



## Original articles

## The economic impact of Long-Acting Contraceptives (LARCs) on public health

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## ABSTRACT

The incorporation of long-acting reversible contraceptives (LARCs) into reproductive health strategies is crucial for enhancing access to effective contraception and reducing unplanned pregnancies (UPs). Evidence shows that even a modest shift from short-acting methods to LARCs can yield significant cost savings and improve health outcomes, both for individuals and public health systems. By facilitating single-visit placements and expanding the training of multidisciplinary teams, including nurses, healthcare providers can increase access to these effective contraceptive options.

## Introduction

The United Nations Target 3.7 of the 2030 Agenda for Sustainable Development Goals aims to ensure universal access to sexual and reproductive health services, including modern contraceptive methods and education.<sup>1</sup> The shift from “family planning” to “reproductive planning” reflects diverse family structures today, emphasizing the importance of individual choice in making reproductive decisions. Key indicators for this target include the proportion of women (aged 15–49) using modern contraceptives and the adolescent birth rate per 1000 women.<sup>1</sup>

Regarding the growth projection of the global population, it is estimated to reach approximately 8.79 billion people by the year 2100.<sup>2</sup> In terms of the Agenda for Sustainable Development Goals, reducing this percentage could lower global population growth by up to 6.29 billion people.<sup>2</sup> This reduction would significantly lessen the strain on public health systems worldwide, resulting in substantial savings on costs related to prenatal care, childbirth, and infant care,<sup>3,4</sup> particularly in socioeconomically vulnerable regions. Furthermore, a smaller planetary population can mean lower carbon emissions and a reduced likelihood of transgressing planetary boundaries, i.e., reducing the risk of human interventions destabilizing the Earth system.<sup>5,6</sup>

This opinion article explores how Long-Acting Reversible Contraceptive methods (LARCs) can contribute to achieving these goals, lowering public health costs, preventing unplanned pregnancies and their consequences, and reducing the planetary population and its

consequent global economic impact.

LARCs are a category of contraceptive methods designed to provide effective pregnancy prevention for extended periods, typically ranging from three years to over a decade, without requiring daily attention.<sup>7</sup> The two main types of LARCs are Intrauterine Devices (IUDs) and subdermal implants. IUDs can be either copper-bearing, which creates a hostile environment for sperm, or hormonal, which releases Levonorgestrel (LNG) to thicken cervical mucus and prevent ovulation. Subdermal implants are small rods placed under the skin of the arm that release hormones to inhibit ovulation.<sup>8</sup> LARCs are highly effective, with failure rates of less than 1/100 Women-Years (W-Y) with typical use, making them one of the most reliable forms of contraception available even for adolescents and nulligravidas.<sup>9</sup> They are also reversible, meaning that fertility returns quickly upon removal, making them an ideal choice for women who want long-term contraceptive protection without the need for frequent intervention.<sup>10</sup>

In Brazil, family planning is a legal right guaranteed by Federal Law 9.263/96, which assures citizens of access to reproductive health services.<sup>11</sup> Through the Unified Health System (SUS), the government provides free contraceptives such as condoms, combined and progestin oral contraceptives, injectables, and Intrauterine Devices (IUDs). Family planning plays a critical role in reducing Unplanned Pregnancies (UPs), as well as maternal and infant morbidity and mortality, by allowing women to space pregnancies, which is particularly important for young women who face higher health risks and complications associated with early pregnancies.<sup>12</sup> Access to LARCs has reduced costs and health

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risks.<sup>3,4,12,13</sup>

A study estimated that the annual cost of Brazil's UPs was almost R \$4.1 billion, with most expenses related to antenatal care, delivery, and postnatal complications. Direct birth costs alone account for approximately R\$1.22 billion, while infant complications and hospital readmissions represent a substantial proportion of these costs, totaling R \$2.84 billion.<sup>3</sup> Another study about UP costs, in Sweden, estimated that a 5% shift from non-LARCs to LARCs methods would result in over 3500 fewer UPs annually, leading to savings of nearly €7.7 million.<sup>4</sup> In Norway, the total costs of UPs in young women were estimated to be 164 million Norwegian Kroner (NOK), of which 81.7% was thought to be due to imperfect contraceptive adherence. It was projected that a 5% increase in LARC uptake would lead to cost savings of NOK 7.2 million in this group.<sup>14</sup> In adolescents, a systematic review confirmed the cost-effectiveness of introducing LARCs and preventing UPs.<sup>15</sup>

An extensive review of users of our family planning service revealed that, from 1980 to 2012, approximately 20,000 women started using LARCs, which in the last decade have contributed to preventing 37 to 60 maternal deaths, 315 to 424 infant deaths, 634 to 853 cases of combined maternal and infant morbidity and mortality, and 1056 to 1412 unsafe abortions.<sup>16</sup> In Brazil, the authors know that the use of LARCs is cost-effective when compared to Combined Oral Contraceptives (COCs) and can save about \$65 billion for the LNG 52 mg IUD, \$302 billion for the subdermal implant, and up to \$422 billion for the copper IUD in the five years following its implementation.<sup>17</sup> There is also positive evidence of the cost-effectiveness of implant insertion as a public health measure in large countries such as India and Brazil.<sup>18,19</sup>

It is known that contraceptive use is higher when more contraceptive methods are available to a large part of the population,<sup>20</sup> and is better than solutions such as cash transfer interventions.<sup>21</sup> In 2020, the estimated use of LARCs was 19.4% globally, while the use of Short-Acting methods (SARCs) was 45%.<sup>22</sup> In contrast, the worldwide use of contraceptive implants in 2020 was 2.6%.<sup>23</sup> In Latin America and the Caribbean, there are recommendations to consider LARCs as a primary option for decreasing UPs and adolescent pregnancy,<sup>24</sup> and its use is still not uniform in the region. Recent evidence shows that the satisfied demand for the use of modern contraceptives in Latin America and the Caribbean is directly related to the educational and socioeconomic level of women, and indirectly related to the level of gender inequality.<sup>25</sup>

Facilitated access to LARC options must be a goal since their single-visit placements represent an effective strategy, resulting in overall very low UP rates, and practicing the extended use of LARCs, as recommended by the US Society of Family Planning.<sup>26</sup> This approach has the potential to reduce not only UPs but also the costs and barriers faced by women and the healthcare system.<sup>13</sup> The insertion of LARCs is an outpatient safe reversible procedure and less invasive than surgical methods. Consequently, IUD insertion in the immediate postpartum period is recognized as an effective strategy to enhance coverage and access to contraception.<sup>27</sup> Although there may be a slightly higher expulsion rate associated with IUDs inserted immediately after delivery, the benefits of immediate access to reliable contraception outweigh this inconvenience.<sup>28</sup>

Moreover, implementing a training program for a multidisciplinary team can significantly improve access to LARCs, allowing the range of providers capable of offering these methods to expand beyond just gynecologists. Evidence suggests that clinical outcomes remain consistent regardless of whether the insertion is performed by nurses, residents, or physicians, as well as irrespective of the age and parity of users. This indicates that healthcare services, especially in areas facing a shortage of physicians, should consider training nurses in IUD insertion to facilitate access to effective contraceptive methods.<sup>29,30</sup>

LARCs not only reduce the costs for public health, reducing the number of UPs and medical visits but also significantly lower general costs for women, as they no longer need to frequently travel for contraceptive replenishment.<sup>13</sup> LARCs are associated with relatively few side effects compared to other contraceptive methods,<sup>31</sup> which benefit

women's health, but also lessen the financial burden on healthcare systems, minimizing costs associated with treating several conditions.<sup>32</sup>

In addition to their contraceptive efficacy, hormonal LARCs provide several non-contraceptive benefits that can further reduce healthcare costs. Many hormonal IUDs and subdermal implants can alleviate Heavy Menstrual Bleeding (HMB), decrease the incidence of anemia, and reduce the need for surgeries related to reproductive health issues, as well as alleviate symptoms of conditions such as endometriosis and adenomyosis.<sup>33,34</sup> By addressing these health issues, LARCs not only improve women's quality of life but also lead to significant savings on hygiene products and medical interventions.<sup>35</sup> The use of disposable pads also imposes the need to buy them, which is not always possible. Menstrual poverty is a global problem,<sup>38</sup> and in Brazil, the scenario in relation to menstrual rights is worrying, marked by historical inequalities in terms of gender, race, region, and social class, aggravated in times of health and economic crises.<sup>36</sup>

The use of LARCs could be at the heart of the solution to the biggest public health problem we will face in the coming years: climate change. By aiding conscious reproductive planning, reducing gender inequalities, promoting sexual and reproductive education, and guaranteeing basic rights for all, we improve the health of humanity, but also planetary health. The impacts of human activity on air and water pollution, biodiversity loss, and climate change are notorious,<sup>5,6</sup> especially in terms of production and economic growth. LARCs can help to put a ceiling on the harmful growth of humanity, but not without consequences: Current economic models need the growth of the economically active population to manage social security programs and to finance public health systems themselves.<sup>37</sup> Among the potential changes that LARCs bring to the economy, in the long term, it could reduce human intervention on Earth.

## Conclusion

The incorporation of LARCs into reproductive health strategies is crucial for enhancing access to effective contraception and reducing UPs. Evidence shows that even a modest shift from short-acting methods to LARCs can yield significant cost savings and improve health outcomes, both for individuals and public health systems. By facilitating single-visit placements and expanding the training of multidisciplinary teams, including nurses, healthcare providers can increase access to these effective contraceptive options. Additionally, the non-contraceptive benefits of LARCs further emphasize their role in improving women's health. Ultimately, prioritizing LARC usage aligns with global health goals and empowers women to make informed reproductive choices. Also, there is robust evidence of the cost-effectiveness of the universal introduction of hormonal IUDs and contraceptive implants in public health. An aging population and the consequent pressure on health systems, social security programs, and the workforce, at different rates in different regions of the planet, could lead to economic and geopolitical instability. Therefore, it would be necessary to think about the use of LARCs.

## Declaration of competing interest

The authors declare no conflicts of interest.

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