

## Review Article

# From Primary Health Care to Universal Health Coverage in the Islamic Republic of Iran: A Journey of Four Decades

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Despite all the problems caused by the imposed war, sanctions and accidents after the Islamic Revolution, materializing primary health care (PHC) in Iran through establishing the National Health Network (NHN) has had substantial gains. Many health indicators in Iran have undergone significant changes. As an example, the change in death of children under the age of 5 years has been studied by adjusting the economic status, and it is estimated that about 2 million deaths in this age group were avoided within 30 years after the Islamic Revolution. Nevertheless, the global experience implies that the PHC has its limitations. By changing the social, economic, and epidemiological patterns of diseases, demands and expectations of community has changed. With the emergence of chronic conditions and new technologies, health expenditures have become a major concern. Meanwhile, in the 2000s, the revision at PHC was aimed at strengthening through the universal health coverage (UHC). Therefore, UHC is along the PHC and not against it.

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**Introduction**

In 1978, the World Health Organization (WHO) launched primary health care (PHC) as the main strategy for achieving affordable universal coverage – the goal of Health For All (HFA). PHC is defined as essential and affordable care that is accessible to everyone and includes health promotion, disease prevention, health maintenance, education and rehabilitation.<sup>1</sup> This strategy, which was a landmark in the history of global health, provided an overall framework for countries to organize their health delivery system in a practical way that best meets population health need. PHC helped many countries to improve their health significantly, particularly in child survival and life expectancy, which in turn led to remarkable progress in global standards of health.<sup>2</sup> However, a review of changes in health status concluded that the goal of HFA by 2000 would not be met, showing that PHC has faced challenges.<sup>3-5</sup> These challenges were mainly rooted in the health system performance. In 2000, the need for a well-functioning health system was highlighted by the WHO, and different means and policy instruments were employed for strengthening health system.<sup>6</sup> Among them, four reforms were introduced by WHO to address the challenges that PHC had. They included universal coverage reforms; service delivery reforms; public policy reforms; and systems leadership reforms.<sup>7</sup> These universal

reforms shaped the concept of the universal health coverage (UHC) in 2010,<sup>8</sup> echoing earlier references in the 2005 World Health Assembly resolution that argued access to health should not risk financial hardship.<sup>9</sup> UHC, which is currently the aspiration of many countries worldwide to frame their health policy initiative, means that all people – irrespective of their ability to pay – receive the health services they need (including prevention, promotion, treatment, rehabilitation, and palliation) with sufficient quality and that using health services does not cause financial hardship.<sup>8</sup>

With these global movements in mind, the Islamic Republic (IR) of Iran has implemented remarkable initiatives to materialize PHC<sup>10</sup> and to strengthen its health system to achieve UHC.<sup>11</sup> The initiatives could make meaningful progress with health outcomes, but there are still some challenges. Given the overlap between the PHC and UHC concepts, there is a debate about whether the initiative of PHC and UHC are aligned with each other or they are two competing movements. On the one hand, proponents advocate that PHC is an essential prerequisite for to UHC and defend that UHC should be connected with PHC. On the other hand, critics believe that initiatives to achieve UHC are in contrast with the PHC concept. In this manuscript, we review the significant initiatives accomplished by the country to meet

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HFA goals. Then, we introduce the achievements and the bottlenecks of these initiatives. Finally, we explain how we should revitalize PHC and make our next reforms focused on strengthening PHC to achieve UHC.

### Historical Initiatives of the IR Iran to Provide HFA

Before the Islamic Revolution of IR Iran, there were critical deficits in health care provision. PHC was minimal and public health was not adequately provided, particularly in the rural area; curative care could only be found in large cities; the number of clinics and hospitals were not enough to response health needs; and there was a significant shortage of health workforce, especially physicians.<sup>12,13</sup> There is no health care “system” in the country.<sup>14</sup> Following the Islamic Revolution, better health care was requested by all people, and it was approved that any Iranian has the right to have the highest attainable standard of health and well-being.<sup>15</sup> This highlights the responsibility of the government for making quality health services available and accessible and for implementing policies that promote and protect health and well-being. Given this responsibility and in parallel with the Declaration of Alma-Ata,<sup>16</sup> IR Iran has started many policies and plans aimed at more addressing the health needs of its population and meeting HFA in the past four decades. Among them, the most important one to materialize PHC is the establishment of the National Health Network (NHN) throughout the country that active providing essential health services through health care delivery points with defined populations.<sup>17</sup> This event resulted in tremendous improvements in population health indices and significantly reduced disparities, particularly in the rural area.<sup>18</sup> This progress is widely ratified by international organizations.<sup>19</sup> However, like many other countries, IR Iran was experiencing rapid changes in different aspects of health outcomes. These changes have not been adequately addressed by the country.<sup>20,21</sup> While the health system performance was reviewed in 2000, it becomes clear that a new generation of measures/actions should be initiated for further improvements in health status.<sup>22</sup> Thus, another milestone imitative to develop PHC, entitled the Family Physician and Rural Insurance Program (FP&RIP), was introduced in 2005. The plan aimed to provide safe, high-quality, effective, efficient, cost-effective, and society-based health care services.<sup>23</sup> This plan stipulated that the government ensure the underprivileged who are from rural areas or cities with less than twenty thousand populations. Receiving health care services through the referral system and family physician was free of charge.<sup>22</sup> The plan then covered cities with less than 50 thousand populations, and finally, it has been generalized to the entire country,<sup>24</sup> in order to expand the coverage and access to services, particularly among poor people via referral system. By implementing FP&RIP, some of the health indices have significantly improved. However, it was not able to respond to critical

challenges the health system had,<sup>25</sup> particularly concerning the public dissatisfaction with a high share of out-of-pocket expenditures. To address these challenges, another endeavor, called Health Transformation Plan (HTP), was implemented in 2014.<sup>18,26</sup> HTP is the most extensive transformation program to provide access to UHC. The plan aimed to provide sustainable financial resources in the health sector, protect the population against health expenses, increase access to high-quality health care and services, and improve the performance of health service delivery.<sup>11</sup> It is reported that the plan has contributed to paving the way towards transforming the country's health system.<sup>27</sup>

### Progress and Achievements of IR Iran's Health System

In the light of forty-year efforts, IR Iran had witnessed significant changes in people's health and improvements in health system performance (Table 1). These achievements are summarized here regarding health outcomes and health system performance.

#### Health Outcomes

Life expectancy at birth has been drastically improved by around 25 years from 50.9 in 1970 to 75.7 in 2015. This improvement is about 25 years for males and 26 years for females. Regarding maternal health, skilled attendance at birth increased from 69.0% in 1990 to 99.0% in 2015.<sup>28</sup> Maternal mortality ratio (per 100 000 live births) had declined dramatically from 255.0 in 1974 to 25.0 in 2015.<sup>28-30</sup> which is comparable with developed nations.<sup>31</sup> The pregnant women receiving prenatal care in 1997 was already high at 76.5%, and by 2011 had increased to 96.9%.<sup>28</sup> Regarding child health, neonatal mortality ratio (in 1000 live births) decreased from 58.9 deaths in 1973 to 9.8 in 2015. Infant mortality ratio (in 1000 live births) did decline from 125.6 in 1971 to 13.8 deaths in 2015, with similar trends for under-5 child mortality rates, which declined from 185.9 deaths per 1000 live births in 1971 to 16.0 per 1000 in 2015 (Box 1).<sup>28,30</sup> Concerning nutritional problems, the prevalence of stunting and wasting in children under-5 had declined from 24.4% in 1995 to 6.8% in 2011 and from 8.1 in 1995 to 4 in 2011, accordingly.<sup>28</sup> The expanded program of immunization (EPI), launched in 1984, has had an important role in these achievements.<sup>32</sup> By implementing EPI, among 1-year-olds, diphtheria tetanus toxoid and pertussis (DTP3) immunization coverage increased dramatically from 32.0% in 1980 to 98.0% in 2015; Polio (Pol3) immunization coverage augmented from 38.0% in 1980 to 98.0% in 2015; and measles-containing-vaccine first-dose immunization coverage improved from 39.0% in 1980 to 99.0% in 2015.<sup>33</sup> Concerning the communicable diseases, the country has achieved successes toward the control of diphtheria and hepatitis B, and elimination or eradication of measles, congenital rubella syndrome, and neonatal

**Table 1.** Status of Selected Health Measures in IR of Iran

	1960	1970	1980	1990	2000	2010	2015	Source
<b>Health outcomes</b>								
Life expectancy at birth	44.9	50.9	54.1	63.8	70.1	73.9	75.7	<sup>28</sup>
Life expectancy at birth male	45.7	50.1	50.2	61.6	69.2	72.5	74.7	<sup>28</sup>
Life expectancy at birth female	44.1	50.9	59.3	66.3	71.2	75.5	76.9	<sup>28</sup>
Cause of death, by communicable diseases and maternal, prenatal and nutrition conditions (% of total)				21.2	16.4	10.8	8.0	<sup>34</sup>
Cause of death, by non-communicable diseases (% of total)				50.1	65.9	74.6	80.5	<sup>34</sup>
Cause of death, by injuries (% of total)				28.7	18.1	14.6	11.5	<sup>34</sup>
Maternal mortality ratio		255.0 <sup>a</sup>		123.0	51.0	27.0	25.0	<sup>29,30,33</sup>
Skilled attendance at birth				69.0	91.0	98.0	99.0	<sup>33</sup>
Neonatal mortality rate		59.8 <sup>b</sup>	39.8	26.1	18.9	12.1	9.8	<sup>28,30</sup>
Infant mortality rate		125.6 <sup>c</sup>	76.3	43.7	28.2	16.8	13.8	<sup>28</sup>
Under-five mortality rate		185.0 <sup>c</sup>	106.9	56.1	34.2	19.6	16.0	<sup>28</sup>
Prevalence of anaemia among children (% of children under 5)				50.3	41.3	32.0	28.4	<sup>28</sup>
Immunization, measles (% of children ages 12-23 months)			39.0	85.0	99.0	99.0	99.0	<sup>28</sup>
Diphtheria tetanus toxoid and pertussis (DTP3) Immunization coverage			32.0	91.0	99.0	99.0	98.0	<sup>33</sup>
Polio (Pol3) Immunization coverage			38.0	90.0	99.0	99.0	98.0	<sup>33</sup>
The incidence of tuberculosis (per 100 000 people)					22.0	17.0	16.0	<sup>28</sup>
<b>Health system Performance</b>								
Current health expenditure (% of GDP)					5.2	7.8	7.6	<sup>28</sup>
Out-of-pocket expenditure (% of current health expenditure)					59.6	59.4	39.7	<sup>28</sup>
Hospital bed density	0.9	1.4	1.5	1.4	1.6	1.7		<sup>28</sup>
Doctor density	0.2	0.3	0.3	0.3	—	0.9	1.5	<sup>28</sup>
Nurses and midwives (per 1000 people)						1.4 <sup>d</sup>	1.6 <sup>e</sup>	<sup>28</sup>

<sup>a</sup>1974; <sup>b</sup>1973; <sup>c</sup>1971; <sup>d</sup>2004; <sup>e</sup>2014.

tetanus sustained polio-free status.<sup>32</sup> Moreover, there is a reduction in the incidence of tuberculosis (per 100 000 people) from 22.0 in 2000 to 16.0 in 2015. Between 2000 and 2015, the incidence of malaria (per 1000 populations at risk) reduced from 39.9 to 0.5.<sup>28</sup> Nevertheless, over the past two decades, the disease burden has shifted to non-communicable diseases (NCDs). The percentage of death due to communicable diseases has decreased from 21.2 in 1990 to 8.0 in 2015, and the percentage of death due to NCDs has increased from 50.1 in 1990 to 80.5 in 2015.<sup>34</sup> Concerning public health outcomes, while the clean water and sanitation were the main environmental health problems, particularly in rural area, about 95% of the population has access to at least basic drinking-water services (rural: 89%, urban: 97%) in 2015. Also, the population using at least basic sanitation services reached 88% in 2015 (rural: 79%, urban: 92%).<sup>33</sup> We think that considerable improvements of the indicators mentioned above happened in the first two decades.

### Health System Performance

Between 2000 and 2015, current health expenditure as a proportion of gross domestic production (GDP) increased from 5.2% to 7.8%, showing more resources allocated to health. However, we did not meet the needs for financial risk protection because out-of-pocket household health spending was 59.6%, although this proportion has since declined after the introduction of HTP (39.7%).<sup>28</sup> Regarding the health workforce, the number of physician

per 1000 people has been increased by 5 times (from 0.3 in 1980 to 1.5 in 2014)<sup>28</sup> and the number specialist per 1000 people has been increased by two times (from 0.4 in 1978 to 0.8 in 2013).<sup>35</sup> There is a slight increase in the number of nurses and midwives (from 1.4 in 2004 to 1.6 in 2014). Regarding health facilities, the number of hospital beds per 1000 people reached 1.6 in 2014, while it was 1.4 in 1970.<sup>28</sup>

The efforts mentioned above alongside other efforts done in the past four decades led to these progress in population health improvement and health system strengthening. However, due to bottlenecks that these initiatives have had, there are still deep-rooted problems and weaknesses in the health system, calling for more attention and effort to be solved.<sup>36</sup>

### Bottlenecks of the Initiatives Done in IR Iran to Provide HFA

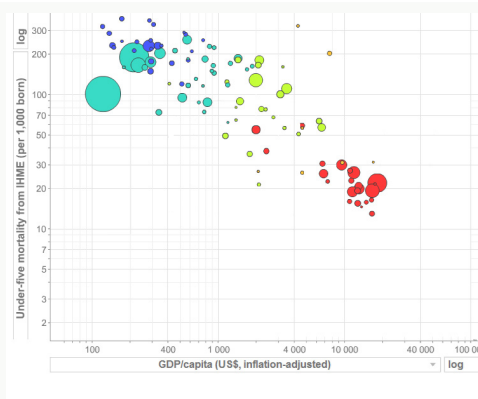
The bottlenecks of establishment NHN and implementing FP&RIP have been thoroughly investigated by scholars. In recent reviews published in this regards, these weaknesses have been extracted.<sup>20,21,37</sup> Such evidence is rare in the case of HTP because it has not been a long time since the implementation of this program.<sup>38,39</sup> However, the authors have some experience regarding the evaluation of HTP. The weaknesses of these initiatives are presented in Table 2. These weaknesses have been addressed in the country's General Health Policies,<sup>40</sup> but unfortunately, due to barriers to implementing them,<sup>41</sup> they remain in our

**Box 1.** How many the under-five mortality has been avoided after the IR Iran's Islamic Revolution?

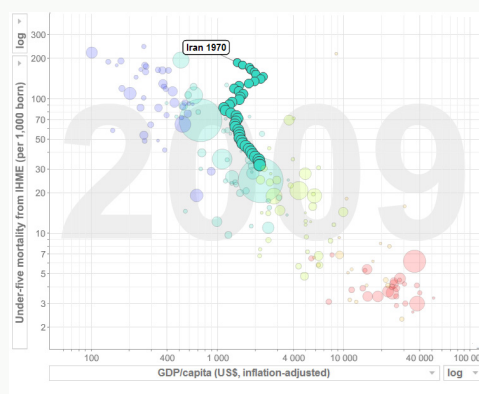
Undoubtedly, the health of the community, as well as the under-five mortality (U5M) of children, are greatly influenced by the general development of the community, including literacy, economic status, and other macroeconomic indicators. The health system's impact per se can hardly be estimated due to the simultaneous effect of the health and other sectors development. Figure 1 shows the relationship between the U5M and the Gross Domestic Product per capita (GDP/P; albeit logarithmically) in one year. As shown in this figure, there is a direct negative correlation between these two indicators. It means as economy grows the U5MR is decreasing.

The second figure shows Iran's changes since 1970. As it is clear from this form, it is clear that before the Islamic Revolution of IR Iran, reducing the U5M accompanied by an increase in national income and the ordinary course of the form one has been. After the Islamic Revolution, even though the revolution, sanctions, and the aftermath of the war have led to a decrease in GDP/P (as shown in Figure 2) the direction of the circles that are blue to the left. However, despite this change, the U5M rates are at a much higher pace than the usual incomes of countries with the U5M.

Linear regression was deployed for the relationship between per GDP/P and U5M to quantify this finding. With the result of the equation of the regression line, the expected values for the U5M rate was estimated. Then, the difference between the expected and observed values was calculated and multiplied by the number of live births of each birth cohort to estimate the crude number of U5M which were avoided after adjustment for the country's economic situation. If the U5M in total and up to 2009 birth cohort, about thirty years after the revolution, it is estimated that the estimated number of avoidable U5M is a bit more than 2 million over almost 47 million births. Even though, according to the literature, deaths due to war and sanctions (such as the Iraq experience) are expected to be higher than usual circumstances which must be considered in addition to the changes of GDP/P which has mentioned above. The observed number of death before the revolution had lag considering the global average. Therefore, improvement in U5M was in two directions of compensating the historical lag and also then exceeding the average of other countries. Thus, the 2 million is quite a conservative estimate. Of course, several developmental factors affect U5M, but it is evident the decrease in U5M was much faster than economic growth and other covariates.



**Figure 1.** Scatter of the Under-Five Mortality Rate and Gross Domestic Product Per Person.



**Figure 2.** Time Trend of the Under-Five Mortality Rate in Iran from 1970-2009.

health system.

A precise look into/at these weaknesses shows that the main bottlenecks of these events can be summarized as follows:

*Unsustainable financing:* although HTP contributed to increasing the share of GGHE from THE (from 33.3% in 2012 to 51.3% in 2015<sup>42</sup>), the aforesaid initiatives, generally, could not make fundamental changes to finance health expenditure from unstable source (e.g. MOHME budget/Oil sales) to stable one (e.g. value-added tax/insurance premium). Thus, based on the macro-economic that country has, the amount of money allocated to health was occasionally restricted, particularly in sanction and economics shocks era. Less attention has also paid by previous attempts for managing the revenues efficiently and equitably to provide individuals with both health services and financial risk protection.

Moreover, the initiatives have not effectively touched

upon the provider payment mechanism. It still suffers from a lack of motivations for those who provide PHC and inefficiency for those who provide outpatient and inpatient service,

*Lack of integrity to provide health care:* while both NHN and FP&RIP focused predominantly on PHC, mostly in the rural area, HTP targeted changes in hospital care. It implies that these initiatives could not entirely meet people's health needs through comprehensive promotive, protective, preventive, curative, rehabilitative, and palliative care along the life course. They also failed to develop a proper coordination mechanism between primary, secondary and tertiary care. Furthermore, due to the inter-sectoral collaboration that is required to better respond to the needs of the population was not institutionalized.

*Inadequate, unskillful and unmotivated health workforce:* Employing community health workforce who can be

**Table 2.** The Main Challenges of 3 Main Initiatives Conducted by Iran to Provide Health For All

Initiative	Challenges
National Health Network	Continuity, comprehensiveness and coordinated of care were not well-addressed Required infrastructures were not adequately provided for first contact access for each new need A centralized approach was being used for making decisions The role of private providers was not considered The financing had some challenges regarding adequate financial resources, fair distribution and motivated mechanism for providers' payment The information system was not being managed precisely <sup>20,21</sup>
Family Physician and Rural Insurance Program	The providers' payment mechanism was not appropriate There was lack of adequate facilities and support in disadvantaged areas Training and capacity-building were not adequate for service providers The referral system was not wholly established The health information system was not integrated and supportive for decision making <sup>27</sup>
Health Transformation Plan	A "top-down" approach was used in planning and implementing The active participation of some stakeholders was not considered There was a lack of coordination among different channels of health service The financing was not sustained The role of private sector was not well reflected <sup>139, 45-48</sup>

trained in a short time to operate specific tasks is one of the primary interventions implemented in NHN. This led to dramatic improvements in population health, but investing in community health workers was less considered in later initiatives. During FP&IR, providing health services through interprofessional teams was targeted to meet the patients' needs. However, this objective was not completely achieved, due to challenges of human resource management. HTP also tried to increase the number of the health workforce and motivate them to stay in the public sector, particularly in the deprived area.

Nevertheless, it was not sustained. It is worth noting that the country has implemented the medical education integration with the aim of overcoming the shortage of health professionals. This event is per se innovative and aimed to upgrade the quality of health workforce training and make the country able to meet the demand for the health workforce.<sup>43</sup> However, there is still an insufficient link between medical education and health service delivery, resulting in challenges regarding availability, accessibility, acceptability, and quality of the health workforce.<sup>44</sup>

*Lack of good governance:* these initiatives aimed to make required changes mainly in service delivery and to some extent in financing arrangements. Manipulating the governance arrangement is less considered in previous efforts done by the country. Consequently, there are severe challenges regarding Iran's health system governance arrangement. For instance, the health system suffers from a well-established, evidence-informed and accountable policy-making process; there is no platform to participate different stakeholders in health priority setting; the health information system is fragmented, and the health policy analysis and evaluation are not conducted regularly.

### A New Approach for PHC to Achieving UHC

It has come brought to our knowledge that the establishment of NHN was a worthy starting point for PHC approach to providing HFA. It facilitated to reach a primary care

system and resulted in excellent progress on health with considerable changes in health indicators. However, in the following years, it could not address the challenges of the health system effectively and efficient mannerly. The country experienced many changes in economic, environmental, technological and demographic aspects. The health system should respond these changes through a multisectoral approach that can involve different sectors in examining, developing and implementing health policies. While our PHC model needed a transformational action to address these challenges, we did not renew it at the right time. Moreover, the country dealt with demographic and then epidemiologic transitions from the communicable diseases to the NCDs. The constant and complex needs of patients with NCDs called an urgent redesigning the health service delivery in which integrated people-centered care can be provided, not only at the rural area but also at urban and peri-urban areas. This was also ignored.

In contrast to the rural area, urban and slums areas suffer from the health systems characterized by hospital-oriented care, private clinics and hospitals, and a lack of effective PHC systems, mainly to treat chronic NCDs. The predominance of medicalization and disease-focused interventions made the primary care system weak. The weaknesses of the primary care system caused many deficits in the health system performance with slight changes in health outcomes. At this time, some measures were taken to strengthen the health system to achieving UHC. These measures could not entirely solve the problem of the health system, too. Cumulative challenges made our health system more vulnerable. Here, some believe that initiatives to achieve UHC are not an appropriate option to fulfill health goals, while other defends that the PHC cannot address our shortfalls.

Given the definitions of PHC and UHC and the components of these two terms, as it discussed in latest global gathering that health leaders had in Astana, 2018,<sup>49</sup> we think the PHC and UHC are not contradictory

concepts. PHC, as a mean, paves the way toward achieving UHC, as a goal. PHC is what we do, and UHC is what we want. Financial risk protection undoubtedly will improve if we emphasize population-level care. This helps us to concentrate more on those promotive and preventive interventions that can reduce the need for individual care and avoid the escalation of health issue to more complex and costly conditions. PHC also can provide an opportunity to increase universal access through a cost-effective way of delivering integrated people-centered care. In this case, we can be assured both coverage and quality of care that people need has been addressed, particularly for the disadvantaged population. These all together make our health system more resilient and strengthen it to absorb, adapt and transform when exposed to sudden changes (e.g., financial shocks, international sanctions). So, the time is now. The country should revitalize the PHC approach and give high priority to it. This refreshment facilitates achieving UHC which our vision by 2025 and commitment by 2030.

To revitalize PHC, there is a political commitment in the country. General Health Policies, endorsed by the Supreme Leader, provides a clear vision to support the primary care system. Apart from this commitment, taking some urgent measures is vital.<sup>49-52</sup> We need strong health leaders that can align policies and financing to support the reorientation of services from a focus on hospital-based and curative care to a focus on community-based and preventive care. We also need an updated approach for health workforce management in which dedicated and multi-skilled public health workforce is trained, employed and motivated for delivering effective population-based services. Finally, more attention should be paid to develop and implement strategies to improve the quality and safety aspects of care, which is the heart of achieving UHC.

In conclusion, establishment of the NHN is a milestone in the history of initiatives accomplished by the country to improve living conditions of Iranian citizens. By focusing more on improving the PHC, NHN could make meaningful progress with health outcomes. However, after the success story of the first two decades of its life, NHN faced many challenges including unsustainable financing; lack of integrity to provide health care; and inadequate, unskillful and unmotivated health workforce and lack of good governance. To tackle these challenges, we need to revitalize PHC to pave the way towards achieving UHC.

#### Authors' Contributions

The present paper was the HSS and RM idea. They have developed the framework of the paper. HSS wrote the first draft. HSS and RM worked in subsequent drafts. All authors confirmed the last version before submission. The authors read and approved the final manuscript. They also declared no funding source .

#### Conflict of Interest Disclosures

The authors have no conflicts of interest.

#### Ethical Statement

Not applicable.

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