception of a particular individual, avoiding

generalizations that risk excluding potentially suitable candidates from treatment. However, two objections can be moved against this shift from age to lifestyle. We examine these objections in turn, arguing that one is particularly deleterious to the case for lifestyle-based discrimination.

A first objection concerns the paucity of reliable evidence linking such factors to fertility treatments' success rates. While there is evidence that "lifestyle" factors influence fertility treatment's success rates, the effect sizes and causal mechanisms underlying the relationships remain unclear and controversial (Koning, Mol, and Dondorp 2017; Maheshwari, Stofberg, and Bhattacharya 2007; Orvieto et al. 2009; Wright et al. 2006). Effect size and causality are commonly employed to criticize BMI-based restrictions (Pandey, Maheshwari, and Bhattacharya 2010; Tremellen, Wilkinson, and Savulescu 2017; Brown 2019). For instance, Tremellen, Wilkinson, and Savulescu (2017) argue that "[w]hile obesity does reduce a woman's chances of having a child from IVF treatment, the magnitude of this reduction is relatively minor" (p. 570). Their conclusion⁸ hinges on the claim that IVF for women with a BMI over 30 is not futile. While the authors do not define "futility" within their discussion, we can reasonably assume that "futility" could be employed to indicate treatments that are certain to be unsuccessful, that is, to not result in a living birth, and treatments that are highly unlikely to be successful, that is, statistically improbable to result in a living birth. If we define "futility" in these terms, then *both* treatments administered to women with a BMI lower than 19 and higher than 30 (and other "lifestyle" factors), as well as women aged above thirty-four should *not* be considered futile. While fertility declines significantly in women aged above thirty-four, fertility treatments in these women cannot be considered "futile" per se. However, unlike BMI-based restrictions, age-based restrictions remain a key factor in fertility treatment provision in the UK as well as in many other countries (Calhaz-Jorge et al. 2020). The concept of "futility" is therefore neither useful for assessing criteria to discriminate access nor to discriminate access simpliciter. In terms of assessing criteria to discriminate access, one would need first to explain what the concept of "futility" stands for and why it tracks (or should track) normatively relevant distinctions. In terms of being an effective discriminating criterion, we contend that if we were to restrict access based on "futility" alone, the resources currently available to fund fertility treatment would not be sufficient, as so many more women would be eligible for treatment than is the case at the moment. For these two reasons, the first objection fails to show that "lifestyle" factors should not replace age in discriminating access to fertility treatment.

A second objection to using “lifestyle” factors to discriminate IVF access—one that we consider more compelling—is that this could increase the emphasis on individual responsibility for one’s own health in devising access to treatment. Such a shift is simultaneously beneficial (e.g., for our epidemiologically healthy thirty-six-year-old woman) and potentially problematic. Focusing on “lifestyle” risks obscuring the reasons why not only the individual, but *individuals like her*, adopts certain lifestyles that result in impoverished health outcomes. Katz (2013) notes that the concept of “lifestyle” has been transformed from focusing on entanglements of structure and agency to capturing a simplistic collection of decontextualized (and often moralized) individual decisions, that is, to smoke or not to smoke. In early social theory, “lifestyle” described a compromise between choices and constraints that were themselves determined by politicoeconomic and sociocultural phenomena. However, “lifestyle” has come to indicate a cluster of individual behaviors and decisions, which are discussed independently from the social circumstances that shape them. These behaviors and decisions are often characterized in negative terms as poor individual choices that contribute to ill health, for example, smoking and eating unhealthy food. The individualization and moralization of “lifestyle” is part of a broader process of “responsibilization” within a broader biopolitics of self-governance, wherein individual citizens are made personally responsible for their health statuses and encouraged to live the “right” types of life to achieve the “right” types of health outcome (see Rose and Lentzos 2017). In a similar vein, Brown (2013) argues that publicly funded interventions aimed at tackling diseases caused by “lifestyle” are often criticized on the grounds that they “reward bad behaviour” (Brown 2013, 695). Such views perpetuate the idea that individuals *should* be considered personally and morally responsible for behaviors that result in poor health outcomes and that such considerations could legitimately have a bearing on rationing decisions in health care (Segall 2007).

A key issue for our discussion is that the “lifestyle” factors in question are typically more common among disadvantaged groups, for example, low socioeconomic status and minority ethnicity groups and contribute to poor health outcomes relative to people from more advantaged groups. Material circumstances; political, social, and cultural environments; occupational status; wealth; education; and other factors greatly influence people’s health outcomes. Lifestyles that contribute to poor health are hence strongly associated with people’s social locations and, often, ethnicity. The epistemic shift from groups to individuals in terms of “lifestyle” is potentially problematic as a discriminating factor to access fertility treatments, for it

overlooks people's broader circumstances and risks further chastising already disadvantaged groups. In other words, the discrimination of treatments based on "lifestyle" characteristics manifests the individualization of that person's political-economic and sociocultural context, increasing the likelihood that disadvantaged groups will be prevented from accessing treatment while advantaged groups gain greater access. Using "lifestyle" factors as criteria to discriminate access risks enacting exclusion based on characteristics such as class and ethnicity. Moving from age discrimination to "lifestyle" discrimination in delineating IVF access would embed this epistemic shift into policy, which could have important performative effects on how people are treated in practice.⁹

As noted, chronological age discrimination is seemingly insensitive to the circumstances of the individual in a manner that could be deemed unfair to the healthy thirty-six-year-old woman who is more likely to conceive than her corresponding epidemiologic subject suggests. This woman might be denied treatment while a less healthy, younger woman is granted access. Conversely, lifestyle-based discrimination may mean that the older woman receives treatment while her younger counterpart, who smokes and is overweight, is not granted access. However, if the older woman's capacity to join a gym and prepare nutritious meals is facilitated by social advantage, then lifestyle-based access criteria serve to exacerbate broader inequalities. Here, disadvantaged groups are benefited by age discrimination, because neither privilege nor disadvantage can alter your date of birth, making chronological age a remarkably egalitarian biosocial variable (though as we will attend to below, the benefits of this broadly egalitarian approach do not hold when one considers gender).

This, in our view, does not get age-based discrimination off the hook nor justify *current* fertility treatment provision. Several CCGs offer services that are significantly below NICE recommendations. Moreover, chronological age can itself be used to problematically individualize sociocultural and political-economic contexts. As with the individualization and decontextualization of "lifestyle" within contemporary biopolitics, the global phenomena of reproductive ageing, whereby the timing of the first child moves further along the lifecourse, is heavily politically, economically, and socioculturally constrained, but risks being construed (and similarly moralized) as a personal choice. Thus, women are often deemed personally and morally responsible for subfertility; their circumstances overlooked in favor of explanations that emphasize personal choice.

In practice, reproductive ageing has been driven by an amalgamation of social transformations, for example, education, contraception, workforce

feminization, family and diversification. These broadly positive developments have reconfigured the contemporary reproductive lifecourse, particularly for more advantaged women in high-income countries, and these processes warrant substantial gerontological attention. For such women, the purported “choice” to have children later in life is heavily structurally determined. Therefore, chronological age restrictions can penalize such women for constraints placed upon them by virtue of their social locations in the same way that “lifestyle” discrimination can penalize disadvantaged women for their social locations. Restricting access to women aged above thirty-five is anachronistic—seemingly more applicable to British women of the 1950s rather than the 2020s.¹⁰ As we have argued, it feeds into misguided individualized depictions of women as irresponsible and blameworthy.

Though not our main focus here, it should be noted that much of the debate regarding age restrictions and IVF focuses on individual women. Both personally and societally, the implications of infertility and limits to fertility-enhancing interventions are equally pertinent to men, yet male fertility is less often at stake in IVF scholarship or policy. Only a few countries legislate male age restrictions to IVF access and rely on men’s age to discriminate access to state-funded fertility treatments. Men’s age limits range between forty-nine and sixty, which are significantly more permissive limits than those typically imposed on women (Calhaz-Jorge et al. 2020). Again, this male permissiveness is well-grounded in robust empirical evidence regarding sex–age–fertility associations, but as we have argued, the robustness of evidence does not preclude its value-ladenness. Sex differences between age–fertility associations render age-based fertility legislation an institutional tool of gender injustice, restricting women far more than men. It focuses bio-legislative attention onto women in a manner that has long garnered feminist critique, casting women as biologically inferior to justify restricting their freedom (Franklin 2013). Hence, while the particular age implications of fertility treatment provision and policy warrant greater critical engagement, there is also considerable scope for reflecting on them while maintaining a critical gaze on broader issues pertaining to gender inequality and discrimination.

Conclusions

We have discussed methodological, social, and normative dimensions of age discrimination in IVF provision. We have traced a critical history of ageism and age discrimination through gerontological scholarship,

highlighting sustained ambiguities and entanglements. Contra earlier definitions of ageism, we have argued that it is analytically useful to distinguish it from age discrimination, especially in the context of age-related research and health policy. We have argued that the ageist component of age-based research lies in assuming age-related similarities and differences beyond age itself. Regarding fertility treatments, age(ism)-related research informs age-discriminated provision, limiting older women's access to IVF. This age discrimination is simultaneously informed by ageist assumptions embedded in research conventions and evidence-based practice aimed at maximizing limited resources.

Given the general aversion to ageism, we have considered whether lifestyle-based discrimination could be more normatively acceptable. While this would benefit certain women, it would represent another form of problematic discrimination, modeled on class rather than age. We view this as a reason to reject a shift from age-based discrimination to lifestyle-based discrimination, which would risk exacerbating existing inequalities in health provision and outcomes. However, we conclude with a caveat: while age discrimination can be a defensible approach to IVF access, it is not unproblematic, irrespective of its relations with ageism. In its current form, it is irreconcilable with the contemporary reproductive lifecourses of affluent women in industrialized countries. These women risk being construed as individually responsible for falling foul of anachronistic IVF governance.

Acknowledgments

We wish to thank Rasmus Hoffmann Birk and Lorenzo Del Savio for their comments on earlier drafts of this article. We are also grateful to two anonymous reviewers for their constructive feedback.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

James Rupert Fletcher  <https://orcid.org/0000-0001-9198-4321>

Notes

1. Studies consistently report women's age to be one of the "strongest" predictors of successfully establishing a pregnancy after IVF treatment—even when age is combined with other variables (van Loendersloot et al. 2010). The most likely explanation for these data is the age-related decline of oocytes quantity and quality (Broekmans, Soules, and Fauser 2009). However, age-associated decline in sperm's volume, motility, and morphology also affects negatively pregnancy outcomes (Johnson et al. 2015).
2. The National Institute of Care Excellence ([2013] 2017) guidelines' *Fertility Problems: Assessment and Treatment* define infertility "in practice" as "the period of time people have been trying to conceive without success after which formal investigation is justified and possible treatment implemented." The World Health Organization relies on a time-sensitive definition of infertility, which states that infertility is "a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse" (Zegers-Hochschild et al. 2009, emphasis added). Such diagnosis does not rule out the possibility of a couple conceiving unassisted. There is evidence of couples who have conceived spontaneously after receiving a diagnosis of infertility (Steures et al. 2006; Pandian, Gibreel, and Bhattacharya 2015). Therefore, we use "subfertility" rather than "infertility" to avoid erroneously suggesting the impossibility of unassisted conception.
3. The use of oocytes from a donor tends to make fertility treatments in older women significantly more successful (Liu et al. 2011). However, we are concerned with IVF provision for autologous treatments. Moreover, egg donation raises several ethical issues concerning the risk of harms to egg providers, so it is often not considered an ethically desirable alternative to autologous IVF.
4. We begin from the assumption that public health care is subject to resource limitations in real-world political economies. We appreciate that this is not beyond contention and that more idealistic possibilities are at least imaginable.
5. We do not discuss whether criteria to access treatment should be based on safety considerations pertaining to the welfare of the future child or the future mother. We are aware that there are ongoing debates on these issues regarding advanced maternal age. However, our discussion focuses on the chances of success of fertility treatment for women accessing it and on whether alternative criteria to age discrimination could inform IVF provision.
6. We appreciate that resources could be distributed differently, that is, more resources could be devoted to fertility treatments rather than other medical treatments or more resources could be devoted to medical treatments rather

than the military. Our argument assumes that (a) IVF provision is constrained by available resources rather than by the attempt to maximize the chances of having a genetically related child for each prospective patient and (b) such resources are likely insufficient to cater for all those who desire fertility treatments.

7. We appreciate that this is an idealized example. In practice, interpersonal interactions between health-care professionals and patients may be characterized by specific gatekeepers subtly impeding access based on a patient's attributes, for example, smoking.
8. Tremellen, Wilkinson, and Savulescu (2017, 570) also contend that age trumps body mass index (BMI) in predicting IVF success rates and that "one could argue from the ethical principle of consistency, that we would be required to withdraw all public funding of IVF treatment for women older than 30 years of age if we are only going to support maximal efficiency outcomes. Certainly the distributive justice argument for not supporting IVF for women older than 43 years of age, a time when IVF treatment does border on futile, is much more valid than withholding IVF treatment for young obese women." See also Brown (2019) on using BMI as an exclusion criterion for IVF.
9. We appreciate that access to fertility treatments, even when such treatments are state-funded, is higher among advantaged women than disadvantaged women (Feinberg et al. 2007; Culley 2009). This is due to various cultural practices and values as well as racism in the fertility industry (Roberts 1997). Whist we consider these views broadly correct, we contend that a shift to "lifestyle" factors would further exacerbate these problematic trends.
10. The restriction of fertility treatments in those aged above thirty-five is at odds with demographic realities given that the average age at childbirth in the UK was 30.6 in 2018, up from 28.5 in 2010, and continues to rise quickly (Clark 2019).

References

- Akande, V. A., C. F. Fleming, L. P. Hunt, S. D. Keay, and J. M. Jenkins. 2002. "Biological versus Chronological Ageing of Oocytes, Distinguishable by Raised FSH Levels in Relation to the Success of IVF Treatment." *Human Reproduction* 17 (8): 2003-2008. doi: 10.1093/humrep/17.8.2003.
- Allan, Sonia, Basak Balaban, Manish Banker, John Buster, Marcos Horton, Kathleen Miller, Edgar Mocanu, et al. 2019. "International Federation of Fertility Societies' Surveillance (IFFS) 2019: Global Trends in Reproductive Policy and Practice, 8th Edition." *Global Reproductive Health* 4 (1): 1-138.
- Anderson, Michael. 1985. "The Emergence of the Modern Life Cycle in Britain." *Social History* 10 (1): 69-87. doi: 10.1080/03071028508567611.

- Berg Brigham, K., B. Cadier, and K. Chevreul. 2013. "The Diversity of Regulation and Public Financing of IVF in Europe and Its Impact on Utilization." *Human Reproduction* 28 (3): 666-75. doi: 10.1093/humrep/des418.
- Broekmans, F. J., M. R. Soules, and B. C. Fauser. 2009. "Ovarian Aging: Mechanisms and Clinical Consequences." *Endocrine Reviews* 30 (5): 465-93. doi: 10.1210/er.2009-0006.
- Brown, Rebecca C. H. 2013. "Moral Responsibility for (Un)Healthy Behaviour." *Journal of Medical Ethics* 39 (11): 695-98. doi: 10.1136/medethics-2012-100774.
- Brown, Rebecca C. H. 2019. "Irresponsibly Infertile? Obesity, Efficiency, and Exclusion from Treatment." *Health Care Analysis* 27 (2): 61-76. doi: 10.1007/s10728-019-00366-w.
- Bunge, Mario. 1999. *Social Science under Debate: A Philosophical Perspective*. Toronto, Canada: University of Toronto Press.
- Butler, Robert N. 1969. "Age-ism: Another Form of Bigotry." *The Gerontologist* 9 (4): 243-46. doi: 10.1093/geront/9.4_Part_1.243.
- Butler, Robert N. 1975. *Why Survive? Being Old in America*. San Francisco, CA: Harper & Row.
- Bytheway, Bill. 1995. *Ageism*. Buckingham, UK: Open University Press.
- Bytheway, Bill. 2005. "Ageism and Age Categorization." *Journal of Social Issues* 61 (2): 361-74. doi: 10.1111/j.1540-4560.2005.00410.x.
- Calhaz-Jorge, C., C. H. De Geyter, M. S. Kupka, C. Wyns, E. Mocanu, T. Motrenko, G. Scaravelli, J. Smeenk, S. Vidakovic, and V. Goossens. 2020. "Survey on ART and IUI: Legislation, Regulation, Funding and Registries in European Countries: The European IVF-monitoring Consortium (EIM) for the European Society of Human Reproduction and Embryology (ESHRE)." *Human Reproduction Open* 2020 (3): (hoz044). doi: 10.1093/hropen/hoz044.
- Clark, Daniel. 2019. "Average Age of Mothers in the UK 2018." Accessed August 7, 2020. *Statista*. <https://www.statista.com/statistics/294590/mother-average-age-of-at-childbirth-england-and-wales/>.
- Connidis, Ingrid Arnet, and Amanda E. Barnett. 2018. *Family Ties and Aging*. Thousand Oaks, CA: Sage.
- Crha, I., D. Hrubá, J. Fiala, P. Ventruba, J. Záková, and M. Petrenko. 2001. "The Outcome of Infertility Treatment by In-vitro Fertilisation in Smoking and Non-smoking Women." *Central European Journal of Public Health* 9 (2): 64-68.
- Cruz, Taylor M. 2017. "The Making of a Population: Challenges, Implications, and Consequences of the Quantification of Social Difference." *Social Science & Medicine* 174 (February): 79-85. doi: 10.1016/j.socscimed.2016.12.025.
- Culley, Lorraine. 2009. "Dominant Narratives and Excluded Voices: Research on Ethnic Differences in Access to Assisted Conception in More Developed

- Societies.” In *Marginalized Reproduction: Ethnicity, Infertility and Reproductive Technologies*, edited by Nicky Hudson, Floor van Rooij, and Lorraine Culley, 17-28. London, UK: Earthscan.
- Dannefer, Dale. 1987. “Aging as Intracohort Differentiation: Accentuation, the Matthew Effect, and the Life Course.” *Sociological Forum* 2 (2): 211-36. doi: 10.1007/BF01124164.
- European Society of Human Reproduction and Embryology (ESHRE). 2018. “More Than 8 Million Babies Born from IVF since the World’s First in 1978.” *Science Daily*, July 3. Accessed August 7, 2020. <https://www.sciencedaily.com/releases/2018/07/180703084127.htm>.
- Feinberg, E. C., F. W. Larsen, R. M. Wah, R. J. Alvero, and A. Y. Armstrong. 2007. “Economics May Not Explain Hispanic Underutilization of Assisted Reproductive Technology Services.” *Fertility and Sterility* 88 (5): 1439-41. doi: 10.1016/j.fertnstert.2007.01.031.
- Fertility Fairness. 2017. “NHS IVF Provision Report 2017.” Fertility Fairness. Accessed August 7, 2020. http://www.fertilityfairness.co.uk/wp-content/uploads/2017/10/FertilityFairness_2017_PBRepor.pdf.
- Franklin, Sarah. 2013. *Biological Relatives: IVF, Stem Cells, and the Future of Kinship*. Durham, NC: Duke University Press.
- Freour, Thomas, Damien Masson, Sophie Mirallie, Miguel Jean, Kalyane Bach, Thomas Dejoie, and Paul Barriere. 2008. “Active Smoking Compromises IVF Outcome and Affects Ovarian Reserve.” *Reproductive BioMedicine Online* 16 (1): 96-102. doi: 10.1016/S1472-6483(10)60561-5.
- Friese, Carrie, Gay Becker, and Robert D. Nachtigall. 2008. “Older Motherhood and the Changing Life Course in the Era of Assisted Reproductive Technologies.” *Journal of Aging Studies* 22 (1): 65-73. doi: 10.1016/j.jaging.2007.05.009.
- Greil, Arthur, Julia McQuillan, and Kathleen Slauson-Blevins. 2011. “The Social Construction of Infertility.” *Sociology Compass* 5 (8): 736-46. doi: 10.1111/j.1751-9020.2011.00397.x.
- Hacking, Ian (Emeritus University Professor), and Tim Hacking. 1990. *The Taming of Chance*. Cambridge, UK: Cambridge University Press.
- Helosvuori, Elina. 2019. “Assembling Viability: The Art of Mundane Embryo Selection in IVF.” *BioSocieties* 14 (1): 1-22. doi: 10.1057/s41292-018-0114-3.
- Higgs, Paul, and Chris Gilleard. 2019. “The Ideology of Ageism versus the Social Imaginary of the Fourth Age: Two Differing Approaches to the Negative Contexts of Old Age.” *Ageing & Society* 40 (8): 1-14. doi: 10.1017/S0144686X19000096.
- Iversen, Thomas Nicolaj, Lars Larsen, and Per Erik Solem. 2009. “A Conceptual Analysis of Ageism.” *Nordic Psychology* 61 (3): 4-22. doi: 10.1027/1901-2276.61.3.4.

- Jasanoff, Sheila, and Ingrid Metzler. 2020. "Borderlands of Life: IVF Embryos and the Law in the United States, United Kingdom, and Germany." *Science, Technology, & Human Values* 45 (6): 1001-37. doi: 10.1177/0162243917753990.
- Johnson, Sheri L., Jessica Dunleavy, Neil J. Gemmell, and Shinichi Nakagawa. 2015. "Consistent Age-dependent Declines in Human Semen Quality: A Systematic Review and Meta-analysis." *Ageing Research Reviews* 19 (January): 22-33. doi: 10.1016/j.arr.2014.10.007.
- Katz, S (2013). Active and successful aging. Lifestyle as a gerontological idea. *Recherches Sociologiques et Anthropologiques*, 44(1): 33-49.
- Klonoff-Cohen, Hillary, Phung Lam-Kruglick, and Cristina Gonzalez. 2003. "Effects of Maternal and Paternal Alcohol Consumption on the Success Rates of In Vitro Fertilization and Gamete Intrafallopian Transfer." *Fertility and Sterility* 79 (2): 330-39. doi: 10.1016/S0015-0282(02)04582-X.
- Koning, Aafke, Ben Willem Mol, and Wybo Dondorp. 2017. "It Is Not Justified to Reject Fertility Treatment Based on Obesity." *Human Reproduction Open* 2017 (2): hox009. doi:10.1093/hropen/hox009.
- Koropecj-Cox, Tanya, Amy Mehraban Pienta, and Tyson H. Brown. 2007. "Women of the 1950s and the "Normative" Life Course: The Implications of Childlessness, Fertility Timing, and Marital Status for Psychological Well-being in Late Midlife." *The International Journal of Aging and Human Development* 64 (4): 299-330. doi: 10.2190/8PTL-P745-58U1-3330.
- Kroløkke, Charlotte, and Filareti Kotsi. 2019. "Pink and Blue: Assemblages of Family Balancing and the Making of Dubai as a Fertility Destination." *Science, Technology, & Human Values* 44 (1): 97-117. doi: 10.1177/0162243918783059.
- Lintsen, A. M. E., P. C. M. Pasker-de Jong, E. J. de Boer, C. W. Burger, C. a. M. Jansen, D. D. M. Braat, and F. E. van Leeuwen. 2005. "Effects of Subfertility Cause, Smoking and Body Weight on the Success Rate of IVF." *Human Reproduction* 20 (7): 1867-75. doi: 10.1093/humrep/deh898.
- Lippert-Rasmussen, Kasper. 2014. *Born Free and Equal? A Philosophical Inquiry into the Nature of Discrimination*. New York: Oxford University Press.
- Liu, Kimberly, Allison Case, Anthony P. Cheung, Sony Sierra, Saleh AlAsiri, Belina Carranza-Mamane, Allison Case, et al. 2011. "Advanced Reproductive Age and Fertility." *Journal of Obstetrics and Gynaecology Canada* 33 (11): 1165-75. doi: 10.1016/S1701-2163(16)35087-3.
- Macnicol, John. 2006. *Age Discrimination: An Historical and Contemporary Analysis*. New York: Cambridge University Press.
- Maheshwari, A., Lawrize Stofberg, and S. Bhattacharya. 2007. "Effect of Overweight and Obesity on Assisted Reproductive Technology—A Systematic Review." *Human Reproduction Update* 13 (5): 433-44. doi: 10.1093/humupd/dmm017.

- Nelson, E. Anne, and Dale Dannefer. 1992. "Aged Heterogeneity: Fact or Fiction? The Fate of Diversity in Gerontological Research." *The Gerontologist* 32 (1): 17-23. doi: 10.1093/geront/32.1.17.
- NICE (National Institute for Health and Care Excellence). 2013. "Fertility Problems: Assessment and Treatment. Clinical Guideline [CG156]." National Institute for Health and Care Excellence. Accessed August 7, 2020. <https://www.nice.org.uk/guidance/cg156>.
- Orvieto, Raoul, Simion Meltcer, Ravit Nahum, Jacob Rabinson, Eyal Y. Anteby, and Jacob Ashkenazi. 2009. "The Influence of Body Mass Index on In Vitro Fertilization Outcome." *International Journal of Gynecology & Obstetrics* 104 (1): 53-55. doi: 10.1016/j.ijgo.2008.08.012.
- Pandey, S., A. Maheshwari, and S. Bhattacharya. 2010. "Should Access to Fertility Treatment Be Determined by Female Body Mass Index?" *Human Reproduction* 25 (4): 815-20. doi: 10.1093/humrep/deq013.
- Pandian, Zabeena, Ahmed Gibreel, and Siladitya Bhattacharya. 2015. "In Vitro Fertilisation for Unexplained Subfertility." *Cochrane Database of Systematic Reviews* (11). doi: 10.1002/14651858.CD003357.pub4.
- Pidd, Helen. 2018. "Couples Being Denied IVF on NHS over Man's Age or Weight." *The Guardian*, October 29. Accessed August 7, 2020. <http://www.theguardian.com/society/2018/oct/29/couples-being-denied-ivf-nhs-mans-age-or-weight>.
- Roberts, Dorothy E. 1997. *Killing the Black Body. Race, Reproduction and the Meaning of Liberty*. New York: Pantheon.
- Rose, Nikolas, and Filippa. Lentzos (2017). Making us resilient: Responsible citizens for uncertain times. In *Competing responsibilities: The ethics and politics of contemporary life* edited by Trnka Susanna and Trundle Catherine, 27-48. Durham, NC: Duke University Press.
- Rossi, Brooke V., Katharine F. Berry, Mark D. Hornstein, Daniel W. Cramer, Shelley Ehrlich, and Stacey A. Missmer. 2011. "Effect of Alcohol Consumption on In Vitro Fertilization." *Obstetrics and Gynecology* 117 (1): 136-42. doi: 10.1097/AOG.0b013e31820090e1.
- Sabat, Steven R. 2001. *The Experience of Alzheimer's: Life through a Tangled Veil*. Oxford, UK: Blackwell.
- Sabatini, L., A. Zosmer, E. M. Hennessy, A. Tozer, and T. Al-Shawaf. 2008. "Relevance of Basal Serum FSH to IVF Outcome Varies with Patient Age." *Reproductive BioMedicine Online* 17 (1): 10-19. doi: 10.1016/S1472-6483(10)60287-8.
- Salter, Brian. 2021. "Markets, Cultures, and the Politics of Value: The Case of Assisted Reproductive Technology." *Science, Technology, & Human Values*. doi: 10.1177/0162243921991929.

- Segall, Shlomi. 2007. "In Solidarity with the Imprudent: A Defense of Luck Egalitarianism." *Social Theory and Practice* 33 (2): 177-98. doi: 10.5840/soctheorpract200733224.
- Sharma, Vinay, Victoria Allgar, and M Rajkhowa. 2002. "Factors Influencing the Cumulative Conception Rate and Discontinuation of In Vitro Fertilization Treatment for Infertility." *Fertility and Sterility* 78 (1): 40-46. doi: 10.1016/S0015-0282(02)03160-6.
- Steures, Pieternel, Jan Willem van der Steeg, Peter G. A. Hompes, J. Dik F. Habbema, Marinus J. C. Eijkemans, Frank J. Broekmans, Harold R. Verhoeve, Patrick M. M. Bossuyt, Fulco van der Veen, and Ben W. J. Mol. 2006. "Intrauterine Insemination with Controlled Ovarian Hyperstimulation versus Expectant Management for Couples with Unexplained Subfertility and an Intermediate Prognosis: A Randomised Clinical Trial." *The Lancet* 368 (9531): 216-21. doi: 10.1016/S0140-6736(06)69042-9.
- te Velde, Egbert R., and Peter L. Pearson. 2002. "The Variability of Female Reproductive Ageing." *Human Reproduction Update* 8 (2): 141-54. doi: 10.1093/humupd/8.2.141.
- The National Institute of Care Excellence. (2013) 2017. Fertility problems: assessment and treatment. <https://www.nice.org.uk/guidance/cg156/resources/fertility-problems-assessment-and-treatment-pdf-35109634660549>
- Tremellen, Kelton, Dominic Wilkinson, and Julian Savulescu. 2017. "Should Obese Women's Access to Assisted Fertility Treatment Be Limited? A Scientific and Ethical Analysis." *Australian and New Zealand Journal of Obstetrics and Gynaecology* 57 (5): 569-74. doi: 10.1111/ajo.12600.
- van Loendersloot, L. L., M. van Wely, J. Limpens, P. M. M. Bossuyt, S. Repping, and F. van der Veen. 2010. "Predictive Factors in in Vitro Fertilization (IVF): A Systematic Review and Meta-analysis." *Human Reproduction Update* 16 (6): 577-89. doi: 10.1093/humupd/dmq015.
- Wright, K. P., J. R. Trimarchi, J. Allsworth, and D. Keefe. 2006. "The Effect of Female Tobacco Smoking on IVF Outcomes." *Human Reproduction* 21 (11): 2930-34. doi: 10.1093/humrep/del269.
- Ylännö, Virpi, and Pirjo Nikander. 2019. "Being an 'Older Parent': Chrononormativity and Practices of Stage of Life Categorisation." *Text & Talk* 39 (4): 465-87. doi: 10.1515/text-2019-2036.
- Zegers-Hochschild, F., G. D. Adamson, J. de Mouzon, O. Ishihara, R. Mansour, K. Nygren, E. Sullivan, and S. Vanderpoel. 2009. "International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO) Revised Glossary of ART Terminology." *Fertility and Sterility* 92 (5): 1520-24. doi: 10.1016/j.fertnstert.2009.09.009.

Author Biographies

Giulia Cavaliere is a lecturer in professional practice, values and ethics at Lancaster University Medical School. Prior to joining Lancaster University, she completed a PhD in bioethics and society at the Department of Global Health and Social Medicine at King's College London. Her doctoral research was funded via a Wellcome Trust PhD Studentship and focused on the ethics and politics of assisted reproduction. From September 2021, she will be working in the Centre of Medical Law and Ethics at King's College London, where she has been appointed Lecturer in Medical Law and Medical Ethics.

James Rupert Fletcher is a teaching fellow in Global Health and Social Medicine at King's College London. His major research interests span the sociologies of aging and dementia. From September 2021, he will be a Wellcome Trust Fellow in the Department of Sociology at the University of Manchester.