

The European Journal of Contraception & Reproductive Health Care

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/iejc20>

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To cite this article: Jan Greguš & John Guillebaud (2020): Doctors and overpopulation 48 years later: a second notice, *The European Journal of Contraception & Reproductive Health Care*

To link to this article: <https://doi.org/10.1080/13625187.2020.1821356>



Published online: 12 Oct 2020.



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COMMENT



Doctors and overpopulation 48 years later: a second notice

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ABSTRACT

Overpopulation exacerbates environmental and health problems, from climate change to biodiversity loss and pandemics. It is the 'upstream' driver of numerous existential threats. Addressing this compassionately – always – should be axiomatic for doctors. Our profession, by dramatically reducing death-rates since the 1800s while birth-rates remained high, sadly bears – unintendedly – some responsibility for the increase: one billion then, eight billion looming. Therefore, *as doctors*, we must surely be uniquely motivated to:

1. be involved in rights-based policies and services with unbroken supply chains ensuring optimal contraceptive care being *available* to all couples worldwide,
2. remove well-known tangible (contraceptives unavailable) and intangible (cultural, religious and mis-informational) barriers to women's choice to *access* family planning everywhere, while achieving full gender equity, especially in education,
3. warn how overpopulation risks all planetary life, through optimal environmental education both for colleagues and the public, and
4. campaign for a *maximum* of two children (replacement fertility – or less) on principle.

Doctors and Overpopulation was established in 1972. Before and since, this issue has become taboo, still affecting many doctors and even people claiming to care passionately about a sustainable future: the environmental NGOs. Their silence implies conservation goals are achievable regardless of human numbers, while many studies show they are not. It is time for an open discussion about this taboo. Therefore we, concerned doctors of 2020, reiterate here the doctors' 48-year long *cri de Coeur*.

ARTICLE HISTORY

Received 31 July 2020

Revised 3 September 2020

Accepted 5 September 2020

KEYWORDS

Overpopulation; population growth; pandemics; environmental degradation; climate change; women's health and rights; family planning; contraception

Introduction

Humanity is facing unprecedented population growth, as has never before occurred through recorded history. The overpopulation caused by it has important implications both for humans and the planet Earth and threatens both our existence and that of the planet. In 1972, the organisation **Doctors and Overpopulation** was established by a Statement, to which one of us (JG) was a signatory, that was published simultaneously in the **British Medical Journal (BMJ)** and in the **Lancet**. ... 'It is right that we as doctors should be especially concerned about the world population crisis. In the first place we bear some responsibility for its genesis, because it was due to our efforts that 'the captains of the men of death' were slain, and this was a major factor in producing the imbalance between birth rates and death rates. Secondly, sheer overcrowding in cities with its attendant pollution is a direct threat to the mental and physical wellbeing of our patients. Finally, doctors, as an informed and highly educated section of the community, are in a particularly strong position to influence society on this all-important topic' [1]. Even though this organisation exists no longer, their message remains fully evidence-based and even more urgent than it was then.

World population prospects

A Rapid Population Growth

Population growth has been studied by the **Population Division of the Department of Economic and Social Affairs (DESA) of the United Nations Secretariat**, which publishes **World Population Prospects** once every two years. This document presents revised demographic data of the populations of all the world's countries, as well as projections for the future. These projections are used by researchers, international organisations and governments for planning, social and health research, monitoring development goals, and as inputs to other forecasting models such as those used for predicting climate change and its impact [2].

In June 2019, the 26th Revision of the **World Population Prospects** was released [3]. According to this document, the world's population reached **7.7 billion in mid-2019**, which means the world has added one billion people since 2007 and two billion since 1994 [3]. Hence the human population has grown by about one billion people every 12 years. It is projected with certainty to rise further, even though the rate of growth will be slower than in the recent years. In 1965-1970, the world's population was growing by 2.10% per year. Today, it is increasing by 1.10%

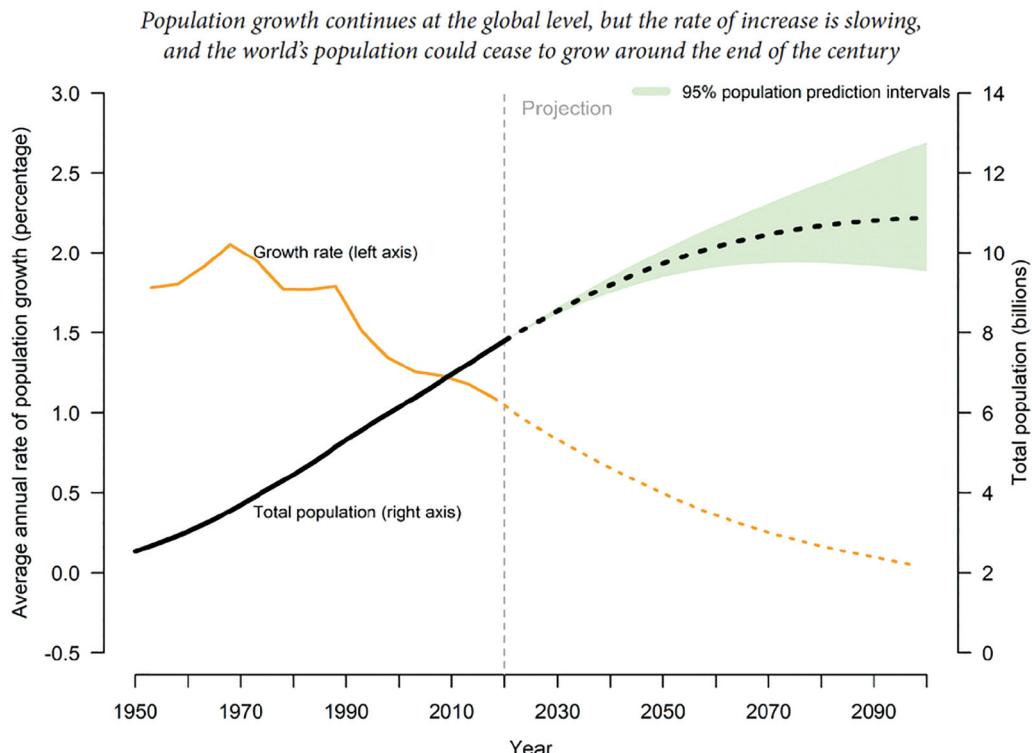


Figure 1. Population size and annual growth rate for the world: estimates, 1950–2020, and medium-variant projection with 95 per cent prediction intervals, 2020–2100. Source: United Nations, World Population Prospects 2019.

per year, yet because of the now vastly greater base number this means **over 80 million people every year** [3], **more than 219,000 people every day, or 9130 people every hour, are being added to the planet Earth**.

The UN's median projection is for world population to increase until the end of the 21st century even though fertility levels decline. In the 2019 Revision **the human population is projected to reach 8.5 billion in 2030, 9.7 billion in 2050, and 10.9 billion in 2100** [3]. Whereas there is inherent uncertainty in all projections, the document concludes that, **with a certainty of 95%, the human population will be between 8.5 and 8.6 billion in 2030, between 9.4 and 10.1 billion in 2050, and between 9.4 and 12.7 billion people in 2100** [3] (Figure 1).

The sub-Saharan problem

More than 50% of anticipated growth in the global population between now and 2050 is expected to happen in Sub-Saharan Africa. Of the increment of 2.0 billion expected between 2019 and 2050, 1.05 billion will be there. Asia is expected to be the second-largest contributor to this future growth, with an addition of over 505 million people between 2019 and 2050. The remaining world regions will not make a significant contribution to population growth, though migration will occur on an increasing scale. **After 2050 Sub-Saharan Africa is expected, unless mortality greatly increases due to probable famines, pandemics and violence, to continue the main contributor to global population growth** [3] (Figure 2). As a result, that region's share of global population, which was 14% in 2019, is projected to grow to almost 22% in 2050 and could reach almost 35% in 2100.

Though in recent years total fertility rates (TFRs, equating approximately to the number of births per woman)

have declined in all world regions, they still remain high in Sub-Saharan Africa, falling from 6.3 births per woman in 1990 to 4.6 in 2019 [3]. **Of the 47 countries with the highest fertility levels, 32 are in Sub-Saharan Africa. Between 2019 and 2050, the population of 18 of these least developed countries is projected to reach at least double their current size** [3].

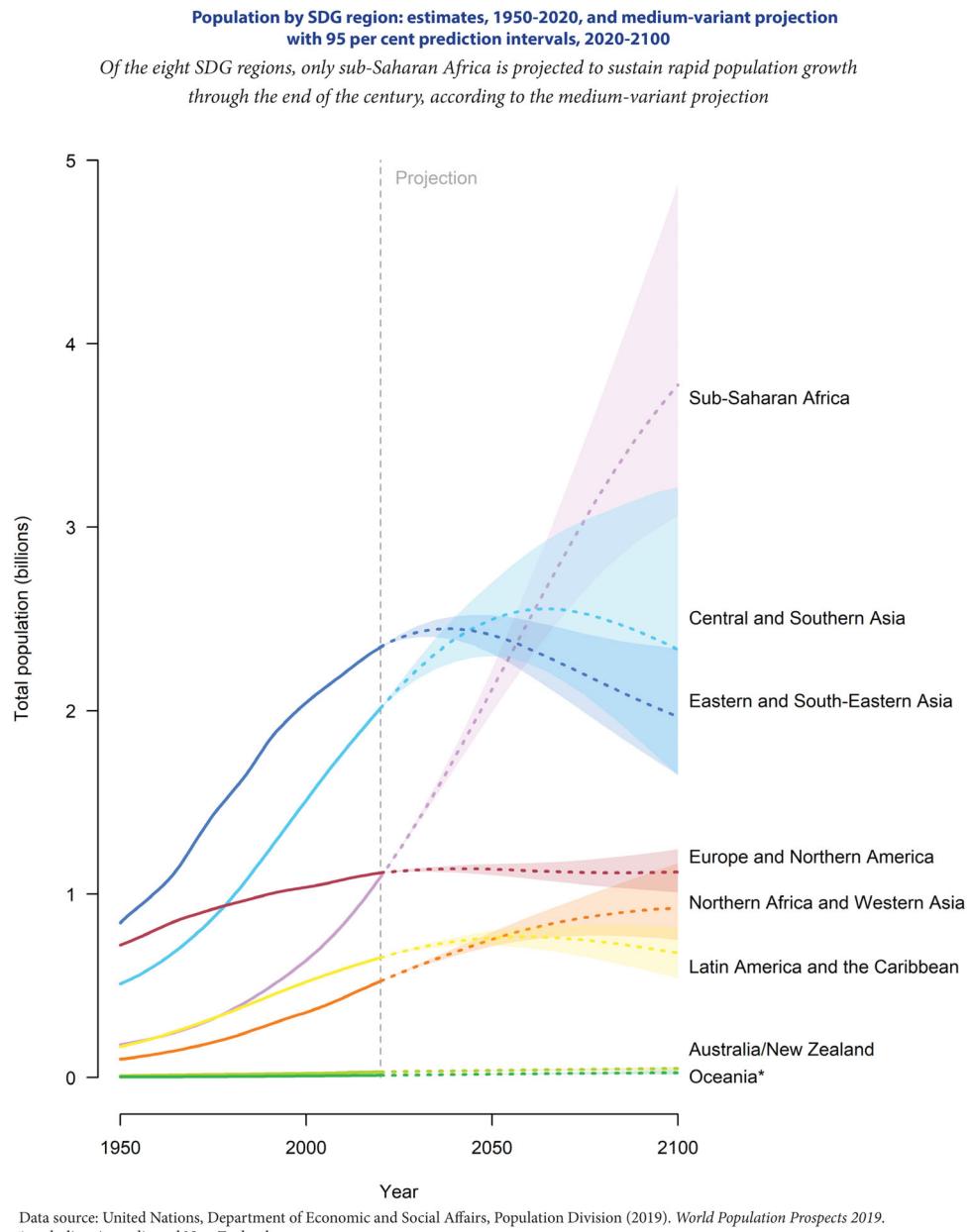
Nigeria's situation is the most unsustainable. Its population, which was 37 million in 1950, is in 2020 at least 201 million, and is projected to reach 400 million in 2050. By then surpassing the United States, it is expected to become the third most populous country in the world after India and China. Indeed by 2100, the population estimate for Nigeria is 733 million [3] outnumbering Europe as projected for 2100.

These increases in human numbers are of greatest concern because of the enormous pressure on the Natural World.

Scientists' warnings to humanity

World Scientists' Warning to Humanity

In 1992, 1575 of the world's most prominent scientists (including 99 of the 196 living Nobel laureates) signed a document ***World Scientists' Warning to Humanity*** [4], which was sent to all governments and their leaders. Among other things it unequivocally stated that '*Pressures resulting from unrestrained population growth put demands on the natural world that can overwhelm any efforts to achieve a sustainable future. If we are to halt the destruction of our environment, we must accept limits to that growth*' [4] ... ***'We must stabilise population. This is possible only ... with the adoption of effective, voluntary family planning'*** [4], and ***'We must ensure sexual equality, and***



Data source: United Nations, Department of Economic and Social Affairs, Population Division (2019). *World Population Prospects 2019*.
 * excluding Australia and New Zealand

Figure 2. Population by SDG region: estimates, 1950–2020, and medium-variant projection with 95 per cent prediction intervals, 2020–2100.
 Source: United Nations, World Population Prospects 2019.

guarantee women control over their own reproductive decisions [4]. There was also a call that 'Developed nations have the obligation to provide aid and support to developing nations' and 'Acting on this recognition is not altruism, but enlightened self-interest: whether industrialised or not, we all have but one lifeboat. No nation can escape from injury when global biological systems are damaged. No nation can escape from conflicts over increasingly scarce resources. In addition, environmental and economic instabilities will cause mass migrations with incalculable consequences for developed and undeveloped nations alike' [4].

World Scientists' Warning to Humanity: A Second Notice

25 years later, in 2017, the **Alliance of World Scientists** led by Professor of Ecology, William J. Ripple, published the **World Scientists' Warning to Humanity: A Second Notice** in **BioScience** [5]. Over 15,000 scientists from 184 countries were signatories to: '**Humanity has failed to make**

sufficient progress in solving these foreseen environmental challenges, and alarmingly, most of them are getting far worse' [5].

Alarming findings were detailed including, *inter alia*: 'Especially troubling is the current trajectory of climate change.... Coastal dead zones which are mainly caused by fertilizer runoff and fossil-fuel use, are killing large swaths of marine life... The world's forests are crucial for conserving carbon, biodiversity, and freshwater. Between 1990 and 2015, total forest area decreased from 4,128 to 3,999 million ha, a net loss of 129 million ha which is approximately the size of South Africa. Forest loss has been greatest in developing tropical countries where forests are now commonly converted to agriculture uses.' [5] (Figure 3).

'Per capita freshwater availability is less than half of levels of the early 1960s with many people around the world suffering from a lack of fresh clean water. This decrease in available water is nearly all due to the accelerated pace of human population growth.' [5]

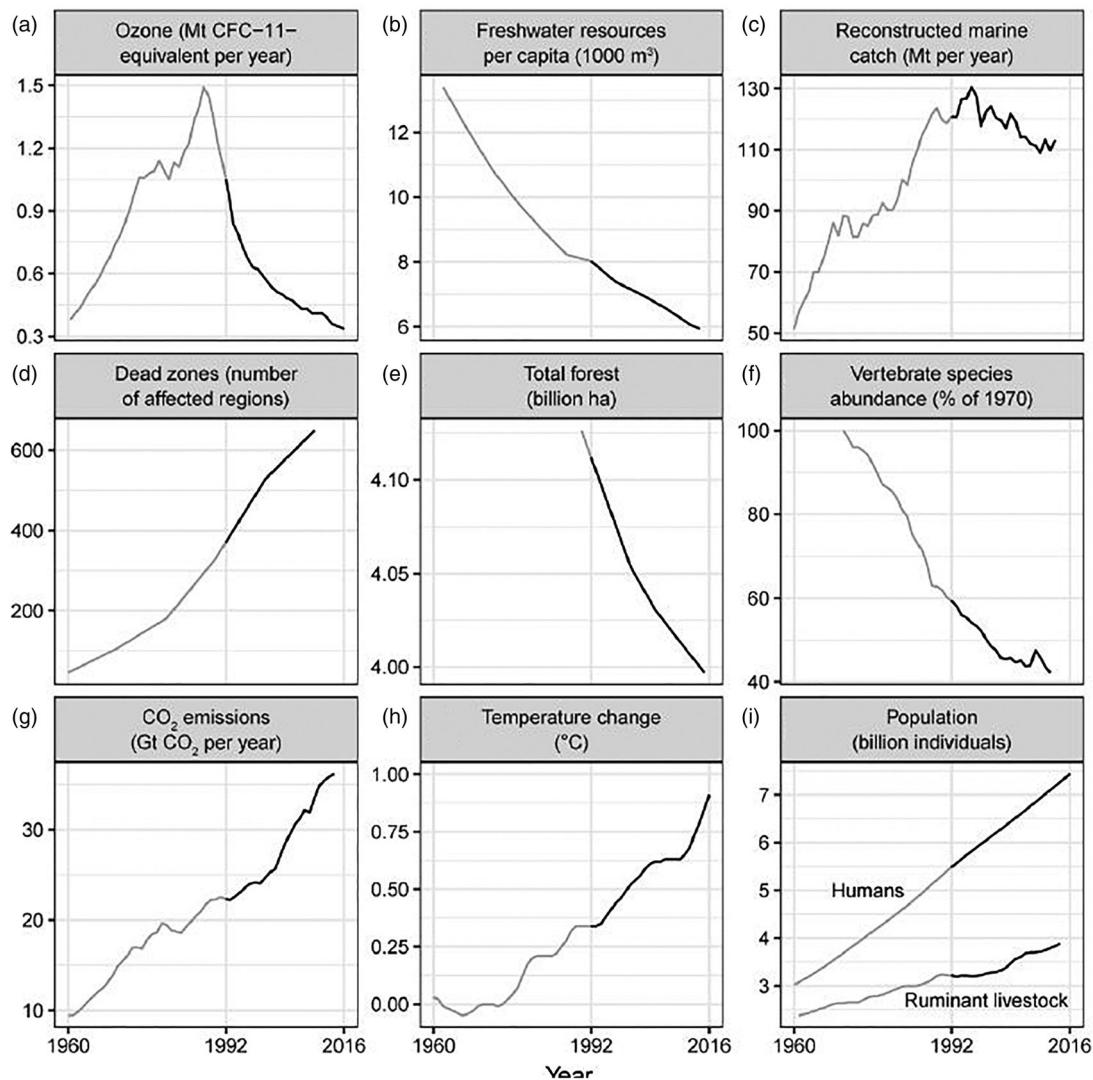


Figure 3. World Scientists' Warning 1992+25. The years before and after the 1992 scientists' warning are shown as gray and black lines, respectively. The Figure comes, with permission, from Figure 1 of Reference 5, where there are also amplifying footnotes [5]. Panel a. is of interest as the solitary 'good news' graphic, environmentally, demonstrating what can be done. Source: World Scientists' Warning to Humanity: A Second Notice.

The Scientists' Warning of 2017 describes vividly the mass species extinction in progress, the sixth in the planet's history, but the first caused by a single species. Biodiversity is vanishing at an alarming rate. Between 1992 and 2017, the populations of vertebrate species (i.e., fish, amphibians, reptiles, birds, and mammals) declined by 29%, moreover by 58% between 1970 and 2012 [5]. Populations of insects that are crucial for pollination, decomposition of biological waste and as essential links of the food chain are rapidly collapsing: two-thirds of observed insect populations had fallen by 2014 to the half of their former numbers [6]. On the other hand, and relevantly, 'the human population increased by 35.5%' and the 'ruminant population (domestic cattle, sheep, goats, and buffaloes)' ... which has its own set of major environmental and climate impacts, has been increasing in recent decades to approximately 4 billion individuals on Earth, an increase of 20.5% [5].

The **World Scientists' Warning of 2017** states forthrightly that: '**we are jeopardising our future by not reigning in our intense but geographically and demographically uneven material consumption and by not perceiving continued rapid population growth as a**

primary driver behind many ecological and even societal threats' [5]. There is a call for major changes in public policy and state with clarity that '*It is also time to re-examine and change our individual behaviours, including limiting our own reproduction (ideally to replacement level at most)*' – this being when two adults have just two children that replace them – '*and drastically diminishing our per capita consumption of fossil fuels, meat, and other resources*'.

The 2017 Warning also observes that '**rapid decline in fertility rates in many regions (was) attributable to investments in girls' and women's education**', and hence calls for '**further reducing fertility rates by ensuring that women and men have access to education and voluntary family planning services, especially where such resources are still lacking**' [5].

On World Population Day 2018, the above warnings were endorsed by the world's seven most active population NGOs. Noting that '*hard-won progress in human rights and social justice is at risk*', all signatories were '*committed to the goal of a sustainable world population achieved through ethical, humane and non-coercive means that fully respect human rights*' [7].

Scientists' Warning of a Climate Emergency

In November 2019, the **Alliance of World Scientists** released a further paper **Scientists' Warning of a Climate Emergency** [8]. More than 11,000 scientists from around the world signed the publication which warns of '*untold human suffering*' unless governments take urgent action to tackle the climate crisis [8]. The statement, which received some media coverage, highlights that '**economic and population growth are among the most important drivers of increases in CO₂ emissions from fossil fuel combustion**' [8]. The authors therefore call for six critical and interrelated steps relating to energy, short-lived pollutants, nature, food, economy, and population to avert the worst effects of climate change.

This Warning continues: '*Still increasing by roughly 80 million people per year, the world population must be stabilized—and, ideally, gradually reduced—within a framework that ensures social integrity. There are proven and effective policies that strengthen human rights while lowering fertility rates and lessening the impacts of population growth on emissions and biodiversity loss. These policies make family-planning services available to all people, remove barriers to their access and achieve full gender equity, including primary and secondary education as a global norm for all, especially girls and young women*' [8].

The warning by scientists that pandemics are overpopulation-related

Though not specifically mentioned when the 2017 Scientists'Warning declared '**we are jeopardising our future**', there can be no doubt that the Covid-19 pandemic had its roots in ecological disruption and overpopulation [9]. Most current commentators have not made the connection, it is not even 'on their radar'. Yet it is hardly unexpected that zoonotic disease viruses, being obligate intra-cellular parasites, would now and *repeatedly* utilise the vast 'culture medium' presented by human flesh: our huge collective biomass [10]. Pandemics are in truth another symptom of *the existential threat to all life resulting from an excess of human life* [11,12].

The roots of overpopulation

The first component of population growth results from **mortality decline**. A decline of mortality rates that is globally projected, even in developing countries, is desirable [13]. This trend is positive and any bias in the opposite direction to curb population growth would be unacceptable.

The second component results from **population momentum**. This momentum results from a 'population bulge' of young people born while birth-rates were high – now entering into reproductive age, or the **reproductive pool** [13]. In other words: **the population is not growing because people are reproducing more, but because more people are present to reproduce**. The population will keep growing until the number of people leaving the reproductive pool is bigger than the number of people entering it. In developing countries, the populations are young, so even when fertility rates drop and the current generation of parents adopt a **small family norm**, the

number of people will continue to grow [13,14]. **This will be responsible for about one half of the population growth in this century** [13].

The third component are social and cultural factors and myths affecting **wanted fertility** [13,15].

The fourth component results from **coerced motherhood** of women who have no other choice in life beyond childbearing, especially in societies or countries which limit, suppress or do not accept women's rights and freedom of choice [13].

The fifth component results from **unwanted fertility** [13], which are pregnancies that occur at times when women do not want to get pregnant – either sooner than they wish, or when they do not wish any (or any more) children. **Currently, this component makes up globally nearly 41% of all pregnancies (some 86 million out of a total 208 million pregnancies a year)** [16].

The last three components can all be targeted, wisely and compassionately, to humanely curb population growth.

Searching solutions to overpopulation

Two basic groups of solutions can be distinguished.

Restrictive measures

The first group of 'solutions' are reprehensible measures, such as forced sterilisation performed in the 1970s in India and some components of the '*One Child Policy*' introduced since the late 1970s in China. **To date these have not been necessary even when applied and have done much damage to perceptions of the well-meant struggle with population growth.**

Positive measures

The second group of measures is education, both generally and more specifically about overpopulation, sexual and reproductive health, and accessibility to family planning methods and services. There is a vast though much neglected literature on how education and accessible family planning methods and services help to reduce human overpopulation. Nevertheless, the availability and full accessibility of these methods is important for another reason: it is a fundamental human right that people can freely regulate the number of their children and spacing between them, just as children have the right to be born as wanted children. This has been repeatedly established in international conferences and treaties [17,18].

World conferences on population

The Cairo conference

The *World Population Conference* held in Bucharest in 1974 initiated the slogan that '*Development is the best contraceptive*' and it was reinforced at the *International Conference on Population* held in Mexico in 1984. The most influential of the conferences was the ***International Conference on Population and Development*** (ICPD) held in Cairo in 1994. This still unfortunately failed to articulate the threat of

unremitting population growth on a finite planet, but did acknowledge the importance of family planning within and as well as development, while upholding the slogan that 'Women are the solution' and that 'The universal prescription which women need is power' [14]. Conclusions of the Cairo conference were:

- that women need to be given more rights and power to be able to make their own life decisions and crucially in their reproductive lives;
- that women must be free from coerced or excessive childbearing; and
- that **childbearing needs to become a women's personal choice, and not her obligation or a matter of chance (i.e., children by choice, not by chance).**

For this to happen, girls' and women's education is of vital importance [14]. The **International Federation of Gynaecology and Obstetrics (FIGO)** agreed on the conclusions of Cairo. For instance, in the 2017 document **Rights-Based Approach to Women's Health**, it states that people 'have the right to decide freely and responsibly on the number and spacing of children and have access to the information, education, and means to enable them to exercise these rights' [19].

The Nairobi conference

In November 2019, the **Nairobi Summit** (ICPD25) was intended as the 25th anniversary of the ICPD at Cairo and as a celebration of the ICPD **Programme of Action** which set out to empower women and girls for their sake as much as for the benefit of their families, communities and nations. In Nairobi, political delegations and international organisations reaffirmed their support for the call for women's sexual and reproductive health and rights to take centre stage in national and global development efforts. Continuing the Cairo emphasis, not to focus on population targets, the 2019 program put the rights, needs and aspirations of individual human beings at the centre of sustainable development [20]. However, it was concluded: 'population growth in 69 countries with high priority needs for family planning has resulted in a rise in the absolute number of women with unmet need from 132 million in 1994 to 143 million in 2019' [20] and hence that '**increasing access to quality, rights-based contraceptive care is essential in empowering women to make informed decisions about their sexual and reproductive health**' [20].

A new document, **the Nairobi Statement on ICPD25: Accelerating the Promise** was issued. It called for intensification of efforts for the full, effective and accelerated implementation and funding of the ICPD Programme of Action and Agenda 2030 for Sustainable Development [18]. This was supported by the **FIGO Response to the Nairobi Statement**: 'FIGO welcomes the Nairobi Statement of ICPD25: Accelerating the Promise, and looks forward to working with partners and fellow women' health champions to turn these commitments into concrete progress and ensure rights and choices for all. The hopes, dreams and expectations of the 1994 ICPD in Cairo have not yet been fully achieved. (...) FIGO's own commitment for the Summit particularly support the goals of (1) **reaching zero unmet need for family planning, and universal,**

availability of quality, accessible and safe, modern contraceptives; (2) zero preventable maternal deaths; (3) zero sexual and gender-based violence and harmful practices; (4) and ensuring the full range of sexual and reproductive health and rights are included in humanitarian response' [21].

The elephant in the room that nobody talked about

Despite the World Scientists' Warnings, the third of which was released in the very month of the Nairobi ICPD25 Summit, and much evidence that unremitting population growth is one of the 'upstream' driver of climate change, biodiversity loss, mass species extinction, deforestation, desertification, environmental degradation and pollution, water resource depletion, pandemics, conflicts and terrorism, resource-driven wars, mass migration and more: **at the Nairobi population conference the word population was nowhere, aside from its title ...**

This reinforced the disastrous trend initiated at Cairo, in which after 1994 as Robin Maynard, the director of Population Matters, observed: '**No longer were international discussions and policy-making to be focussed on the overall numbers or impacts of population growth and certainly not from any overt consideration of seeking to minimise further population growth, but addressed exclusively through the lens of reproductive health and women's rights.** Emphasising the crucial importance of addressing the unmet needs of young women and girls was right and necessary, but **stripping out and effectively creating a taboo around addressing that in context of ongoing population growth was a mistake.** A mistake, ironically, born out by the numbers; since that shift of emphasis at Cairo **our global population has increased by over 2 billion from 5.6 billion in 1994 to 7.7 billion today.** Despite the focus on enabling more women in developing countries to access safe, modern contraception, the proportion of women doing so has increased by only 6% - from 52% globally to 58% today' [22].

Last but not least, both the Cairo and Nairobi Summits omitted (or deliberately ignored) the third factor promoting population growth, i.e., **wanted fertility** [13]. Yet that can readily be targeted non-coercively through (environmental) education, delivered with wisdom and compassion to children – and to the wider public using media [23] – encouraging small family size as a recommended global norm.

Time for a taboo-free talk

Despite the Earth's population enlarging by a further two billion people, what was lacking at ICPD25, as at Cairo in 1994, was the '**overarching context or sense of perspective or indeed urgency as to the reality of global human population growth and its impact upon people and planet**' [22].

Important as women's rights, education, empowerment and women's health definitely are (for individuals, and as key components of development), as is the focus on enhancing accessibility of family planning services to combat an epidemic of unintended pregnancies, **future generations will not forgive this one for ignoring this issue, above all** at any global Summit that has the word 'population' in its title alongside 'development'.

The understandable reason behind this shift away from that word population was the negative experience of past coercive '*population control*' programmes which abused or ignored human rights, targeting certain sectors of society: accusations that were not unjustified in some of those introduced in India and China. Abhorrent as these indubitably were, they compromised the well-intentioned struggle with rapid population growth and overpopulation, and **the ongoing neglect of those problems is equally wrong. It is indeed our moral obligation to do so.** What can be worse than denying the rights of future generations to a habitable planet?

As Maynard puts it '*focusing only on those negatives ignores the greater number of positive examples of voluntary, non-coercive, choice-based programs at the community level that have been successful in reducing birth rates and boosting the well-being of the individual and country from Bangladesh, to Iran to Thailand. These were dismissed and their achievements in stabilising population growth have been ignored and cut out of the discourse at the international policy level. Consequently, the progress being made in slowing and stabilising population growth pre-Cairo has stalled and even reversed*' [22].

Another very good reason to talk about overpopulation is the climate emergency. In 2014, the **Intergovernmental Panel on Climate Change** (IPCC) stated: '*CO2 emissions could be lowered by 30% by 2100 if access to contraception was provided to those women expressing a need for it*' [24]. In 2009 it was calculated that '*by having one less child, an American woman would reduce her carbon legacy (i.e., the summed emissions of herself and descendants weighted by relatedness) by 9 441 tones*' [24]. Out of over 80 climate change interventions available now, combining women's education with voluntary family planning came second, in Scenario 1 of Project Drawdown [25].

Doctors and overpopulation 48 years later: a second notice

Why is addressing population, humanely and appropriately, important for *doctors*, above all other professions? Because it was our profession that, starting around 1850, dramatically reduced death-rates while birth-rates remained high, so that we sadly bear some responsibility – completely unintendedly – for the ongoing population 'explosion' from a base of circa 1.25 billion then to almost eight billion now, in just 170 years. This should surely motivate us **as doctors to be uniquely motivated to advocate for the policies and actions listed in the Box below.**

In 1972, when the organisation **Doctors and Overpopulation** started, **the world's population was 3.8 billion people. In 2020 after a mere 48 years the world's population is 7.8 billion, so the increment is greater than the original total**, and it continues growing by roughly 80 million every year.

For these reasons, we, two concerned doctors in the field of Family planning and Sexual and Reproductive Health, have decided **to break remaining taboos and deliver herewith to our fellow-doctors a second notice.** We call for official acknowledging of the problem by Civil Society and international organisations, **reframing the discussion, and overtly though always with humanity, wisdom and compassion, addressing all three of the**

targetable components, i.e., the Big Three factors listed in the section 'The roots of overpopulation'.

We wholeheartedly agree with FIGO that '*expanding access to modern contraception is a priority and ensuring universal access to sexual and reproductive health services*' and that '*we need to work together as a coalition of government, public and professional organisations, NGOs and private sector*' [21] and support their effort to reach zero unmet need for family planning. **Additionally, and in this unlike FIGO, we call for encouraging small families as a recommended global norm.**

Last, but not least, we firmly state that all measures should be rights-based and that there is no place for coercive interventions.

We, as Doctors, or Health Care Professionals generally, especially those of us who work in the field of Family Planning and Sexual and Reproductive Medicine and Health, can contribute to the fight towards women's and the planet's health (and thereby prevent other – less humane – measures of solving this problem being introduced) by:

1. advocating for wise, compassionate and proven effective policies, services and sustained supply chains of the best family planning methods, thereby **ensuring that optimal contraceptive care is fully accessible to all couples worldwide**, along with
2. removing well-known tangible (contraceptives unavailable) and intangible (cultural, religious and mis-informational) barriers to the choice to access family planning in all settings, while strengthening human rights and achieving full gender equity, including primary and secondary education as a global norm for girls [26]
3. alerting all to the problems of overpopulation and its many deleterious consequences, for all life on the planet
4. campaigning for better environmental education for all (both doctors and the public), especially affluent high greenhouse gas (GHG) emitters in **all** nations – who need to learn, however well 'educated' they may be otherwise, that having one less child is hugely beneficial [since that child will be responsible in its lifetime for at least 30 x more GHG emissions than one from a least-developed country] [24]. But **also:**
5. campaigning for and, if relevant for self, choosing to have a **small family**: meaning a **maximum** of two children (i.e., no more than or even less than replacement fertility), on principle and as an example.

Conclusion

To conclude this second notice, we end with two statements made in the same year as the first Scientists' Warning:

First, James Grant in *The State of the World's Children*, UNICEF 1992, p 58: "Family planning could bring more benefits to more people at less cost than any other single technology now available to the human race".

Second, Maurice Strong, Secretary General of the *United Nations' Earth Summit* in Rio de Janeiro, 1992: '**Either we reduce the world's population voluntarily or Nature will do this for us, but brutally**' [27].

Disclosure statement

No potential conflict of interest was reported by the author(s).

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