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OPINION

Protecting life in a time of war

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Abstract
Despite centuries of lessons from history, war endures. Across Earth, during nearly every year from the beginning of the twentieth century to present day, over 30 wars have been fought resulting in 187 million casualties, excluding the most recent conflict, which is the impetus for this essay (Timeline of 20th and 21st century wars). We are, sadly, a war-mongering people. The word "war" word infiltrates our vernacular, e.g., the war on poverty, on drugs, on cancer, on COVID, and, apropos, on terror. How did rational approaches to disagreement and conflict evade the world's progress? Reproductive physicians and scientists are dedicated to safeguard lives and build families. Violence is antithetical to our mission as professionals, and moral integrity as humans. We are deeply concerned for, and stand in unity with, our Ukrainian colleagues—the embryologists, scientists, OBGYN and REI physicians, infertility patients, and all people under siege. Reproductive health services for Ukrainians (as with many other war-torn regions) have collapsed. Deeply disturbing reports have emerged that cite civilian hospitals (including maternity centers) being targeted. Liquid nitrogen supplies are scarce. Pregnant mothers and gestational carriers are at emergent risk of delivering in extremely harsh conditions, cold underground bunkers and refugee queues.

Keywords Ukraine · Russia · War · Sanctions · ART · Assisted reproductive technologies

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> "I know not with what weapons World War III will be fought, but World War IV will be fought with sticks and stones." – Albert Einstein

Despite centuries of lessons from history, war endures. Across Earth, during nearly every year from the beginning of the 20th century to present day, over 30 wars have been fought resulting in 187 million casualties, excluding the most recent conflict, which is the impetus for this essay [1]. We are, sadly, a war-mongering people. The word "war" word infiltrates our vernacular, e.g., the war on poverty, on drugs, on cancer, on COVID, and, apropos, on terror. How did rational approaches to disagreement and conflict evade the world's progress?

Reproductive physicians and scientists are dedicated to the causes of safeguarding lives and building families. Violence is antithetical to our mission as professionals, and moral integrity as humans. We are deeply concerned for, and stand in unity with, our Ukrainian colleagues—the embryologists, scientists, OBGYN and REI physicians, infertility patients, and all people under siege. Reproductive

health services for Ukrainians (as with many other war-torn regions) have collapsed. Deeply disturbing reports have emerged that cite civilian hospitals (including maternity centers) being targeted. Liquid nitrogen supplies are scarce. Pregnant mothers and gestational carriers are at emergent risk of delivering in extremely harsh conditions; cold underground bunkers and refugee queues.

While admittedly paling in comparison to soldiers in time of war, physicians and scientists are well known for answering and exceeding the call of duty in times of medical crises. As it pertains to reproductive healthcare, dedicated professionals have slept at IVF clinics, provided gas to ailing generators, and moved embryo storage tanks in response to extreme weather events and the recent COVID-19 global pandemic. As the guardians of life, many reproductive scientists feel a sacred duty and moral obligation to care for "our" embryos.

Natural fertility of men and women can be impacted by war through physical and psychological trauma, although chemical warfare can also play a role, e.g., the toxin sulfur mustard on sperm quality (Arch Iran Med. 2020 Apr 1;23(4Suppl1):S16-S22.). Women are at increased risk of menstrual cycle dysfunction. Adding to the reproductive healthcare tragedy, Ukraine is a booming surrogacy hub, home to the hopes and dreams of thousands of foreigners who enter into surrogacy arrangements there. It was only recently that the world learned the true scale of third-party reproductive services during the COVID-19 pandemic induced border closures, when hundreds of infants were stranded inside Ukraine, unable to be retrieved by their intended parents. To confront the current devastation, one major surrogacy agency has secured a bomb shelter to protect parents, surrogates, and newborns for an expected 200 births in the next three months. Consequently, surrogates are forced into precarious and life-threatening decisions: remain with the intended families, fight for their country, or flee and move to safety for the sake of the baby they carry and necessary employment.

Governments must ensure the medical profession can care freely for patients without violence. The right to healthcare exists even in armed conflicts, where the effects of war on the civilian population should be mitigated through the continuity of health services, e.g., the prevention and treatment of infectious diseases, particularly SARS-CoV-2 infection, but also for reproductive and maternity care, who are among the most vulnerable patients [2]. Anecdotal reports reveal heroic efforts by our colleagues, self-sacrificing embryologists protecting and guiding dozens of dewars containing thousands of eggs and embryos, and the hopes and dreams of families, over international borders to relative safety, albeit for now.

What role, if any, can an expression of support and rejection of violence from an academic journal play in a war? Science is often accomplished through state funding, and pays the price by orienting its work to the interest of the state. The scientific knowledge produced is itself neutral, but the use of science and technology is the work of politicians through policies. Many sanctions (sports, travel, banking, etc.) are aimed at mobilizing the public to apply greater pressure on governments. Academic sanctions are defined as "intentional denial of scholarly exchange for political reasons," and they have been used previously, for example, in South Africa during apartheid.

Ideally, we operate under the principle that "science knows no borders." Scientists speak the same language, one that transcends cultures and ideologies. Sanctions tend to affect whether scientists can obtain a visa to travel or transfer funds. Should publications also play a role in curtailing the scientific output of a country? Particularly if the faculty and researchers, and centers are mainly government funded? In other words, what can we, in our small corner of the world, do to help apply pressure with the intended effect of righting this grievous injustice quickly?

The JARG editorial board promptly agreed to expedite our views over this tragedy. As for our community of JARG article reviewers, chillingly, those in the Ukraine have begun to decline review requests, citing unsafe conditions and lack of basic utilities. Individual reviewers elsewhere have asked if they should reject articles by Russian authors. At the time of this writing, the Springer family of journals has taken the stance that the role of Journals is to advance science and improve outcomes for the benefit of society. Restrictions on scientific publishing harm individual researchers who may have different political views from their governments. Currently, no government sanctions are in place which impact the handling of submitted manuscripts by Russian authors. Our review process will continue to follow "Fair Play" practices, whereby scientific work should be evaluated for its intellectual content, without regard to race, gender, sexual orientation, religious beliefs, ethnic origin, citizenship, or political philosophy of the authors. However, in the past, some journals have asked US editors and reviewers not to handle manuscripts with, for example, Iranian co-authors employed by the Government of Iran, in response to its pursuit of nuclear technology [3]. The editorial board of *Journal of Molecular Structure* has decided to no longer consider manuscripts authored by scientists working at institutions in Russia, amid a global outpouring of support for Ukrainian scientists and condemnation of Russia. Research organizations worldwide are severing ties with Russia, i.e., ceasing funding and resources, ending collaborations with their scientists, canceling joint scientific events, and announcing a moratorium on no new collaborations [4]. The European Society of Embryology and Human Reproduction announced its dissociation from Russia and Belarus [5].

The outcomes of this war will, without exaggeration, irrevocably damage the healthcare structure and people of Ukraine. The blatant disregard to the rights of those deserving of healthcare focuses attention to the most immediate impact this is having on the patients and practitioners of ART. Our thoughts and prayers are with the myriad victims of this heinous event.

"If we don't end war, war will end us." – H.G. Wells

Declarations

Conflict of interest The authors declare no competing interests.

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