



# **ISSUES IN LAW & MEDICINE**

***The Safety of Self-managed Abortion:  
A Dearth of Good-quality Evidence  
and a Wealth of Misrepresentation***  
*Calum Miller, M.D.*

***“Three Decades of Research:”  
A New Sex Ed Agenda and the Veneer of Science***  
*Irene H. Ericksen, M.S. and Stan E. Weed, Ph.D.*

***A Loss of FACE: The Freedom of Access  
to Clinic Entrances Act post  
Dobbs v. Jackson Women’s Health Organization***  
*Gregory J. Roden, J.D.*

***The Pregnancy Continuum in Domestic Sex  
Trafficking in the United States: Examining the  
Unspoken Gynecological, Reproductive, and  
Procreative Issues of Victims and Survivors***  
*Laura J. Lederer, J.D., Theresa Flores, LSW, MS and  
McKamie J. Chandler*

***Chemical Abortions: With and Without  
Medical Supervision***  
*American College of Pediatricians*

***The Teenage Brain: Under Construction***  
*American College of Pediatricians*

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# ISSUES IN LAW & MEDICINE

## CONTENTS

Preface ..... iii

### Articles

The Safety of Self-managed Abortion: A Dearth of Good-quality Evidence and a Wealth of Misrepresentation <i>Calum Miller, M.D.</i> .....	3
“Three Decades of Research.” A New Sex Ed Agenda and the Veneer of Science <i>Irene H. Ericksen, M.S. and Stan E. Weed, Ph.D.</i> .....	27
A Loss of FACE: The Freedom of Access to Clinic Entrances Act post <i>Dobbs v. Jackson Women’s Health Organization</i> <i>Gregory J. Roden, J.D.</i> .....	47
The Pregnancy Continuum in Domestic Sex Trafficking in the United States: Examining the Unspoken Gynecological, Reproductive, and Procreative Issues of Victims and Survivors <i>Laura J. Lederer, J.D., Theresa Flores, LSW, MS and McKamie J. Chandler</i> .....	61
Chemical Abortions: With and Without Medical Supervision <i>American College of Pediatricians</i> .....	77
The Teenage Brain: Under Construction <i>American College of Pediatricians</i> .....	107



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# Preface

This edition features an article by Calum Miller, M.D. It examines self-managed abortion, which has been particularly prominent in recent discussions of abortion due to the rise of telemedicine abortion during the COVID-19 pandemic, and the reality of self-managed illegal abortion in pro-life states following the overturning of *Roe v. Wade*. There has likewise been much concern about disinformation circulated in the media. This article highlights how disinformation and poor quality studies have been used to make implausible claims regarding the safety of telemedicine and the number of deaths from abortion. This puts women's health and lives at risk by promoting unsafe medical practice and the public policy decisions regarding abortion and emergency obstetric care based on inadequate and poorly designed studies.

The second article, by Irene H. Ericksen, M.S. and Stan E. Weed, Ph.D., critiques the research review entitled "Three Decades of Research: The Case for Comprehensive Sex Education," by Goldfarb and Lieberman (2021). That paper purports to show "strong support" for the effectiveness of school-based comprehensive sex education (CSE) as producing many benefits beyond its original goals of preventing teen pregnancy and STDs. The authors reviewed the evidence the study cites in support of these claims, item by item, and found that 1) 80% of the sources cited as supporting evidence for CSE are not studies of CSE programs; and 2) of the few cited studies of actual CSE programs, roughly 90% do not meet recommended scientific standards for evidence of program effectiveness. Important to note, contrary to its claims, the study does not show scientific evidence that comprehensive sex education helps prevent child sex abuse, reduces dating/intimate partner violence or homophobic bullying, or that it should be taught to young children in the early grades. Rather than making "the case for CSE," Goldfarb and Lieberman's review gives the appearance of scientific support to a new CSE agenda that the authors articulate and endorse, which includes early sex education, gender ideology, and social justice theory. However, they do not present scientifically reliable confirmatory evidence for that agenda.

Gregory J. Roden, J.D., in the third article, argues that The Freedom of Access to Clinic Entrances Act of 1994 is no longer a valid exercise of federal jurisdiction under the Fourteenth Amendment, in light of *Dobbs v. Jackson Women's Health Organization*. It also argues that the Act was never

valid under the Commerce Clause, properly understood, as illustrated by the Supreme Court's opinion in *United States v. Morrison*.

In the fourth article, Laura J. Lederer, J.D., et al., supports the fight against sex trafficking by surveying the experiences of victims and survivors. Survivor surveys have illuminated key areas to address, but a clear gap in the research is in the reproductive, gynecological, and procreative health issues of victims and survivors. This article opens the door to research and dialogue by publishing the findings of a pilot survivor survey focused on survivors' sexual and reproductive health. The retrospective survey offers preliminary findings for a larger national study underway in 2023 that will enable healthcare providers, service providers and other first responders to identify and better meet the unique needs of victims and survivors of human trafficking in this area.

The fifth article is a position paper by the American College of Pediatricians, and describes the use of synthetic chemicals to induce abortion and the complications faced by women who obtain care in a medical setting, including hemorrhage and incomplete abortions that may require surgical intervention. Additionally, it describes the increased risks for those women who use telemedicine or the Internet to obtain their chemical abortion, especially when those abortions are completed without physician supervision (self-managed). The risks may include an undiagnosed ectopic pregnancy, increased complications due to underestimated or understated gestational age, Rh isoimmunization, and undiagnosed infection. Intimate partner violence, reproductive coercion, and human trafficking are also less likely to be detected in the absence of an in-person medical evaluation. The American College of Pediatricians encourages health care professionals, policy makers, and women of all ages and their families to understand the serious risks associated with chemical abortions, especially when self-managed. Additionally, pregnant women with regrets after starting chemical abortions need to be informed about the potential for abortion pill reversal.

The American College of Pediatricians, in a second position paper, asks the question whether sexual activity, alcohol and drug use, violent video games, pornography and other activities, including use of social media, damage adolescent minds? Early high-risk behaviors appear to have significant harmful effects on the brain's development. Evidence suggests that the hormones and neural patterns triggered may lead to addictive, and other high-risk behaviors, social withdrawal, and depression. Compounding these concerns are the immature decision-making processes during adolescence. Fortunately, parents can positively impact the brain development of adolescents as they assist in decision-making, provide structure to the adolescent's environment, and monitor the adolescent's activities.

The edition marks the first e-journal edition of *Issues in Law & Medicine*; no printed journal is available. It is also the first edition to be open access; no

subscription is required to view or download the articles on the <https://IssuesinLawandMedicine.com> website. In addition, a new open access website is being constructed, but not quite ready yet. These are major changes for us and the editors hope that with these changes the journal will continue to grow in popularity and influence for legal and healthcare professionals, both domestically and internationally.

Barry A. Bostrom, J.D.  
EDITOR-IN-CHIEF





**IL&M**

## ***Articles***



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# **The Safety of Self-managed Abortion: A Dearth of Good-quality Evidence and a Wealth of Misrepresentation**

Calum Miller, M.D.\*

**ABSTRACT:** Self-managed abortion has been particularly prominent in recent discussions of abortion, with the rise of telemedicine abortion during the COVID-19 pandemic and the reality of self-managed illegal abortion in pro-life states following the overturning of *Roe v. Wade*. There has likewise been much political concern about misinformation and fake news circulated in the media. This article highlights how misinformation and poor quality studies have been used to make implausible claims regarding the safety of telemedicine and the number of deaths from unsafe abortion where abortion is illegal. This puts women's health and lives at risk by authorizing unsafe medical practice and poorly evidenced policy decisions regarding abortion and emergency obstetric care.

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## **Introduction**

The argument that legalising abortion makes it safer and prevents women dying from dangerous illegal abortions has been perhaps the most prominent argument historically for legalising abortion, continuing to this day in many pro-life countries. The argument is forceful because it does not depend on any particular view about the moral value of the fetus, or on the balance between a woman's bodily autonomy and the child's right

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\* Dr Calum Miller is a Research Fellow at the University of Oxford and a practicing medical doctor in the UK.

to life. It says that even if abortion is morally wrong, it should be legal, because women will die otherwise. Sometimes the claim is also added that legalising abortion will not increase the number of abortions; it will only convert illegal abortions to legal abortions. This latter claim has been disproven repeatedly.<sup>1</sup>

At the same time, there has been an interest in a new kind of self-managed abortion: telemedicine abortion. This involves the provision of abortion drugs to women without them ever being seen in person by a healthcare professional (for a face-to-face history, examination, ultrasonography, and/or blood tests). It is impossible to deny that self-managed or so called 'backstreet' abortion without any in-person contact has become a lot safer than in most of the 20<sup>th</sup> century and even earlier. Yet serious concerns about telemedicine abortion have been raised by leading (typically pro-choice) medical and safeguarding authorities in the UK, one of the first countries to introduce telemedicine abortion.<sup>2</sup>

The argument from illegal/backstreet abortions and the argument for telemedicine abortion may cancel each other out, to a degree: if self-managed abortion really is safe, then criminalising abortion is unlikely to lead to a large number of deaths from self-managed abortion. It is perhaps for this reason that the US Women's March, advocating for greater abortion access, explicitly advised attendees not to use coat-hanger imagery for fear of perpetuating the 'right-wing talking point' that self-managed abortion is unsafe.<sup>3</sup>

The reality is more complicated: telemedicine abortion with mifepristone and misoprostol is certainly much safer than methods of abortion in earlier centuries and decades, but is still less safe than abortion counselled and performed in medical establishments.<sup>4</sup> The convergence of illegal and legal abortion upon telemedicine abortion suggests that whatever impact the legalisation of abortion might have on maternal mortality will tend to zero as time goes on. Previous papers have described in greater detail the evidence relating to telemedicine abortion and the relationship between abortion legalisation and maternal mortality,<sup>5</sup> with a more comprehensive survey of the empirical evidence on backstreet abortions to follow.<sup>6</sup>

The political nature of both of these topics has the consequence that claims may be made which are not rooted in strong evidence, in both the mainstream media and in academic settings. In this article, I describe some case studies of poorly evidenced claims in both contexts, emphasising the need for rigorous

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<sup>1</sup> Ekblad (1956); Foster (2018); Foster (2018; 2020); Frejka (1983); Gebhard (1959); Huldt (1968); Levine (2004); New (2018).

<sup>2</sup> Royal College of Paediatrics and Child Health (2022); National Network of Designated Healthcare Professionals for Children (NNDHP) (2022).

<sup>3</sup> Women's March (2021).

<sup>4</sup> Miller (2022b).

<sup>5</sup> Miller (2021a; 2022a; 2022b).

<sup>6</sup> Miller (forthcoming; unpublished).

study design and integrity in making empirical claims in the public sphere. In the case of unsafe abortion mortality, I examine some recent estimates of deaths from unsafe abortion. In the case of telemedicine abortion, I focus on the studies typically cited in favour of its safety. I pay particular attention to the UK context, whence much of the conversation and literature on unsafe abortion and telemedicine abortion derives.

## **Unsafe Abortion Mortality**

### ***The Royal College of Obstetricians and Gynaecologists in 1966***

Unsafe abortions – also known as backstreet or backalley abortions—are abortions in which the mother’s life or health is also threatened, due to dangerous methods or lack of medical supervision. They are typically identified with illegal abortions—also known as criminal or clandestine abortions—but the correlation is not exact, since legal abortions can be dangerous for the mother and illegal abortions can be relatively safe for her.

The argument from unsafe abortion to legal abortion typically involves premises like the following:<sup>7</sup>

- 1) There is a huge number of illegal abortions.
- 2) There is a huge number of deaths from illegal abortions.
- 3) Legalising abortion won’t increase the abortion rate.
- 4) But it will stop women from dying from illegal abortions.

Pro-life scholars often and unsurprisingly dispute some, if not all, of these claims. Less well known is that in 1966, the year before abortion was legalised in the UK, the Royal College of Obstetricians and Gynaecologists (RCOG) likewise disputed them with unanimous approval from their Council, noting that each was at that time without empirical foundation.

In response to 1), they noted that “It has been repeatedly stated that as many as 100,000 criminal abortions are induced in this country each year, and a more recent estimate is 250,000. These, and an earlier figure of 50,000, are without any secure factual foundation of which we are aware... In the experience of many gynaecologists working outside large cosmopolitan cities the occurrence is relatively uncommon.”<sup>8</sup>

In response to 2), they pointed out that the vast majority of abortion complications were actually from spontaneous abortion, i.e. miscarriage: “it is the experience of gynaecologists that most cases of abortion treated in hospital are spontaneous in onset, and their occurrence is to the disappointment of the patient. Our impression is that not more than one out of five abortions treated in hospital is other than spontaneous in onset.”<sup>9</sup>

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<sup>7</sup> Singh et al. (2018), p. 41.

<sup>8</sup> Royal College of Obstetricians and Gynaecologists (1966).

<sup>9</sup> Ibid.

In response to 3),<sup>10</sup> the RCOG explained that not only did legalisation increase legal abortion rates, it was not even clear it decreased illegal abortion rates at all: “criminal abortion becomes less abhorrent, and those guilty of the offence receive punishments so light as not to discourage them and others in their activities. The total effect is that women are increasingly ready to have their pregnancies terminated and potential criminal abortionists are less reluctant to help... [In Japan], during the years immediately following legalization of abortion on socio-economic as well as medical grounds it is reckoned that when the number of legal abortions rose to one million per annum the number of illegal abortions was also one million per annum.”<sup>11</sup>

Finally, responding to 4), they noted that the empirical evidence for this claim was non-existent, not least because illegal abortions themselves usually did not decrease: “except in those countries where abortion on demand and without inquiry is permissible, the legalization of abortion often resulted in no reduction and sometimes in a considerable increase in the number of illegal abortions. This is because those women who aim to be rid of an unwanted pregnancy are so concerned to preserve secrecy or to avoid delay that they continue to seek help from unorthodox sources... In Hungary and Czechoslovakia, where abortion is induced freely, the number of abortions other than legal treated in hospital in 1961 was approximately the same as in the years before the introduction of abortion laws.”<sup>12</sup>

In 1970, 3 years after abortion was legalised, they considered themselves vindicated: “The fact that legalization of abortion has not so far materially reduced the number of spontaneous abortions or of deaths from abortions of all kinds is not surprising. It confirms the experience of most countries and was forecast by the College’s 1966 statement.”<sup>13</sup>

### ***United States Figures***

In the same era, claims of thousands of deaths from unsafe abortion in the US were common. But it was later revealed by Bernard Nathanson—a leading abortion advocate who subsequently changed his mind—that these figures were fabricated:

How many deaths were we talking about when abortion was illegal? In NARAL we generally emphasized the drama of the individual case, not the mass statistics, but when we spoke of the latter it was always 5,000 to 10,000 a year. I confess that I knew the figures were totally false, But in the

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<sup>10</sup> Which, as noted earlier, is not only implausible given basic economic theory, but has also been decisively disproven.

<sup>11</sup> *Ibid.*

<sup>12</sup> *Ibid.*

<sup>13</sup> Royal College of Obstetricians and Gynaecologists (1970).

“morality” of our revolution, it was a useful figure, widely accepted, so why go out of our way to correct it with honest statistics?<sup>14</sup>

In fact, CDC statistics demonstrate that in 1972, the year before *Roe v. Wade*, 63 women died from abortion, 24 of which were from legal abortion and 39 from illegal abortion.<sup>15</sup> Despite this, the American College of Obstetricians and Gynecologists and Planned Parenthood, as recently as 2019 and 2014 respectively, maintained that 5,000 women a year were dying of unsafe abortion prior to *Roe v. Wade*.<sup>16</sup>

Such implausible claims are not uncommon in the mainstream media. I offer here further examples.

### **Kenyan Figures**

In August 2020, it was reported by Reuters that Kenya was condemning women to death by unsafe abortion, even despite a constitutional change in 2010 allowing greater access to abortion than previously. One parliamentarian, Martha Karua, claimed that “Ten years since the promulgation of the constitution we are still losing the lives of women and girls in great numbers... These deaths are preventable, but unfortunately little has been done... Our inaction has pushed poor women and girls to quacks. We are condemning them to death by unsafe abortion.”<sup>17</sup>

The basis for these remarks was a new report by the Center for Reproductive Rights<sup>18</sup> claiming that unsafe abortion was still a major problem. But the figures cited by Reuters—that 2,600 women still die annually from unsafe abortion—were explicitly noted by the CRR as being prior to the constitutional reform of 2010. The CRR report also claimed that in the early 2000s, 35% of maternal deaths were attributable to unsafe abortion (from which the 2,600 figure is seemingly derived, given 7,700 maternal deaths). The source for this claim is ostensibly the 1998 Demographic and Health Survey. A source from a quarter century ago is evidently not a reliable basis for saying that in the current day, despite constitutional reform just 10 years ago, many women are dying from abortion.

But this is not the only problem: a more pressing problem is that the 1998 DHS Report has no figures at all concerning causes of maternal death, abortion-related or otherwise. Even the underlying dataset provided no data on this question. On personal correspondence with the DHS Program, it was

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<sup>14</sup> Nathanson and Ostling (1979).

<sup>15</sup> Koonin et al. (1996). Some states had legalised abortion slightly earlier, hence the large number of deaths from legal abortion.

<sup>16</sup> Kessler (2019).

<sup>17</sup> Bhalla (2020).

<sup>18</sup> Center for Reproductive Rights (2020).

confirmed that ‘there is no basis for giving a percentage breakdown and saying they come from DHS... The variable MM11 is “NA” (not applicable)—the information was not collected in the survey.’<sup>19</sup> One of the most widely circulated figures on deaths from unsafe abortion in Kenya is not only from quarter of a century ago; even then it appears to have been invented; at the very least, it is extremely difficult to discern where it might have originated.<sup>20</sup>

Such erroneous claims are not, however, confined to mainstream media: as already demonstrated, they appear in claims by legislators and in documents circulated by NGOs (in this case, the Center for Reproductive Rights) lobbying for abortion across the world.

They are also made by professional bodies and academic institutions. For example, the International Federation of Gynecology and Obstetrics in 2019 claimed that 17% of maternal deaths in Kenya are due to unsafe abortion.<sup>21</sup> But a closer look at their source, Mutua et al. (2018), suggests that ‘up to’ 17% of deaths ‘may’ be associated with induced abortion. Mutua et al. did not use any data from Kenya specifically, but relied on a 2014 estimate from the World Health Organization (WHO) that, between 2003 and 2009, 9.6% of maternal deaths in sub-Saharan Africa generally were from abortion —with 17.2% being the upper bound of a large confidence interval.<sup>22</sup>

Hence there are at least three problems with the FIGO statistic: it is relatively outdated, it is a statistic for sub-Saharan Africa generally, not Kenya, and it is the upper bound of a confidence interval, not the actual point estimate.

A fourth and even more critical problem is that the WHO study explicitly noted that ‘abortion’ in this context includes not only unsafe abortion, but also safe induced abortion, spontaneous abortion, ectopic pregnancy, and a variety of other less common causes of maternal death.<sup>23</sup> There is nothing in the WHO study to distinguish unsafe abortion as a cause of death from the other causes—and hence no basis for estimating any number of deaths from unsafe abortion specifically. The situation is relevantly similar to knowing that, say, 30% of deaths in a given population are from cancer, and claiming that 30% of deaths in the same population are from breast cancer specifically. Hence there are at

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<sup>19</sup> Personal correspondence with the Demographic and Health Survey Program.

<sup>20</sup> Likewise, the CRR in 2015 claimed that 35-50% of maternal deaths were attributable to unsafe abortion. This came from a 2012 report from the Kenyan National Commission on Human Rights, which relied on a 2004 document by an abortion activist group, Ipas. But this document is no longer available online (Ipas did not respond to a request for the document). A *British Journal of Obstetrics and Gynaecology* paper with a very similar name by an Ipas researcher published in 2005 made no claims about the percentage of maternal mortality attributable to unsafe abortion. There is no indication of where a 35-50% figure could come from. See Center for Reproductive Rights (2015).

<sup>21</sup> Kaaria (2019).

<sup>22</sup> Say et al. (2014).

<sup>23</sup> Ibid.



least 4 critical problems with the FIGO statistic. In fact, the 2017 Confidential Enquiry into Maternal Deaths in Kenya revealed that only 1.7% of maternal deaths were clear cases of induced abortion (some or many of which may well have been legal).<sup>24</sup>

This example therefore helpfully illustrates some of the various ways in which abortion mortality statistics are misrepresented in the public domain, not only by mainstream media actors but also professional bodies and institutions. In fact, the latest evidence suggests an extremely small percentage of maternal deaths in Kenya are related to unsafe abortion.

### **Global Figures**

While there is little reason to doubt that the WHO estimate (when properly interpreted as referring to a variety of causes) for 2003-2009 was an accurate reflection of maternal mortality causes during that period, there is reason to doubt the WHO's commitment to accurate abortion mortality statistics subsequently.

For example, this same study noted that 4.7-13.2% of global maternal deaths from 2003-2009 were due to abortive outcomes, again, including safe abortion, spontaneous abortion and ectopic pregnancy, *inter alia*. But the WHO in their other literature and advocacy consistently claim<sup>25</sup> that this figure refers only to 'unsafe abortion', despite the clarity of the paper itself, despite repeatedly being corrected, and despite one of the paper authors—who works for the WHO—agreeing that this is a misrepresentation of the statistic.<sup>26</sup> This author did not reply when it was pointed out that the WHO made this same misrepresentation as other sources.

The same statistic has been variously misrepresented by other prominent organisations, including the UN Office of the High Commissioner for Human Rights,<sup>27</sup> the RCOG,<sup>28</sup> and the British Medical Association.<sup>29</sup> When Up To Date was informed of this error, they immediately corrected it.<sup>30</sup> By contrast, the Royal College of Obstetricians and Gynaecologists only removed the claim after many months, and only in a website overhaul which appeared to remove the offending article along with many others. The claim still appears at least twice on their website.<sup>31</sup> When asked whether they would write to the WHO to help correct the misinformation, the RCOG replied that 'we do not feel it is our place to write to the WHO on this matter. We have responsibility for the

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<sup>24</sup> Ministry of Health Kenya (2017).

<sup>25</sup> World Health Organization (2021).

<sup>26</sup> Personal correspondence with a study author.

<sup>27</sup> Office of the United Nations High Commissioner for Human Rights (2020).

<sup>28</sup> Royal College of Obstetricians and Gynaecologists (2020a).

<sup>29</sup> Regan (2018).

<sup>30</sup> Personal correspondence with Up to Date; Up To Date (2023).

<sup>31</sup> Royal College of Obstetricians and Gynaecologists (2018; 2020b), rounded to 5-13%.

accuracy of our own outputs, but we cannot be responsible for those of other organisations.<sup>32</sup> It is harder to see how this unwillingness to politely correct an important mistake by an allied organisation aligns with the stated mission of the RCOG which includes “[advising] the government and other public bodies on healthcare matters relating to O&G.”<sup>33</sup> Indeed, the RCOG frequently goes significantly beyond engaging with international organisations to advocating for law change on abortion in other sovereign nations<sup>34</sup> where RCOG’s ideological positions are rejected by the overwhelming majority of the population—in lobbying efforts which have for decades been criticised as neo-colonial.<sup>35</sup> The RCOG even explicitly say that they “are committed to advocating for safe abortion care globally for everyone who needs it.”<sup>36</sup> A small note to the WHO correcting a demonstrable and harmful error would be a minor interference by contrast.

The American College of Obstetricians and Gynecologists makes the same basic error in their commentary on mortality from unsafe abortion globally. They write that ‘approximately 25 million women around the world resort to unsafe abortions each year, and complications from these unsafe procedures account for as many as 15% of all maternal deaths, approximately 44,000 annually.’<sup>37</sup> However, the supplementary material for their source clearly shows that this figure include deaths from ectopic pregnancies, miscarriages, and a variety of other conditions<sup>38</sup>—not to mention the fact that the Global Burden of Disease study on which they rely had been updated since, with far fewer deaths from abortion estimated.

### **Malawian Figures**

A final example along the same lines was a recent claim from the RCOG that 12,000 women die every year in Malawi from unsafe abortion. The RCOG cited a recently published article by *The Telegraph*, which claimed that ‘Thousands of women’ (namely, 12,000) were ‘dying like chickens’. But this is impossible, since total maternal deaths in Malawi are fewer than 2,000.<sup>39</sup> Despite this demonstrable impossibility, the RCOG initially refused to retract their endorsement of the claim, holding that “There isn’t any controversy about the article anywhere else and *The Telegraph* hasn’t retracted anything since the

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<sup>32</sup> Personal correspondence with senior board member.

<sup>33</sup> Royal College of Obstetricians and Gynaecologists (2022).

<sup>34</sup> E.g. Royal College of Obstetricians and Gynaecologists (2021).

<sup>35</sup> Ekeocha (2018).

<sup>36</sup> Royal College of Obstetricians and Gynaecologists (2023).

<sup>37</sup> American College of Obstetricians and Gynecologists (2020).

<sup>38</sup> Kassebaum et al. (2014).

<sup>39</sup> Miller (2021a).

article was published in February. We therefore feel satisfied that this article accurately portrays the situation for women in Malawi.<sup>40</sup>

This position became increasingly unsustainable as a comprehensive review of abortion deaths in Malawi had been published shortly before this response,<sup>41</sup> along with a *Journal of Medical Ethics* blog<sup>42</sup> drawing attention to the errors. The RCOG subsequently retracted their endorsement after a protracted dispute, commenting understatedly that ‘there is a question mark over the figure for maternal deaths’.<sup>43</sup> Likewise, after nearly a year of complaints and an intervention by the Independent Press Standards Organisation, *The Telegraph* withdrew the original article, agreeing that “a closer examination of the joint report [on which the original article was based], which is publicly available, shows that this estimate of 12,000 women dying from backstreet abortions annually is unsupported by the data contained in the report. In fact the number of deaths from back street abortion in Malawi is likely to be far lower.”<sup>44</sup>

*The Telegraph* did not specify just how much lower, but they did link to the comprehensive review published in 2021. This suggested that the real proportion of deaths from abortion and miscarriage combined had already fallen to 6% by 2001, equating to around 70-150 deaths today—around half (or perhaps more) of which may be from miscarriage,<sup>45</sup> suggesting 35-75 deaths from induced abortion given a 6% overall rate. But since abortion mortality generally falls as a proportion of maternal mortality over time,<sup>46</sup> this proportion has in all likelihood fallen further in the last 20 years. Hence deaths from abortion in Malawi are therefore probably significantly lower than 35-75 now. That a figure of 12,000 was claimed in the media and cited with approval by the RCOG illustrates how easily such misinformation can go unchecked.

## Telemedicine Abortion

In this section I describe some of the ways in which poor research methodology and the selective presentation or misinterpretation of results have put women’s life and health at risk, in a new kind of unsafe self-managed abortion—this time with the imprimatur of leading abortion advocacy groups and other organisations, such as the WHO.

Telemedicine abortion is defined in various ways in the literature: here, I refer to what might be called ‘full telemedicine abortion’—the provision of

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<sup>40</sup> Personal correspondence with senior board member.

<sup>41</sup> Miller (2021a).

<sup>42</sup> Miller (2021b).

<sup>43</sup> Personal correspondence with senior board member.

<sup>44</sup> *The Telegraph* (2022).

<sup>45</sup> Miller (2021a).

<sup>46</sup> Miller (2021a; 2022a; forthcoming; unpublished).

abortion pills without any in-person contact with a healthcare provider. That some elements of the abortion process could be performed remotely is trivially true; what is more controversial is the recent move in a few countries<sup>47</sup> to prescribe abortion pills without any in-person contact at all.<sup>48</sup> This necessarily removes, as routine features: a) guaranteed privacy for taking a history; b) ultrasound examination; c) blood testing, especially Rhesus; d) physical examination; e) sexually transmitted disease (STD) testing; f) supervision of pill administration.

Many scholars and doctors, including some leading professional bodies, have raised concerns about the safety of this practice. These concerns have not been limited to those ideologically opposed to abortion, but have been shared by leading pro-choice bodies responsible for the safeguarding of children and vulnerable adults in the UK, such as the Royal College of Paediatrics and Child Health (RCPCH) and the National Network of Designated Healthcare Professionals for Children (NNDHP). These concerns were so serious that both groups actively lobbied for the law to restrict telemedicine abortion access, and included the following:<sup>49</sup>

1) Safeguarding: Women and girls who are victims of abuse or trafficking frequently present to abortion providers,<sup>50</sup> which have therefore traditionally been a centrally important opportunity to make contact with such women and girls and identify them as victims; moreover, coerced abortions make up a large minority of abortions,<sup>51</sup> and a private consultation was previously the primary mechanism of determining that an abortion was really the women's choice—private consultations obviously cannot be guaranteed via telemedicine.<sup>52</sup>

2) Ectopic pregnancies: Ultrasound is the standard way of excluding ectopic pregnancy, but a physical examination can help in its absence. Ectopic pregnancies are therefore more likely to be missed with telemedicine, and moreover, the symptoms of medical abortion are often impossible to differentiate from a ruptured ectopic pregnancy, leading to delays in presentation if an ectopic pregnancy does rupture.<sup>53</sup>

3) Delayed gestation: Without an ultrasound (or physical exam) it is impossible to reliably determine with accuracy the gestation of the pregnancy; as a result, dozens of babies have been born at late gestations in the UK with no medical supervision after attempted telemedicine abortions, sometimes to teenage girls, and in at least one case resulting in

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<sup>47</sup> Moreau et al. (2021).

<sup>48</sup> Full telemedicine allow some women to be seen in person, but not routinely; this would only occur after initial screening in a telephone or video consultation.

<sup>49</sup> Described at greater length with complete references in Miller (2022b).

<sup>50</sup> Lederer and Wetzel (2014), Motta et al. (2015).

<sup>51</sup> Miller (2022b); ComRes (2022).

<sup>52</sup> Miller (2022b).

<sup>53</sup> Ibid.

a murder investigation after a baby was born alive.<sup>54</sup> Moreover, at later gestations, Rhesus isoimmunisation may occur, putting future pregnancies at risk of Rhesus disease. The WHO previously recommended giving anti-D for abortions over 9 weeks, recently changing this to 12 weeks without a clear evidence base. They claimed that the ‘theoretically there should be zero chance of antibody formation’<sup>55</sup> at 12 weeks, despite clear cases contradicting this claim in the literature of Rh sensitisation in women having abortions prior to 12 weeks.<sup>56</sup>

4) Lack of examination: Without an examination, the provider may miss other important examination findings such as multiple pregnancy, fibroids, pelvic tumours, or a molar pregnancy. They will also likely miss signs of conditions requiring more complex abortion provision, such as anaemia, malaria or RTIs/STIs.<sup>57</sup>

5) Interval between mifepristone and misoprostol: Although this applies to all home abortion regardless of whether there has been an in-person consultation, and although the proper interval is not always reliably reserved even in abortion clinics, telemedicine exacerbates these poor practices and increases the risk of complications.<sup>58</sup>

6) STD testing: Although STD testing, particularly chlamydia, is recommended before every abortion, there has been a doubling of women not receiving an offer of chlamydia screening before abortion since telemedicine was introduced in the UK.<sup>59</sup>

7) Contraception: Post-abortion contraception is standardly seen as an important intervention to prevent further unwanted pregnancies. However, telemedicine abortion during COVID caused an enormous drop in the uptake of the most effective contraception (LARCs), from around one third to 8.7% of patients.<sup>60</sup> Leading advocates of telemedicine abortion later drew out this implication in more detail.<sup>61</sup>

### **Evidence for Telemedicine Abortion Prior to COVID-19**

The evidence for the general safety of telemedicine abortion was very limited prior to COVID. A 2019 systematic review by Endler et al. found that ‘Several areas, however, remain to be investigated in order to substantiate policy recommendations on abortion care though [telemedicine].’ The review found that for the least unsafe telemedicine procedures, those below 10 weeks, hospitalisation rates of up to 2.85% were seen, in addition to the 0.9-19.3% rates of surgery for incomplete abortion. When all gestations were included, surgery

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<sup>54</sup> Ibid.

<sup>55</sup> World Health Organization (2022).

<sup>56</sup> Goldman and Eckerling (1972); Gavin (1972).

<sup>57</sup> World Health Organization (2012).

<sup>58</sup> Miller (2022b).

<sup>59</sup> Ibid.

<sup>60</sup> Ibid.

<sup>61</sup> Dixon et al. (2022).

rates varied from 8.5-20.9% and the need for antibiotics was 9.3%. It was noted that surgical evacuation rates with telemedicine abortion are higher than normal.<sup>62</sup>

In addition to these somewhat concerning findings, the review had significant limitations. First, ectopic pregnancies were not measured or discussed at all—a considerable limitation given that this is one of the primary safety concerns regarding telemedicine abortion. Moreover, the studies included had high attrition rates of 5-57% and mostly used self-reported data, and so the authors concluded that the overall data quality was low, with a high risk of selection bias. Most crucially, this review included studies which retained mandatory ultrasound prior to the abortion. Hence it did not properly evaluate full telemedicine—that is, lack of in-person contact.

Despite their somewhat cautious conclusions and significant limitations—with Endler et al. noting the low data quality—this review has been presented by others as demonstrating the safety of telemedicine abortion. Particularly troubling is that it has been used to advocate for full telemedicine,<sup>63</sup> when the review is very clear that many of the studies were not full telemedicine at all—they used some of the key safeguards missing in full telemedicine (e.g. routine ultrasonography).

A similar systematic review was performed by the Cochrane Library in 2020, on home abortion (in which the abortion pills are taken at home). This concluded that ‘The evidence for the safety of these interventions was very low.’<sup>64</sup> Since telemedicine abortion is a specific subset of home abortion—the subset with no in-person contact at all—the evidence base for telemedicine abortion was necessarily slimmer still.

Hence prior to the COVID pandemic, the evidence base for home abortion in general, including telemedicine abortion, was extremely limited. Nevertheless, it was promoted from the beginning of the pandemic as safe and effective, becoming authorised in a variety of countries almost immediately.

### ***Evidence for Telemedicine Abortion Since COVID-19***

Since the evidence base was inevitably still somewhat limited, a variety of studies were conducted during the pandemic with the aim of demonstrating the safety and efficacy of full telemedicine abortion. Some of the leading proponents of telemedicine abortion, Parsons and Romanis, subsequently cited (in addition to the review by Endler et al.) four studies, claiming that ‘There is a strong body of evidence to demonstrate that [telemedical early medical abortion] is safe, effective, and acceptable to patients.’<sup>65</sup>

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<sup>62</sup> Endler et al. (2019).

<sup>63</sup> E.g. Parsons and Romanis (2022); British Society of Abortion Care Providers (2020).

<sup>64</sup> Cochrane Library (2020).

<sup>65</sup> Parsons and Romanis (2022).

These studies, however, fail to support Parsons and Romanis' conclusions. The first was a qualitative study of 45 patients,<sup>66</sup> and the second had minimal data on complications,<sup>67</sup> focusing on client satisfaction instead. The third found that 6% of patients had emergency room visits and 7.8% other outpatient visits. Moreover, around three quarters of the patients did in fact have ultrasound, and the outcomes did not distinguish these from women who had in-person contact but no ultrasound, or from those who had full telemedicine (i.e. no in-person contact).<sup>68</sup> None of these, therefore, show that full telemedicine—no routine in-person contact—is safe and effective. Yet full telemedicine is exactly what is at stake.

In fact, they only cite one study which actually addresses full telemedicine, Aiken et al. (2021), which claimed to study 85% of all medical abortions nationally from April to June 2020, and reported 1.2% incomplete abortions and 0.7% requiring surgical evacuation. This is the primary study on which the RCOG and other pro-abortion medical bodies also relied for their political advocacy.<sup>69</sup>

The authors claimed that telemedicine was more efficient and hence allowed earlier abortions, which are safer in general. But this was unconvincing for at least six reasons: 1) there was a pre-existing trend towards earlier abortions into which the alleged trend would fit; 2) the pandemic may have caused earlier recognition of pregnancy; 3) given the lack of ultrasound, the gestations measured were not reliably accurate; 4) the alleged reduction in gestation was 0.4 weeks (2.8 days); yet 5) this was outweighed by the time taken to deliver the pills (2.4 days on average; in some cases 5 days or never), since the study measured only the *posting* of the pills and not their reception; and 6) the fact that only half of women receiving pills take them the same day, with 2.5% taking them over a week later.<sup>70</sup>

Hence the proposed mechanism for telemedicine being safer is without empirical foundation. But the results are likewise demonstrably inaccurate. For example, they say that only 1.2% had incomplete abortions (including continued pregnancy). This would be surprising enough given background data suggesting that incomplete abortion rates are typically much higher.<sup>71</sup> But the specific data for England and Wales in 2020 show a rate of 6% for incomplete abortions on Freedom of Information requests to hospitals.<sup>72</sup> Hence the study demonstrably underrepresented complications by a very large margin. Clearly,

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<sup>66</sup> Kerestes et al. (2021).

<sup>67</sup> Meurice et al. (2021).

<sup>68</sup> Chong et al. (2021).

<sup>69</sup> Royal College of Obstetricians and Gynaecologists et al. (2022).

<sup>70</sup> For each of these claims, see Miller (2022b) and references therein.

<sup>71</sup> Endler et al. (2019).

<sup>72</sup> Duffy (2021).

hospitals have picked up many complications which were not found by the study authors. This is consistent with evidence from healthcare regulators in the UK that abortion clinics have had significant failures in reporting incidents to the appropriate regulators.<sup>73</sup>

In fact, Aiken et al. did find that post-abortion discovery of ectopic pregnancy was three times more common with telemedicine than with the traditional model—and this was likely an underestimate given the aforementioned concerns about underreporting. This was not mentioned because the sample size was too small to demonstrate statistical significance—but clearly warrants further study and caution in the interim. Likewise, abortions of a greater gestational age than clinically safe (by the standards of those who think telemedicine abortion is safe) numbered 11 in the telemedicine group, compared to none in the non-telemedicine group. These were likewise grossly underestimated given what is known from Freedom of Information requests.

Thus the evidence cited to support full telemedicine—no routine in-person contact—is largely from studies which *did* have routine in-person contact. In the major study which did look at full telemedicine, the results are simply inconsistent with all background knowledge, and even with known data from what is substantially the same dataset.

### ***The Political Dynamics of Telemedicine Abortion***

It is inevitable in such a politically invested subject that some of those pursuing a particular policy will at times rely on substandard evidence—or misrepresent the evidence—in order to achieve that end. This may happen intentionally or unintentionally. Either way, it raises the need for critical analysis of the evidence to ensure that women's safety is not jeopardised by unsafe medical practice. In this case, unsafe, non-evidence based practice has been authorised primarily for political reasons, supported by an uncritical use of poor quality studies, and misrepresentation of other studies.

It was claimed by some medical authorities that there was robust evidence for telemedicine's safety, that there was no convincing evidence against it, and that the only opposition to it was from pro-life ideologues. For example, it was suggested by a variety of abortion activist medical bodies that the National Network for Designated Healthcare Professionals—the National Health Service's network of senior doctors and nurses with child safeguarding responsibilities—were not 'authorities who have expertise and experience in the safeguarding of young people who present for abortion care.'<sup>74</sup>

Those same medical bodies, defending telemedicine's safety, drew attention to the fact that the Royal College of Paediatrics and Child Health had produced guidance supporting telemedicine for young people—but when the

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<sup>73</sup> See, for example, Care Quality Commission (2021a; 2021b; 2021c).

<sup>74</sup> Morris et al. (2021).



RCPCH (2022) were allowed to speak for themselves they raised their own concerns about telemedicine abortion for young people and supported a parliamentary amendment to restrict it, despite their general support for abortion access for children.

Again, the NNDHP and RCPCH are not pro-life bodies—they are leading pro-choice medical authorities<sup>75</sup> whose duty is to safeguard children, teenagers and vulnerable young adults. Their sincere medical and safeguarding opinion was that telemedicine abortion was fundamentally unsafe, even going so far as to support political action against it.<sup>76</sup>

In 2022 the same groups supporting telemedicine abortion, including the RCOG and the Royal College of Midwives, escalated their rhetoric against the NNDHP,<sup>77</sup> accusing the NNDHP of ‘undermining] the democratic process’ simply for sharing their concerns as experts and experienced clinicians in child safeguarding *after* the matter had been debated in Parliament. This makes little sense: the fact that the legislature has made a decision evidently does not make it anti-democratic for child safeguarding professionals to voice concerns about that decision.

The groups attempted to undermine their colleagues at the NNDHP further by attributing the NNDHP’s statement to ‘individuals within that group’ and implying that the group had inadequate governance and did not respect the diversity of their members. But given the stances described above that the RCOG has taken (in various cases rooted in misinformation and certainly not reflecting their diversity of membership) and the ways in which they have explicitly resisted accountability when challenged over misinformation—this criticism is difficult to take seriously, or at least, easy to turn back against the RCOG itself. The RCOG is not the only one of the groups with questionable governance and lack of accountability to its members: the Royal College of Midwives, for example, had just a few years prior suffered a revolt after its President—with the vested interest of being Chairman at the UK’s largest abortion provider—unilaterally signed the College up to supporting the complete decriminalisation of abortion with no consultation among members whatsoever.<sup>78</sup>

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<sup>75</sup> ‘We now call for a full review of abortion service provision that gives the needs of all children and young people separate and distinct consideration, ensuring that they have ready access to safe and effective abortion services.’ National Network for Designated Healthcare Professionals for Children (2022); ‘Every child and young person has the right to the best possible health. It is in the best interests of a child or young person to have equitable access to safe, effective and quality abortion services.’ Royal College of Paediatrics and Child Health (2022).

<sup>76</sup> National Network for Designated Healthcare Professionals for Children (2022); Royal College of Paediatrics and Child Health (2022).

<sup>77</sup> Morris et al. (2022).

<sup>78</sup> Petre and Adams (2016).

Given the extremely poor quality of the evidence cited by the RCOG and other groups, the credibility (and lack of pro-life vested interest) of dissenting professional groups, and the rare to unprecedented hostility implicit in these remarks between professional medical colleagues, the best explanation of the attacks on those groups is that they are perceived as a threat to a valued political interest—namely, easier access to abortion through the removal of safeguards.<sup>79</sup> But in this case, the political interests are putting women and girls in danger, by misleading them about the safety of taking abortion pills without ever being seen in person. The reality is that this is a controversial treatment which has primarily been advocated by highly politicised groups with a strong ideological commitment to abortion—but opposed by a wide range of stakeholders from a variety of perspectives, with a great deal of expertise, experience and, crucially, evidence.

### Politics and Academia

The misrepresentation of data and the selective use of poor quality data in academic settings in service of abortion ideology is nothing new. Katerini Storeng and Jennifer Palmer described in *The Lancet* the intimidation and threats they and their co-authors received when evaluating the efficacy of maternal health and family planning interventions funded by the Department for International Development and implemented by Marie Stopes International and Ipas, two of the world's leading abortion lobbyist groups: "Censorship is a strong word. But what else can you call it when a donor that commissions a research-based evaluation of one of its major global health programmes instructs the researchers to omit important results from their final report? Or puts pressure on them to change the tenor of their conclusions? Or when a staff member of an implementing partner that is being evaluated threatens the reputation of the researchers and their university if they publish negative findings?"<sup>80</sup> The Department for International Development's maternal health work has already been criticised for focusing disproportionately on family planning as a result of its strong incentives to show cost-effectiveness even when a programme is failing. Avoidable maternal deaths occur as a result.<sup>81</sup>

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<sup>79</sup> The RCOG are explicit about their vested political interests: "Denying pregnant people safe abortion care may lead to violations of their right to life, their right to health, their right to privacy and can in some cases amount to cruel, inhumane or degrading treatment. Women and girls should have the right to choose what they do with their own bodies. The RCOG and FSRH are committed to advocating for safe abortion care globally for everyone who needs it." (Royal College of Obstetricians and Gynaecologists, 2023).

<sup>80</sup> Storeng and Palmer (2019). The original paper was examining the ways in which Marie Stopes International and Ipas used donor funding from the UK government to lobby covertly for the legalisation of abortion in various African countries.

<sup>81</sup> Miller (2021a).

On the topic of abortion and mental health, it is commonly held that the causal associations between abortion and mental health have been disproven.<sup>82</sup> A comprehensive and careful review of the literature has shown that the opposite is true—that the best available evidence shows a clear causal link between abortion and various psychiatric sequelae.<sup>83</sup> The author who published what is widely regarded by the leading major reviews<sup>84</sup> as being the best quality research on this topic was pro-choice, but he held that the research clearly showed a causal link between abortion and mental health.<sup>85</sup> Yet despite the high quality of his research and his own pro-choice stance, he was asked by his country's government-appointed Abortion Supervisory Committee not to publish his findings in case they were used by pro-life advocates.<sup>86</sup> This sort of overt pressure and attempted censorship goes a long way to explaining the commonly held but false position that there is no association between abortion and negative psychiatric outcomes.

Finally, a particularly remarkable example occurred in 2017, when Blair Darney and colleagues accused Elard Koch, a leading Chilean epidemiologist, of various errors in his work on mortality from unsafe abortion in Latin America—they went so far as to question his (and his colleagues') transparency and integrity: 'Transparency and integrity in research is crucial, as well as perhaps even more in politically contested topics such as abortion. Rigorous evidence about the health impacts of increasing access to safe abortion worldwide is needed.'<sup>87</sup>

Darney submitted a research proposal to the Society for Family Planning, which both gave her team \$250,000 and published her paper in their journal, *Contraception*. In the proposal she criticised the society for '[failing] to respond to anti-abortion junk science'. These criticisms are somewhat ironic given the various vested ideological and financial incentives involved in the publishing of this paper.<sup>88</sup>

It emerged later, however, that Darney et al.'s own paper had misrepresented the science—so much so that they had *reversed* their actual findings in their conclusions. Koch and colleagues had shown that states protecting unborn life showed a decreased in the maternal mortality ratio. In their response, Darney et al. achieved the same result but wrote that there was an *increase*—exactly

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<sup>82</sup> Royal College of Obstetricians and Gynaecologists (2011).

<sup>83</sup> Miller (2022c); this review also addresses the recent Turnaway Study, which is of considerably lower quality.

<sup>84</sup> American Psychological Association (2008); National Collaborating Centre for Mental Health (2011).

<sup>85</sup> Fergusson et al. (2008; 2013).

<sup>86</sup> Hill (2006).

<sup>87</sup> Darney et al. (2017).

<sup>88</sup> Moynihan (2019).

inverting the truth. And *this* was used to suggest that Koch and colleagues had lacked transparency and integrity, and been guilty of ‘junk science’. The error from Darney et al. was so egregious that, after initial reluctance from both the authors and the journal, the journal eventually had no option but to entirely retract the paper.<sup>89</sup>

## Conclusion

This article has highlighted some important and recent instances of the manipulation and misrepresentation (or potentially even fabrication) of data for political purposes. I have shown that academic and medical bodies are not immune to propagating such ‘fake news’.

The Kenyan case is a good illustration of a particularly common phenomenon in this area: a chain of citations leading back so far that few people are motivated to check the original data and see whether they are fairly described. This leads to false statistics being cited as common ‘knowledge’ and readily accepted and propagated, while rarely challenged because of the effort required to obtain the original source. The chain extends back sufficiently far that the original source is, by the time of writing, outdated or misrepresented, or in some cases even non-existent.<sup>90</sup> This highlights the need for contemporary writers on these themes to be vigilant and engaged in their own source-checking/fact-checking.

In other cases, such as the Malawi example, the statistics are demonstrably false to begin with, and have no discernible basis in any study, and yet are published and repeated by medical bodies. This can only be remedied at present by those medical bodies choosing to fact-check their sources and endorse only accurate data. Given the political advantages of publishing or endorsing false data, this mechanism is bound to fail in various instances. Thus, mechanisms of accountability need to be introduced to medical bodies to ensure that they do not mislead the public on health issues. There will always be reasonable debate on various issues surrounding as controversial an issue as abortion—but the magnitude of some of the errors described in this paper go beyond any reasonable controversy and can be fairly described as demonstrably and decisively false.

Misinformation for political ends will always exist, and for the foreseeable future will continue to be published even by authoritative medical bodies. There is a degree to which this can only be resolved by the voluntary will of those publishing such misinformation—and at present there is still a strong reluctance on the part of certain medical bodies, particularly the RCOG, to correct misinformation which they have published.

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<sup>89</sup> Darney et al. (2019); Moynihan (2019).

<sup>90</sup> Often having been written prior to routine internet publication or archiving.

In such situations, the optimal solution is not easy to discern, especially in a liberal democracy which permits a wide latitude on harmful and false instances of speech. While few liberals would want to see these sorts of claims legally outlawed, since free speech is a basic right, there may be a case for maintaining the *rights* but removing the *privileges* of public organisations consistently committed to misleading the public on demonstrable falsehoods—especially healthcare bodies misleading the public about healthcare issues. For example, public funding—a privilege, not a right, in this case—could be dependent on a commitment to refraining from publishing misinformation or to establish mechanisms of accountability from neutral, external authorities. In the case of the RCOG, for example, it might be felt that a Royal Charter should not be attached to Colleges knowingly and persistently propagating misinformation. Hence there are some mechanisms of accountability which do not impede the strong *prima facie* right to freedom of speech so rightfully valued by many societies.

In the meantime, individual doctors and groups of doctors can at least make themselves more aware of false statistics circulating in academia and the media, particularly on the topic of abortion. They can take steps to ensure they check the original source of statistics, especially when there may be strong political motivation to misconstrue those statistics. This will likely never eradicate misinformation, but may at least lessen the harm caused by it.

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# **“Three Decades of Research:” A New Sex Ed Agenda and the Veneer of Science**

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**ABSTRACT:** The research review, “Three Decades of Research: The Case for Comprehensive Sex Education,” by Goldfarb and Lieberman (2021), purports to show “strong support” for the effectiveness of school-based comprehensive sex education (CSE) at producing many benefits beyond its original goals of preventing teen pregnancy and STDs. We reviewed the evidence the study cites in support of these claims, item by item, and found that 1) 80% of the sources cited as supporting evidence for CSE are not studies of CSE programs and 2) of the few cited studies of actual CSE programs, roughly 90% do not meet recommended scientific standards for evidence of program effectiveness. Important to note, contrary to its claims, the study does not show scientific evidence that comprehen-

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sive sex education helps prevent child sex abuse, reduces dating/intimate partner violence or homophobic bullying, or that it should be taught to young children in the early grades. Rather than making “the case for CSE,” Goldfarb and Lieberman’s review gives the appearance of scientific support to a new CSE agenda that the authors articulate and endorse, which includes early sex education, gender ideology, and social justice theory. However, they do not present scientifically reliable confirmatory evidence for that agenda.

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## Introduction

For more than 30 years, sex education research has struggled without success to produce compelling evidence that school-based comprehensive sex education (CSE) is an effective strategy for achieving its original purposes: reducing teen pregnancy, STDs, and sexual risk behavior. Yet, despite repeated claims that CSE programs have been “proven effective” at accomplishing such goals,<sup>1</sup> when a credible scientific lens is used to examine studies designed to test the causal impact of CSE programs, the evidence disappears.

For example, a recently published systematic review of the research most often cited by CSE advocates found that only six out of 103 studies of school-based CSE worldwide showed a sustained protective effect (lasting one year post program) on either teen pregnancy, STDs, condom use, or abstinence, for the intended youth population, without also producing other negative effects on sexual risk behavior. Moreover, nearly three times as many studies (16) found harmful CSE effects (increases in teen sexual risk behavior).<sup>2</sup> Two other landmark meta-analyses also found a dearth of positive CSE results.<sup>3</sup> One, sponsored by the U.S. Centers for Disease Control and Prevention (CDC), found that school-based CSE programs did not significantly increase teen condom use or reduce teen pregnancy or STDs, key outcomes for which CSE was originally designed. The other, a meta-analysis of U.S. federally funded sex educa-

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<sup>1</sup> See, for example: Advocates for Youth. (2009). Comprehensive Sex Education: Research and Results. *The Facts, September 2009*. Retrieved from <https://www.advocatesforyouth.org/wp-content/uploads/storage//advfy/documents/fscse.pdf>

<sup>2</sup> Ericksen IH and Weed SE. (2019). Re-Examining the Evidence for School-based Comprehensive Sex Education: A Global Research Review. *Issues in Law and Medicine*, 34(2):161-182. See: <https://www.institute-research.com/published-cse.php>

<sup>3</sup> Weed SE. Sex Education Programs for Schools Still in Question: A Commentary on Meta-Analysis. *Am J Prev Med*. 2012;42(3):313-315, doi: 10.1016/j.amepre.2011.11.004; Juras R, Tanner-Smith E, Kelsey M, Lipsey M, Layzer J. Adolescent Pregnancy Prevention: Meta-Analysis of Federally Funded Program Evaluations, *American Journal of Public Health*. 2019;09(4), e1-e8.

tion programs (most were CSE), found no statistically significant results for any outcomes.

Perhaps being aware of CSE’s poor record at achieving these original goals, Goldfarb and Lieberman, the authors of a 2021 review of this body of research, looked for CSE success with other types of outcomes. The researchers conducted what they termed a “review of [the past] three decades of research on school-based programs to find evidence for the effectiveness of comprehensive sex education ... [at producing outcomes] beyond pregnancy and sexually transmitted disease prevention,” including outcomes related to gender norms, gender identity, sexual orientation, and social justice. They detailed their findings in their published report, “Three Decades of Research: The Case for Comprehensive Sex Education.”<sup>4</sup>

Goldfarb and Lieberman state that their study found, “school-based CSE can lower homophobia and homophobic-related bullying, can increase understanding of gender and gender norms, can improve knowledge and skills that support healthy relationships, can build child sex abuse prevention skills, and can reduce dating and intimate partner violence.”<sup>5</sup> They further assert that they have found “substantial evidence that sexuality education is most effective when begun early.”<sup>6</sup> The authors give approximately 88 citations of purported evidence to support these claims for CSE effectiveness. Yet there are two major problems with the study that undermine its claims and call into question the overall usefulness of the analysis. However, before discussing these two problems, it is important to understand what is typically meant by the term “comprehensive sex education.”

## What Is Comprehensive Sex Education?

Goldfarb and Lieberman make wide-ranging claims about “comprehensive sex education” (a.k.a., comprehensive sexuality education), without being very clear about what it is and what it is not. Of course, this is not a term that these authors coined nor that can be re-defined as they see fit. This term has been in use for over 30 years, and a common meaning has developed over that time, aided by definitional statements from organizations in this field. One of them is the (so-called) *National Sexuality Education Standards* (a set of *recommendations* that have not been endorsed by any federal agency but rather were self-labeled as “national standards” by their authors).<sup>7</sup> These “Standards” are quoted by the study authors as stipulating that the “*essential, minimum,*

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<sup>4</sup> Goldfarb E and Lieberman L. Three Decades of Research: The Case for Comprehensive Sex Education. *J Adolesc Health*. 2021;68(1):13-27. doi: 10.1016/j.jadohealth.2020.07.036

<sup>5</sup> Ibid.

<sup>6</sup> Ibid.

<sup>7</sup> Future of Sex Education Initiative. *National sex education standards: Core content and skills, K-12*. 2nd ed. Washington, DC: American School Health Association; 2020.

core content ... for sex education” should include instruction on “Anatomy and Physiology, Puberty & Adolescent Sexual Development ... [and] Sexual Health” (*italics added*).<sup>8</sup> In addition, the United Nations has defined CSE as “a curriculum-based process of teaching and learning about ... sexual and reproductive anatomy and physiology; puberty and menstruation; reproduction, modern contraception, pregnancy and childbirth; and STIs, including HIV and AIDS.”<sup>9</sup>

Combining these two definitions, a CSE intervention will have at least two features; it will: a) be an articulated curriculum that can be taught to students, and b) contain content on sexual and reproductive health issues, including instruction on contraception and STI/HIV/AIDS prevention. These characteristics are consistent with the common usage of the term “comprehensive sex education” over the 30-year time period covered in the present study. Programs manifesting these characteristics are typically referred to as CSE while those that do not, are not. However, the Goldfarb and Lieberman study appears to consider any school-based activity addressing issues of student well-being as fitting into the same category as CSE programs. This is not scientifically appropriate; it is inaccurate and misleading to equate child sex abuse prevention or anti-bullying programs with CSE or to ascribe positive impacts from any type of prevention program in schools to CSE if the program does not exhibit the core elements of CSE (i.e., instruction on human sexuality, contraception, and STI/HIV/AIDS prevention).

## Two Major Methodological Problems

We find two major methodological problems with this study that negate its claims about CSE’s benefits.

### ***1. Most of the Evidence Attributed to CSE is Not from CSE Studies***

The first methodological problem arises when the consensus definition of CSE described above is applied to this review. Of the roughly 88 documents cited by the authors as the sources of their “evidence” for CSE, 72 of them, or four out of five (i.e., 80%, as stated earlier), *are not studies of CSE programs at all*. So, in a study subtitled “The Case for Comprehensive Sex Education,” only 16 of 88 evidentiary citations (fewer than one in five) are CSE studies. These 16 CSE studies are listed in Table 1. Throughout the report of study findings, strong assertions are made about the impact of CSE on many positive outcomes, but the “evidence” cited as proof of that impact is primarily *not* research about

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<sup>8</sup> Goldfarb E and Lieberman L, 2021.

<sup>9</sup> United Nations Educational, Scientific and Cultural Organization. (2018). International Technical Guidance on Sexuality Education: An Evidence-Informed Approach, Revised Edition; 2018 (p.16, Section 2.1). Available at: [http://www.unaids.org/sites/default/files/media\\_asset/ITGSE\\_en.pdf](http://www.unaids.org/sites/default/files/media_asset/ITGSE_en.pdf)

**TABLE 1.16 Studies of Comprehensive Sex Education (CSE) - Cited in Goldfarb & Lieberman, (2021), “Three Decades of Research: The Case for Comprehensive Sex Education”**

PROGRAM & STUDY DESCRIPTION									PROGRAM OUTCOMES			
Reference Number*	1st Author & Year	Program Name	Country	Program Type	Study Design	Follow-Up Time	Sample	Age	Negative Effects	Post-Program Effects		
										Knowledge	Attitudes	Behavior
27	Brown, 1991	<i>AIDS Education in Rhode Island</i>	USA	School-Based CSE	Experimental	Pre-Post Only	2,709	7-12 grade	No	Increased	Improved-Slightly (No Follow-up)	No Effect Reported - Not Measured?
29	Baams, 2017	<i>Health Education On Risky Behavior</i>	The Netherlands	School-Based CSE	Correlational: Longitudinal+ Cross-Sectional	baseline & 8mo	601	10-12 grade	No	Not Measured	SubGroup Effect (Males Only)	SubGroup Effect: More Sex Ed Reduced Name Calling (Females Only)
30	Proulx, 2019	N/A	USA	Impact Of Sch-Bsd Sex Ed Content	Correlational: YRBS&State-SexEdContent	N/A	N/A	HighSchool	No	Not Measured	Not Measured	LGBTQ-Content-->lessSuicidality, Bullying, Depression
31	Blake, 2001	N/A	Massachusetts	Impact Of Sch-Bsd Sex Ed Content	Correlational: TchrSl-fRpt&LGBT studOut-comes	N/A	3647stu	HighSchool	No	Not Measured	??	LGBTQ SxEd=less# Prt, RecSex, DrugUse+Sex; NotSuicideAttmpt
40	Smylie, 2008	<i>Multi-Dimensional School-Bsd Sex Ed</i>	Canada	School-Based CSE	Quasi-Experimental	1 mo. Fup	240	9th grade	No	Increased	Improved	Not Measured?
41	Constantine, 2015	<i>Sexuality Education Initiative (SEI)</i>	Los Angeles, CA	Rights-Based CSE in Schools	Experimental	Pre-Post Only	1750	9th grade	No	Increased	Mixed results	Incr CommunW Parents ReSex (No Follow-up)
42	Rohrbach, 2015**	<i>Sexuality Education Initiative (SEI)</i>	Los Angeles, CA	Rights-Based CSE in Schools	Experimental	1-year F-up	1447	10th grade	No	Increased	Improved	Incr Prt Com-Crry Cndm&UseSx-Hlth Serv; No Red-Sex Rsk Bev
46	Haberland, 2015	N/A	USA+Internl	Gender & Power CSE Programs	Systematic Review-Expr/Quasi-Expr	???	N/A	Adol≤19YO	Increased Multiple Risk Behaviors	N/A	No Measure: Attit Re.Gndr Equity, Rghts, SocJst	Only 2 School-Bsd-Progs-Found Multiple Neg Effects-For Both

TABLE 1. (Continued)

PROGRAM & STUDY DESCRIPTION									PROGRAM OUTCOMES			
Reference Number*	1st Author & Year	Program Name	Country	Program Type	Study Design	Follow-Up Time	Sample	Age	Negative Effects	Post-Program Effects		
										Knowledge	Attitudes	Behavior
53	Wolfe, 2012	<i>The Fourth R</i>	Canada	HlthyRelationship-AbusePrev&CSE	Observational Subjective Rating	Post-test only	196	9thGr girls	No	NotMeasured	Not Measured	Not scientifically valid
54	Peskin, 2014	<i>It's Your Game (IYG)</i>	Texas	School-BasedCSE+HlthyRelationship	Experimental	1-year F-up	760	9th grade	IncrSxRsk Bev(2other-Studies)	N/A	N/A	Males&Females: DecrPhys&EmotAbuse
71	Wolfe, 2009	<i>The Fourth R</i>	Canada	HlthyRelationship-AbusePrev &CSE	Experimental	Pre & 2.5YR Fup	1722	9th grade	Lower Condom Use for Girls***	NotMeasured	Not Measured	ReducPhysDat Viol(MalesOnly); incrCondom Use(MalesO)
72	Mathews, 2016	<i>PREPARE</i>	South Africa	School-Based CSE/HIV&IPVPreventn	Experimental	6-mo. F-up	3451	8th grade	No	Increased	Not Measured	At6-mo.F-up:Lower-Viol; NOT-IncrCondomUse
76	Pick, 2007	<i>I Want to, I Can...prevent HIV/AIDS</i>	Mexico	Commun/HIVprev;30hr; 15-20wk	Experimental	Pre&<6mo-Fup	1581	9-12YO, 4thGr	No	NotMeasured	Improved	Increased Commun w/Adult on DifficultSubjects
78	Lamb, 2016	<i>SexualEthics ForACaring Society (SECS-C)</i>	USA	SexualEthics; 8-1hour lessons	Non-Experimental, unpaired	Pre-Post Only	79	9th grade	LowerIntent-ToIntervene	NotMeasured	Improved	Not scientifically valid
79	Scull, 2014	<i>Media Aware Sexual Health(MASH)</i>	USA	CSE & Media Awareness	Non-Experimental, unpaired	Pre-Post Only	56	8th grade	No	No Effect	Mixed results	Not Measured
108	Gaskins, 2002	<i>[HIV/AIDS Awareness EducationProgram]</i>	USA	School-BasedHIV/AIDS Awareness Prog	Non-Experimental	Pre-Post Only	??	K-5thGr	No	Increased	Improved	Not Measured

\*These are the item numbers on the Goldfarb & Lieberman Reference List--please see that list for full citations

\*\*This study met recommended scientific standards for evidence of program effectiveness

\*\*\*The study reported "condom use by partners was less for girls in the intervention group" (OR=.76), but it was not clear if this was statistically significant (no p-value was given)



**TABLE 2. 72 Studies of Non-CSE Programs - Cited in Goldfarb & Lieberman (2021), “Three Decades of Research: The Case for Comprehensive Sex Education”**

**PROGRAM & STUDY DESCRIPTION**

Reference Number*	Study 1st Author & Year	Program Name	Country	Program Type	Study Design	Follow-Up	Sample	Age
17	Schall, 2003	[Gay Literature Program]	USA	ClassDiscuss-LiteratureWGay/LesbianCharacters	Qualitative-Class Discussion	N/A	29	4th&5thGr
18	Eick, 2016	N/A	Israel	Personal Story method	Non-Experimental, Paired	Pre-Post	272	9th-11thGr
19	Richard, 2015	N/A	Canada	Testimonial workshops	Non-Exper, Paired/Qualitative	Pre-Post, 3mo.	277	9th-12thGr
20	Athanases, 1996	N/A	USA	Class Discussion method	Qualitative-Class Discussion&Interact	N/A	21	10thGr
21	Van de Ven, 1995	Anti-Homophobia Unit	Australia	Class Discussion method	Non-Experimental	Pre-Post+ 3moFup	130	9th Gr
22	Helmer, 2015	N/A	USA	Gay & Lesbian Literature Course	Qualitative-StudentQs&IVs	N/A	24	11th&12thGr
23	Helmer, 2016	N/A	USA	Gay & Lesbian Literature Course	Qualitative-Student&TchrtVs	N/A	24	11th&12thGr
24	Alan & Miriam, 2011	<i>Out For Equity (OFE)</i>	USA	School-based LGBTQ support program	NonExperQualAnalysis&Reflections	N/A	1613	MiddleSchool
25	Bentley & Souto-Manning, 2015	N/A	USA	Influencing 4-YearOlds With Gay Fairytales	Qualitative-Class Discussion	N/A		1 PreSchClss
26	Lucassen and Burford, 2015	N/A	New Zealand	60-min. Sexual Diversity Workshop	Non-Experimental, Paired	Pre-Post	229	9th&10thGr
28	Snapp, 2015	N/A	USA	StudentPerception:LGBTQ-inclusive-Curr&SchlClimate	CorrelationOfInternal-SurveyData	N/A	1232	Mid&HgtSch
32	Hill and Kearnl, 2011	<i>Crossing The Line</i>	USA	AAUWReportOnSexualHarrasmentATSchool	QualitativeSurvey	SliceInTime	1965	7th-12thGr
33	Ramirez-Valles, 2014	<i>Just As We Are</i>	USA	Film-based Intervention	Non-Experimental, Paired	Pre-Post	44	9th-12thGr
34	Ryan, 2013	<i>Princess Boys &amp; Pregnant Men</i>	USA	TeacherInfusedLGBTContentInClass-roomCurriculum	Qualitative-Class Discussion	N/A	1 class	3rdGr
35	Rice, 2002	N/A	USA	Influencing 3rd Graders Through Literature	Qualitative-Class Discussion	N/A	24	3rdGr

**TABLE 2. (Continued)**  
**PROGRAM & STUDY DESCRIPTION**

Reference Number*	Study 1st Author & Year	Program Name	Country	Program Type	Study Design	Follow-Up	Sample	Age
36	Dutro, 2002	<i>But That's A Girl's Book</i>	USA	Influencing 5th Graders Through Literature	Qualitative-ClassDiscussion	N/A	24	5thGr
37	Hermann-Wilmarth, 2017	CriticalLiterature&TransgenderTopics	USA	Influencing 4th Graders Through Literature	Qualitative-ClassDiscussion	N/A	15	4th&5thGr
38	Knotts and Gregorio, 2011	<i>Gay Mens Chorus of LA</i>	USA	Music Performance & Biographic Storytelling	NonExper,Paired,ClassDiscussion	Pre-Post	101	9th-12thGr
39	Matthews, 1998	<i>Identify, Remedy Gender Inequities</i>	USA	Case Studies & CD-ROM	Qualitative-ClassDiscussion	N/A	22	5thGr
43	Barker, 2010	[Literature Review]	USA	WideVariety:IndivCnsig,MediaCampaign, etc.	Systematic Review-58 Studies	NoLong-TrmFup	Men&/orBoys	N/A
44	Baiocchi, 2017	[Dating Violence Prevention]	Kenya	Dating Violence Prevention	Experimental--Non-Matched	Pre & 9mo.Fup	6356	10-16YOgirls
45	Miller, 2012	<i>Coaching Boys Into Men</i>	USA	DatViolPrev-Coach-Delivered-ToHSchAthletes	Experimental	Pre & 3-mo Fup	1798	9th-12thGr Boys
47	Ting, 2009**	Meta-Analysis:DatingViolencePreventionProg	US & CAN	Dating Violence Prevention	Meta-Analysis:Knowledge/Attitude	Not Specified	13MSch&HSch	Mid&HghSch
48	Foshee, 2004**	Safe Dates	USA	Dating Violence Prevention	Experimental	Pre-Post; 4Yr-Fup	460	8thGr
49	Foshee, 1998	Safe Dates	USA	Dating Violence Prevention	Experimental	Pre-Post	1886	8th to 9thGr
50	Crooks, 2015	The Fourth R, adapted	CAN	Healthy Relationships & Violence Prevention	Experimental	Pre & 1mo.Fup	1,012	7th&8thGr
51	Foshee, 2000	Safe Dates	USA	Dating Violence Prevention	Experimental	Pre-Post; 1Yr-Fup	1886	8th to 9thGr
52	Kervin and Obinna, 2010	Youth Action Strategies	USA	Youth-led Dating Violence Prevention	Non-Experimental (no stat.anal.)	Pre-Post	29	HSch students
55	Rice, 2017	[Relationship Education Programs]	USA	Relationship Education (not ViolencePrevention)	NonExper,RepeatedMeasures	???	3658	9th-12thGr
56	Taylor, 2010	[Dating Violence Prevention]	USA	Peer&DatingViolencePrevention(-2DiffVersions)	Experimental	Pre-Post; 5-6moFup	1639	6th to 7thGr
57	Pacifici, 2001	[Dating Violence Prevention]	USA	Coercive Dating Behavior Prevention	Experimental	Pre&10dayPost	457	9th-12thGr

TABLE 2. (Continued)

PROGRAM & STUDY DESCRIPTION								
Reference Number*	Study 1st Author & Year	Program Name	Country	Program Type	Study Design	Follow-Up	Sample	Age
58	De La Rue, 2014	[Systematic Literature Review]	USA	Dating Violence Prevention	Syst Review-Exper or Quasi-Eper	Not Specified	23 progs	4th-12thGr
59	Smith and Weichans, 2000	[Rape Prevention]	USA	Peer Education-Emphasis On Male Responsibility	Non-Experimental, Unpaired	Pre-Post	253	10th-12thGr
60	Sosa-Rubi, 2017	[Dating Violence Prevention]	Mexico	Dating Violence Prevention	Quasi-Exper, Matched Pairs	Pre-Post	885	9th-12thGr
61	Baker, 2014	Respect	Hawaii	CultGrdDatingViolencePrevention(TrainTheTrainer)	Quasi-Experimental, Unpaired	Pre-Post&1mo. Fup	63(I)/73(C)136	9th-12thGr
62	Maegowan, 1997	[Dating Violence Prevention]	USA	Dating Violence Prevention	Experimental	Pre-Post	440	6th to 8thGr
63	Meyer and Stein, 2004	[Dating Violence Prevention]	USA	Literature Review--5 DatingViolencePrevProgs	N/A	N/A		6th to 12thGr
64	Weisz and Black, 2001	[Dating Violence Prevention]	USA	Sexual Assault & Dating Violence Prevention	Quasi-Experimental, Unpaired	Pre-Post&6mo. Fup	46(I)/20(C)66	7thGr
65	McLeod, 2015	RELATE--Adapted-Latino & African American	USA	SchBsdPeerLedHealthyRelProg-forAt-RskAdol	Non-Experimental, Unpaired	Pre-Post	291	9thGr
66	Adler-Baeder, 2007	LoveU2-IncrYrRelSmrts	USA	Relationship & Marriage Education	Quasi-Exper, Matched Pairs	Pre-Post	340	9th-12thGr
67	Jaycox, 2006	Ending Violence (Latino Adolescence)	USA	DatingViolencePrevention-focusOnLegalIssues	Experimental	Pre-Post&6mo. Fup	2540	9thGr
68	de Lijster, 2016	Benzies & Batchies	Netherlands	Sexual Harrassment Prevention	Experimental	Pre-Post&6mo. Fup	815	12-16YearsOld
69	Roscoe, 1994	[Sexual Harrassment Prevention]	USA	Sexual Harrassment Prevention	Non-Experimental	Pre-Post	815	7th&8thGr
70	Kernsmith, 2011	[Sexual Assault Prevention]	USA	SexualAssaultPrevent--Gender-Sens, PeerLed	Non-Experimental, Unpaired	Pre-Post&3mo Fup	815	9th-12thGr
73	Bates, 2006	[Sexual Harrassment Prevention]	USA	Sexual Harrassment Prevention	Non-Exper (NotCredibleStudy)	Pre, During, Post	815	7thGr
74	Kettry, 2017/2019	[Bystander Intervention Progs-EffctOnSexAssitPrev]	USA	Meta-Analysis--27 Studies	Syst Review-Exper or Quasi-Eper	RptsFupUpTo12mo	815	7th-12thGr&Coll
75	Miller, 2013**	Coaching Boys Into Men	USA	DatingViolencePrev-CoachDelivd-ToHSchAthletes	Experimental	Pre & 1.2-mo Fup??	815	9th-12thGr-Boys

TABLE 2. (Continued)

PROGRAM & STUDY DESCRIPTION								
Reference Number*	Study 1st Author & Year	Program Name	Country	Program Type	Study Design	Follow-Up Sample	Age	
77	Buote and Berglund, 2010	<i>Respectful Relationships</i>	CAN	DevmtOfSocialCompetenciesRelatedToSocialJustice	Non-Experimental, Unpaired	Pre-Post	815	7th-10thGr
80	Davis and Gidycz, 2000**	[Child Sex Abuse Prevention]	USA	Meta-Analysis--27 Studies	SystReview-Exper or Quasi-Eper	???	815	ages 3-13YO
81	Kenny, 2008**	[Child Sex Abuse Prevention]	US & CAN	SystematicLiteratureRev--21 Studies of 5 Progs	SystRev-PbshldInSciJrn-IORBook	NotSpecified	815	ages 3-12YO
82	Macintyre and Carr, 1999	<i>Stay Safe</i>	Ireland	Child Sex Abuse Prevention	Experimental	Pre, Post, 3-moFup	815	2nd & 5thGr
83	Walsh et al. 2018**	[Child Sex Abuse Prevention]	Internat'l	SystematicLitRev-24 Studies, across 7 countries	SystReview-Exper or Quasi-Eper	6mo	815	K-5thGr
84	Topping and Barron, 2009**	[Child Sex Abuse Prevention]	Internat'l	SystLitRev--22 Studies inUS,CAN,UK, Holland	Systematic Review	SomeMsr-EffDuratn		K-6thGr
85	Pulido, 2015	<i>Safe Touches</i>	SA	Child Sex Abuse Prevention	Experimental	Pre-Post	492	2nd & 3rdGr
86	Baker, 2012	<i>My Body, My Boundaries</i>	Hawaii	Child Sex Abuse Prevention	Quasi-Experimental	Pre-Post	80	3rd&4thGr
87	Hazzard, 1991**	<i>Feeling Yes, Feeling No</i>	USA	Child Sex Abuse Prevention	Experimental	1YrFup	399	3rd&4thGr
88	Brown, 2016	<i>Safer, Smarter Kids</i>	USA	Child Sex Abuse Prevention--Latino Population	Non-Experimental, Unpaired	Pre-Post	1169	Kstudents
89	Kenny, 2012	<i>Kids Learning About Safety</i>	USA	Child Sex Abuse Prevention--Latino Population	Quasi-Experimental, Unpaired	Pre-Post&3mo	123	PreK, 3-5YO
90	Jin, 2017	<i>Body Safe Training</i>	China	Child Sex Abuse Prevention	Experimental	Fup	484	1st-5thGr
91	Kim and Kang, 2017	<i>C-SAPE</i>	South Korea	Child Sex Abuse Prevention	Quasi-Experimental	Pre-Post	39(I)/50(C)89	5thGr
92	Kater, 2002	<i>Healthy Body Image</i>	USA	Body Image Program	Quasi-Experimental	Pre-Post	415	4th-6thGr
93	Halliwell, 2016	<i>Body Image in the Primary School</i>	UK	Body Image Program (tested 6 of 49 lessons)	Quasi-Exper (a pilot study)	Pre-Post&3mo	144	9-10yearsOld
94	Dunstan, 2017	<i>Happy Being Me</i>	Australia	Body Image Program	Quasi-Experimental	Fup	200	7thGr-Girls

TABLE 2. (Continued)

		PROGRAM & STUDY DESCRIPTION						
Reference Number*	Study 1st Author & Year	Program Name	Country	Program Type	Study Design	Follow-Up	Sample	Age
95	McCabe, 2010	[BodyImageProg]	Australia	Body Image Program-For Boys	Quasi-Experimental	Pre,Post,3/6/12mo Fup	421	7th-9thGr-Boys
96	Berman and White, 2013	[Body image & Media Literacy Program]	Australia	Body Image Program Plus Media Literacy	Non-Exper (NotCredibleStudy)	Pre-Post	48	8thGr
109	Mueller, 2008	[Correlation:ReceiptOf-SexEd&RiskBehavior]	USA	NSFG200 data-Type of Sex Ed not specified	Correlational Analysis	N/A	2019	15-19YearsOld
110	Reading, 2009	[Position Paper On Childrens Rights]	N/A	PositionPaperRechldRghts&Maltrtmt-basedonUNCRC	N/A	N/A	N/A	N/A
120	Flowers, 2008	[A position paper]	N/A	Contributions of Black women sex educators	N/A	N/A	N/A	N/A
121	Berglas, 2014	[A position paper]	N/A	Rights-based approach to sexuality education	N/A	N/A	N/A	N/A
122	Schalet, 2014	[A position paper]	N/A	Recommends sex ed research on LGBTQ issues	N/A	N/A	N/A	N/A
123	Garcia, 2017	[A position paper]	N/A	Recommends sex ed focus on pleasure & desire	N/A	N/A	N/A	N/A
124	Flores, 2017	[A position paper]	N/A	Teacher’s subjective experience teaching LGBTQ literature	N/A	N/A	N/A	N/A

\*These are the item numbers on the Goldfarb & Lieberman Reference List--please see that list for full citations

\*\*This study met recommended scientific standards for evidence of program effectiveness

comprehensive sex education, or any type of sex education.<sup>10</sup> (See note 10 for more details.) The fact that this study attributes many positive findings from the 72 non-CSE sources (see Table 2) to the impact of CSE programs is a serious misrepresentation of the research on CSE and impugns the paper's credibility.

## **2. Most of the Evidence Cited Does Not Meet Adequate Scientific Standards for Evidence of Effectiveness**

The second fundamental problem with this study is that of those same 88 sources cited as the evidence upon which its claims of CSE effectiveness are based, the large majority (roughly 9 out of 10) do not meet recommended scientific standards for credible evidence of program effectiveness. That is, they do not produce reliable evidence of causal impact by a program on purported outcomes.

The scientific field of program effectiveness has recommended standards for evidence of effectiveness—scientific criteria that should be met to legitimate the assertion that a program is effective at producing claimed outcomes.<sup>11</sup> First, the *study* of the program must be of adequate scientific quality. Recommended standards include: it must be designed to test cause and effect (i.e., an experimental or quasi-experimental study), have an adequate sample size, and measure long-term impacts (whether program effects endure beyond the program's end). Second, in order to provide evidence of effectiveness, the program should produce *results* that have adequate effectual power. We evaluated program results according to criteria derived from the field of prevention research: positive effects should occur for the target population (not just a subgroup), they should endure well beyond the end of the program (for school-based programs, effects lasting from one school year to the next, or 12 months post program), and there should not be any countervailing negative program effects. Of the 88 sources

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<sup>10</sup> Although the Goldfarb and Lieberman paper states there are 80 studies cited as supporting evidence, we counted 88 sources that were actually cited as evidence to support the claims made in the text. The 72 citations that are not CSE studies include reports on literature-based reading programs, films, musical performances, and personal narratives; subjective teacher observations and opinions; and studies of healthy relationship/communication programs, body image/acceptance programs, child sex abuse prevention programs, and dating violence prevention programs. Many of these interventions are not an articulated curriculum and none of them include content on sexuality or reproductive health, so they should not be called "sex education." At least five of the citations – represented as being from the research literature – are actually ideological opinion pieces (see References 120-124 in Table 2).

<sup>11</sup> See, for example: Flay BR, Biglan A, Boruch RF, Castro FG, Gottfredson D. Standards of Evidence: Criteria for Efficacy, Effectiveness and Dissemination. *Prev Sci.* 2005; 6(3):151-175; Gottfredson DC, Cook TD, Gardner FEM, Gorman-Smith D, Howe GW, Sandler IN, Zafft KM. Standards of Evidence for Efficacy, Effectiveness, and Scale-up Research in Prevention Science: Next Generation. *Prev Sci.* 2015; 16(7):893-926. doi: 10.1007/s11121-015-0555-x; Blueprints for Healthy Youth Development: Blueprints Standards. Available at: <https://www.blueprintsprograms.org/blueprints-standards/>

cited as evidence by Goldfarb and Lieberman, only nine, or roughly one in 10,<sup>12</sup> meet these scientific standards for evidence of effectiveness.<sup>13</sup>

The authors justify their lack of scientifically adequate studies by a claim that the “substantial number” of studies with inadequate research designs or inadequate sample sizes or qualitative (i.e., subjective) approaches “when taken together lead to strong evidence of outcomes” (see p. 4). This is a startling misrepresentation of scientific reality. In fact, the more error that is infused into a pool of evidence—by *adding together* studies of poor quality—the more, not less error will be found in the resulting evidence.

Combining these two fundamental problems—the inclusion of few actual CSE studies and the reliance on evidence of inadequate scientific quality—reveals the miniscule, shaky foundation upon which this paper and its sweeping claims stand: of the 16 citations that are studies of actual CSE programs, only three met scientific standards for *studies* of program effectiveness,<sup>14</sup> and of these three, only one produced *outcomes* that met recommended standards for evidence of program effectiveness. This means that in a paper subtitled “The Case for Comprehensive Sex Education,” only one study provided reliable, credible evidence *about* CSE effectiveness (appropriate study design and sample size, with measurement of sustained effects) *and* produced outcomes that met recommended standards *for* evidence of effectiveness (positive effects for the target population, sustained at least 12 months, without other negative effects). Specifically, a program called *Sexuality Education Initiative* reported improvements in self-efficacy and attitudes about relationship rights. It also increased communication with partners, and the number of students using sexual health services and carrying a condom, 12 months after the program. However, it did not reduce teen sexual activity or number of sex partners, or increase condom or contraceptive use—major goals of the program and of CSE

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<sup>12</sup> See References 42, 47, 48, 75, 80, 81, 83, 84, and 87 in Goldfarb and Lieberman, 2021 (Note 4).

<sup>13</sup> Only one-half (44) of the 88 studies employed experimental or quasi-experimental design (able to measure cause and effect) and most of these only measured immediate or short-term effects. Only 16 measured whether effects were sustained for more than 6 months and only 9 of those (see Note 12) found a positive impact after 12 months, for the targeted youth population, without other negative effects, thus providing reliable evidence of program effectiveness (see Note 11). We should mention that for some of the systematic reviews, the follow-up times were unclear and where this was the case we gave the benefit of the doubt and assumed they included studies with long-term follow-up measures.

<sup>14</sup> Peskin MF, Markham CM, Shegog R, et al. Effects of the It’s Your Game...Keep It real program on dating violence in ethnic-minority middle school youths: A group randomized trial. *Am J Public Health*. 2014;104:1471e7; Rohrbach LA, Berglas NF, Jerman P, et al. A rights-based sexuality education curriculum for adolescents: 1-year outcomes from a cluster randomized trial. *J Adolesc Health*. 2015;57:399e406; Wolfe DA, Crooks C, Jaffe P, et al. A school-based program to prevent adolescent dating violence: A cluster randomized trial. *Arch Pediatr Adolesc Med*. 2009;163:692e9

generally. Such a failure would disqualify it as an effective CSE program.<sup>15,16,17</sup> (See notes 16 and 17 for details on the other two CSE studies.)

It should be noted that three of the 16 CSE studies cited in this paper are *cross-sectional* or *correlational* studies that produced conflicting findings on the association between LGBTQ-sensitive sex education and various outcomes (see Section 4, below).<sup>18,19,20</sup> It is well known that correlational analyses cannot test causal impact nor thereby provide reliable evidence about program effectiveness. As authors of two of the studies put it, “The data we collected were ... not designed to demonstrate causal relationships between independent and dependent variables,”<sup>21</sup> and, “...we should interpret these correlational findings with some caution—causal mechanisms cannot be inferred...”<sup>22</sup> The findings of these studies may raise questions meriting further *experimental* research, but they cannot be considered conclusive evidence of CSE impact.

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<sup>15</sup> Rohrbach LA, Berglas NF, Jerman P, et al. A rights-based sexuality education curriculum for adolescents: 1-year outcomes from a cluster randomized trial. *J Adolesc Health*. 2015;57:399e406.

<sup>16</sup> One of the two remaining studies, an evaluation of *It's Your Game* (IYG) by the program's authors (Peskin MF, Markham CM, Shegog R, et al. Effects of the It's Your Game...Keep It real program on dating violence in ethnic-minority middle school youths: A group randomized trial. *Am J Public Health*. 2014;104:1471e7) found that it did reduce dating violence. But two other studies of IYG have found that it produced multiple increases in sexual risk behavior for the teenage participants. These harmful impacts negate IYG's designation as an effective prevention program for any purposes. (See Markham CM, Peskin MF, Shegog R, Baumler ER, Addy RC, Thiel M, Escobar-Chaves SL, Robin L, & Tortolero SR. Behavioral and psychosocial effects of two middle school sexual health education programs at tenth-grade follow-up. *Journal of Adolescent Health*. 2014; 54(2), 151-159; Potter S, Coyle K, Glassman J, Kershner S, & Prince M. It's Your Game ... Keep It Real in South Carolina: A Group Randomized Trial Evaluating the Replication of an Evidence-Based Adolescent Pregnancy and Sexually Transmitted Infection Prevention Program. *American Journal of Public Health*. 2016; 106(S1), S60-S69).

<sup>17</sup> The third of the three strong CSE studies (Wolfe DA, Crooks C, Jaffe P, et al. A school-based program to prevent adolescent dating violence: A cluster randomized trial. *Arch Pediatr Adolesc Med*. 2009;163:692e9) found significantly differing results for males and females (i.e., subgroup effects). The program reduced physical dating violence for boys but not girls (OR=2.63, vs. 1.03, respectively), increased condom use for boys (OR=1.70), and was reported to lower condom use for girls (OR=.76, although this effect may not have been statistically significant). These inconsistent results across the target population do not provide evidence of program effectiveness.

<sup>18</sup> Baams L, Dubas J, van Aken M. Comprehensive sexuality education as a longitudinal predictor of LGBTQ name-calling and perceived willingness to intervene in school. *J Youth Adolesc*. 2017; 46:931e42.

<sup>19</sup> Blake SM, Ledsky R, Lehman T, et al. Preventing sexual risk behaviors among gay, lesbian, and bisexual adolescents: The benefits of gay sensitive HIV instruction in schools. *Am J Public Health*. 2001;91:940e6 (p.944).

<sup>20</sup> Proulx CN, Coulter RW, Egan JE, et al. Associations of lesbian, gay, bisexual, transgender, and questioning-inclusive sex education with mental health outcomes and school-based victimization in U.S. high school students. *J Adolesc Health*. 2019;64:608e14.

<sup>21</sup> Blake, et al., 2001.

<sup>22</sup> Baams, et al., 2017.



Thus, only one CSE study in this review produced reliable evidence of positive CSE impact, but it improved only minor outcomes and failed to achieve the major goal—to reduce teen sexual risk behavior. Such results clearly do not make “the case for comprehensive sex education.”

Even allowing for a broader category of interventions that includes storybook reading programs for 3<sup>rd</sup> graders, musical performances, personal testimonials, etc., would add to the evidence base only eight studies meeting standards for evidence of effectiveness: five studies finding evidence of effectiveness for child sex abuse prevention programs and three for dating violence prevention programs. It would still leave eight of the ten outcomes claimed as benefits of this so-called “CSE” without credible supporting evidence.

Below we describe the actual evidence, or lack thereof, for some of the major claims in this paper.

## Unsupported Claims

### ***1. No Evidence that Sex Education Should Begin in Early Elementary School***

The study claims, “This review offers substantial evidence that sexuality education is most effective when begun early” (p.10),<sup>23</sup> meaning, “beginning in the earliest grades” (see “University News” article at: <https://www.montclair.edu/newscenter/2020/12/14/experts-sex-education-should-begin-in-kindergarten/>). However, of the nine studies cited as evidence for this claim,<sup>24</sup> only one was a study of sex education in the early grades (kindergarten through 3<sup>rd</sup> grade) and this study did not meet recommended standards of scientific quality for studies of effectiveness—it was a non-experimental design and did not measure effects beyond the program’s end.<sup>25</sup> Two of the other nine studies were of child sex abuse prevention programs in the early grades that did meet scientific standards of evidence, and they did find positive program effects beyond the programs’ end.<sup>26</sup> However, child sex abuse prevention is not sexuality education, and evidence that these programs have been beneficial for young children is not evidence that CSE *or any sex education* program will be. In other words, the authors produced no credible evidence supporting their claim that “substantial evidence” shows “sex education is most effective when begun early.”

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<sup>23</sup> Goldfarb E and Lieberman L, 2021.

<sup>24</sup> See References 76,80,82,83,92,93,108-110 in Goldfarb and Lieberman, 2021 (Note 4).

<sup>25</sup> Gaskins SW, Beard SR, Wang MQ. An HIV/AIDS education program for children in grades K-5. *J HIV/AIDS Prev Educ Adolesc Child.* 2002;5:31e43.

<sup>26</sup> See References 80 and 83 in Goldfarb and Lieberman, 2021 (Note 4).

## 2. No Evidence that CSE Can Help Prevent Child Sex Abuse

The authors claim their review found that “school-based CSE...can build child sex abuse prevention skills.” However, none of the 12 studies cited as evidence for this claim were studies of CSE.<sup>27</sup> All 12 were studies of child sex abuse prevention programs for young children, not sex education. At least five of these met scientific standards for studies of effectiveness and these found positive effects sustained beyond the program’s end.<sup>28</sup> However, child sex abuse prevention programs do not contain the sex education content that defines CSE, and attributing their positive results to CSE program impact is a misrepresentation of the research on CSE and on child sex abuse. Preventing child sex abuse is a worthy goal for classroom-based interventions, but giving CSE credit for building child sex abuse prevention skills, when there is no evidence for it, is factually erroneous and misleading.

## 3. Inadequate Evidence that CSE Reduces Dating/Intimate Partner Violence

The authors claim their review found that “school-based CSE...can reduce dating and intimate partner violence.” Yet out of the 32 studies<sup>29</sup> cited to support this claim, only four were studies of CSE or any type of sexuality education program.<sup>30</sup> Of the four CSE studies, only two met scientific standards for studies of effectiveness, but these programs’ outcomes did not show evidence of effectiveness. One was a study of *It’s Your Game* (IYG) by the program’s authors, which found it reduced dating violence after one year. However, multiple other studies have found IYG has also increased teen sexual risk behavior.<sup>31</sup> These negative effects rule out IYG’s designation as an effective violence prevention program. The other CSE study found significantly differing results for males and females (i.e., subgroup effects). The program reduced violence for boys but not girls and increased condom use for boys while girls were reported to have reduced condom use (OR=.76), although it did not appear to be significant at the  $p<.05$  level.<sup>32</sup> (A third study found short-term impact but did not measure effects beyond six months, as recommended for studies testing effectiveness.<sup>33</sup>) These results do not provide adequate evidence that school-based CSE is an effective strategy for reducing dating violence.

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<sup>27</sup> See References 80 - 91 in Goldfarb and Lieberman, 2021 (Note 4).

<sup>28</sup> See References 80, 81, 83, 84, and 87 in Goldfarb and Lieberman, 2021 (Note 4).

<sup>29</sup> See References 44 - 75 in Goldfarb and Lieberman, 2021 (Note 4).

<sup>30</sup> See References 53, 54, 71, and 72 in Goldfarb and Lieberman, 2021 (Note 4).

<sup>31</sup> See note 16.

<sup>32</sup> Wolfe DA, Crooks C, Jaffe P, et al. A school-based program to prevent adolescent dating violence: A cluster randomized trial. *Arch Pediatr Adolesc Med.* 2009;163:692e9.

<sup>33</sup> Mathews C, Eggers SM, Townsend L, et al. Effects of PREPARE, a multicomponent, school-based HIV and intimate partner violence (IPV) prevention programme on adolescent sexual risk behaviour and IPV: Cluster randomised controlled trial. *AIDS Behav.* 2016;20:1821e40.

Six of the non-CSE studies were dating violence prevention programs that met scientific standards for studies of effectiveness,<sup>34</sup> and two found reductions in dating violence for the target population after one year—evidence of program effectiveness.<sup>35</sup> However, to attribute the positive impact of these dating violence programs to CSE, when their goals and content are very different from that of CSE, is erroneous and misleading.

#### **4. Inadequate Evidence that CSE Reduces Homophobic Bullying**

Three of the five studies cited as evidence for this claim were CSE studies, but none met scientific standards for *studies* of effectiveness, that is, all three were correlational designs, rather than an experimental design that could test CSE’s causal impact. Moreover, the findings across the three studies were inconsistent. A study by Baams, et al., conducted in high schools in the Netherlands, found that neither teaching about “STI prevention” or “sexual orientation and gender” (common topics in current CSE programs) was associated with a reduction in LGBTQ+ name-calling in schools. Goldfarb and Lieberman actually misrepresent this study’s “lack of findings for the topic of sexual orientation and gender” (as stated in Baams, et al., 2017, pp. 937, 938; for males,  $p < .539$ , for females,  $p < .332$ ),<sup>36</sup> and assert that its inclusion in curriculum reduced homophobic name-calling (see Goldfarb and Lieberman, p. 4), a claim that contradicts the data and conclusions reported in the study. Unfortunately, Baams, et al., actually misrepresent their own reported findings in the study Abstract. To be clear, the only factor they found to be associated with homophobic name-calling was the *amount* of sexuality education received (without respect to the specific content of the program), *but this was a subgroup effect, that is, observed by females only*.

Blake, et al., 2001, did not find that LGBTQ+ youth in schools with LGBTQ+ sensitive sex ed curriculum (identified by teachers’ subjective ratings) were less likely to be suicidal or feel unsafe at school than those in schools without it.<sup>37</sup> But Proulx, et al., 2019, reported that LGBTQ+ sex ed content (again, not objectively measured but subjectively reported by school personnel) was associated with lower levels of bullying, depression, and suicidality.<sup>38</sup>

The non-experimental study design and conflicting pattern of results across these three CSE studies does not substantiate the claim that CSE reduces homophobic bullying.

<sup>34</sup> See References 47, 48, 51, 58, 74, and 75 in Goldfarb and Lieberman, 2021 (Note 4).

<sup>35</sup> Foshee VA, Bauman KE, Ennett ST, et al. Assessing the long-term effects of the safe dates program and a booster in preventing and reducing adolescent dating violence victimization and perpetration. *Am J Public Health*. 2004; 94:619e24; Miller E, Tancredi DJ, McCauley HL, et al. One-year follow-up of a coach delivered dating violence prevention program: A cluster randomized controlled trial. *Am J Prev Med*. 2013;45:108e12.

<sup>36</sup> See note 18.

<sup>37</sup> See note 19.

<sup>38</sup> See note 20.

## 5. A Pervasive Lack of Scientific Evidence for Any Claimed CSE Benefits

A similar lack of scientific evidence can be seen for all of the other positive outcomes that Goldfarb and Lieberman report to be the result of school-based CSE. To cite another example, for the claim that CSE produces “expanded understanding of gender/gender norms,” none of the nine supporting citations were studies of CSE.<sup>39</sup>

### A New Sex Education Agenda

We wonder about finding these erroneous representations of research evidence published in a scholarly paper in a mainline academic journal. Having examined it thoroughly, we can only conclude that, rather than providing scientific evidence about a set of potential CSE benefits, the Goldfarb and Lieberman paper seems to provide the appearance or veneer of scientific support to a new sex education agenda, an agenda the authors articulate and endorse.

This agenda comes into focus around the claim that research shows sex education should be delivered to children as young as kindergarten age. The authors acknowledge the lack of research data on this topic: “there are only limited examples of sexuality-related content in the K-5 curriculum” (p. 10). Then they claim that this (nonexistent) “data strongly indicate that such topics are developmentally appropriate and produce positive outcomes, ... that not only are younger children able to discuss sexuality-related issues but that the early grades may, in fact, be the best time to introduce topics related to sexual orientation, gender identity and expression, gender equality, and social justice related to the LGBTQ community before hetero- and cis-normative values and assumptions become more deeply ingrained and less mutable” (p.10). The authors provide no research studies that show scientific evidence for these claims, despite their efforts to give the appearance that they have done so. A couple of classrooms in which LGBTQ+ storybooks are read to 4-year-old preschoolers or 3<sup>rd</sup> graders, with positive reports by their teachers, do not constitute scientific evidence.

What the authors *have* done, however, is to articulate an ideological rationale for this new agenda, as follows: “Children learn gender role attitudes at an early age from observing the people in their families ... it is important to introduce concepts that would disrupt stereotypical and harmful biases related to gender and sexual orientation, during this formative time” (pp. 10 & 11). Revealing Goldfarb and Lieberman’s lack of evidence for this agenda is timely because today, many proponents of this new approach want it to begin with children in kindergarten or younger, and are looking to studies like this one for evidence that supports such early inculcation of a debatable ideology.

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<sup>39</sup> See References 19, 25, 32-37, and 97 in Goldfarb and Lieberman, 2021 (Note 4).

*We want to be clear. The Goldfarb and Lieberman paper does not contain any scientifically reliable evidence justifying sex education for young children, nor for teaching gender ideology or social justice theory in school classrooms.*

## Conflicting Interests

Finally, one thing that was not made clear in their paper is the extent to which Goldfarb and Lieberman may have a vested interest in their own findings. Their final conclusion is that these “findings strengthen justification for the widespread adoption of the National Sex Education Standards.” Not disclosed is that both Goldfarb and Lieberman are “contributors and reviewers” on these same National Sex Education Standards.<sup>40</sup> Further, they conclude that their study “provides strong support for comprehensive sex education.” Not disclosed is that Goldfarb is the author of one CSE curriculum, *Our Whole Lives*,<sup>41</sup> and co-author of another, *The 3Rs*.<sup>42</sup> Thus, there is potential financial benefit in finding “strong support” for CSE programs.

Perhaps more important, *The 3Rs* curriculum appears to reflect the sex education agenda that Goldfarb and Lieberman endorse in their research report. Included in the content of *The 3Rs*: in kindergarten a graphic lesson on identifying the genitals that “most boys have” or “most girls have;” for 6-year-olds, a lesson on gender non-conformity based on the book, “My Princess Boy;” for 7-year-olds a graphic lesson identifying male and female genitals and their functions; a lesson for 10-year-olds on homosexuality; lessons for 11-year-olds on gender roles and identity, on “gender-neutral” language (e.g., to say “someone with a vulva” instead of “girl” or “female”), a lesson that includes gay and transgender romantic relationships in which sexual activity is discussed, as well as a lesson directing 11-year-olds to a website called “sexetc.org” with stories on the homepage about masturbation and transgender men getting pregnant; for 12-year-olds, a lesson that describes “bathing together” and “mutual masturbation” with a boyfriend/girlfriend as “important because they can help ... build connection between people without any risk of STDs [or pregnancy],” four lessons about transgenderism and homosexuality, and a lesson on how to decide “whether [you] want to be in a sexual relationship.”<sup>43</sup>

<sup>40</sup> See note 7.

<sup>41</sup> Goldfarb, E. *Our Whole Lives: Sexuality Education for Grades 10-12*. Available at: [https://www.amazon.com/Our-Whole-Lives-Sexuality-Education/dp/1558963960/ref=sr\\_1\\_3?gclid=Cj0KCQjwuaiXBhCCARIsAKZLt3nVPBM1FY38anDzETZhezOxEcMwUJYrW9BNeTrX2qXO6ABKwGTSwv8aAmA\\_EALw\\_wcB&hvadid=241633995505&hvdev=c&hvlocint=9029757&hvlocphy=1001773&hvnetw=g&hvqmt=e&hvrnd=7699977268988357045&hvtargid=kwd-61145398597&keywords=our+whole+lives+sexuality+education&qid=1659562386&sr=8-3](https://www.amazon.com/Our-Whole-Lives-Sexuality-Education/dp/1558963960/ref=sr_1_3?gclid=Cj0KCQjwuaiXBhCCARIsAKZLt3nVPBM1FY38anDzETZhezOxEcMwUJYrW9BNeTrX2qXO6ABKwGTSwv8aAmA_EALw_wcB&hvadid=241633995505&hvdev=c&hvlocint=9029757&hvlocphy=1001773&hvnetw=g&hvqmt=e&hvrnd=7699977268988357045&hvtargid=kwd-61145398597&keywords=our+whole+lives+sexuality+education&qid=1659562386&sr=8-3)

<sup>42</sup> <https://www.3rs.org/about-3rs/authors-and-reviewers/>

<sup>43</sup> *The 3Rs* curriculum. Available at: [https://www.dropbox.com/s/xeyxkjlwa6ojlyf/3Rs\\_ALL\\_Lesson\\_Plans.pdf?dl=0](https://www.dropbox.com/s/xeyxkjlwa6ojlyf/3Rs_ALL_Lesson_Plans.pdf?dl=0)

Thus, it appears legitimate to ask whether Goldfarb and Lieberman may have overlooked the weakness of their evidence in order to support an agenda in which they appear to have multiple vested interests.

## Conclusion

The Goldfarb and Lieberman research review does not provide “strong support” that CSE is an effective strategy for producing the benefits it claims; it provides almost no support at all. Less than one in five of the studies cited as evidence are actually studies of CSE, and only one of those provides scientifically credible evidence of CSE’s effectiveness for any positive outcomes. Even there, the evidence is weak: there was no reduction in teen sexual risk behavior. Two of the 9 CSE studies that were designed to measure cause and effect show short-term positive impacts and one shows effects on a demographic subgroup. But these few minor indicators of program *potential* are not evidence of CSE *effectiveness*. Instead of “strong support” for CSE, this review gives the *appearance* of scientific backing to a new and arguable CSE agenda, for readers who do not examine the purported evidence closely.

## Recommendations

The title of Goldfarb and Lieberman’s paper declares that three decades of research have made “the case for CSE.” Yet, when the lack of evidence in their review is combined with the poor results of school-based CSE at achieving its original purposes (reducing teen pregnancy and STDs),<sup>44</sup> *the case for CSE falls apart*. If three decades of research have made any “case,” it is that it’s time to re-think CSE as the go-to strategy for sex education in school classrooms worldwide. A strategy with such a consistently poor track record for 30 years does not merit the expenditure of public funds nor the trust of parents and school districts who look to it to protect young people from harm. Rather than being expanded to encompass new, unproven, and debatable purposes, CSE should be retired and the search for more effective strategies should be intensified. Newer evidence supporting sexual risk avoidance paradigms should be a part of that search.<sup>45</sup>

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<sup>44</sup> See notes 2 and 3.

<sup>45</sup> See note 2.

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# **A Loss of FACE: The Freedom of Access to Clinic Entrances Act post Dobbs v. Jackson Women's Health Organization**

Gregory J. Roden, J.D.\*

**ABSTRACT:** The Freedom of Access to Clinic Entrances Act of 1994 is no longer a valid exercise of federal jurisdiction under the Fourteenth Amendment, in light of *Dobbs v. Jackson Women's Health Organization*, nor ever was under the Commerce Clause, properly understood, per *United States v. Morrison*.

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## **Introduction**

In *United States v. Morrison*, Chief Justice Rehnquist wrote for the United States Supreme Court, "The regulation and punishment of intrastate violence that is not directed at the instrumentalities, channels, or goods involved in interstate commerce has always been the province of the States."<sup>1</sup> Whereas the very stated purpose of The Freedom of Access

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*United States v. Morrison*, 529 U.S. 598, 618 (2000).

to Clinic Entrances Act of 1994<sup>2</sup> is in no way concerned with actions directly affecting “instrumentalities, channels, or goods involved in interstate commerce.”<sup>3</sup> Rather, the FACE Act presents itself as a regulation of activity that is alleged, in the aggregate, to produce an effect upon interstate commerce by a causal chain of events.

The FACE Act also sought federal jurisdiction in the enforcement clause of the Fourteenth Amendment—but that is premised on their being another pertinent clause of said amendment to enforce.<sup>4</sup> Yet in *Dobbs v. Jackson Women’s Health Organization* the Supreme Court returned the matter of abortion “to the people and their elected representatives,”<sup>5</sup> overturning *Roe v. Wade* 410 U.S. 113 (1973) and *Planned Parenthood of Southern Pennsylvania v. Casey*, 505 U.S. 833 (1992) and their claim to federal jurisdiction under Section 1 of the Fourteenth Amendment.<sup>6</sup> So once again the sovereign states may criminalize abortion at their discretion, as long as such laws have a rational basis.<sup>7</sup>

Hence The Freedom of Access to Clinic Entrances Act of 1994 is not a valid exercise of federal jurisdiction under the Fourteenth Amendment in light of *Dobbs v. Jackson Women’s Health Organization*, nor under the Commerce Clause per *United States v. Morrison*.

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<sup>2</sup> Freedom of Access to Clinic Entrances Act of 1994, Pub. L. 103-259, § 2, May 26, 1994, 108 Stat. 694:

Pursuant to the affirmative power of Congress to enact this legislation under section 8 of article I of the Constitution, as well as under section 5 of the fourteenth amendment to the Constitution, it is the purpose of this Act to protect and promote the public safety and health and activities affecting interstate commerce by establishing Federal criminal penalties and civil remedies for certain violent, threatening, obstructive and destructive conduct that is intended to injure, intimidate or interfere with persons seeking to obtain or provide reproductive health services.

<sup>3</sup> U.S. CONST. art. I, § 8: “The Congress shall have Power... To regulate Commerce with foreign Nations, and among the several States.”

<sup>4</sup> U.S. CONST. amend. XIV, § 5: “The Congress shall have power to enforce, by appropriate legislation, the provisions of this article.”

<sup>5</sup> “We therefore hold that the Constitution does not confer a right to abortion. *Roe* and *Casey* must be overruled, and the authority to regulate abortion must be returned to the people and their elected representatives.” *Dobbs v. Jackson Women’s Health Organization*, 597 U.S. \_\_\_\_, \_\_\_\_ (2022) (Alito, J.).

<sup>6</sup> “We hold that *Roe* and *Casey* must be overruled. The Constitution makes no reference to abortion, and no such right is implicitly protected by any constitutional provision, including the one on which the defenders of *Roe* and *Casey* now chiefly rely—the Due Process Clause of the Fourteenth Amendment.” *Dobbs v. Jackson Women’s Health Organization*, 597 U.S. \_\_\_\_, \_\_\_\_ (2022) (Alito, J.).

<sup>7</sup> *Dobbs v. Jackson Women’s Health Organization*, 597 U.S. \_\_\_\_, \_\_\_\_ (2022) (Alito, J.):

We must now decide what standard will govern if state abortion regulations undergo constitutional challenge and whether the law before us satisfies the appropriate standard.

Under our precedents, rational-basis review is the appropriate standard for such challenges. As we have explained, procuring an abortion is not a fundamental constitutional right because such a right has no basis in the Constitution’s text or in our Nation’s history.



## I. Congress May Not Regulate Noneconomic, Violent Intrastate Crime

It was recognized early in our history that although Congress may have general jurisdiction over federal properties and in federal territories, such as the District of Columbia, Congress has no general jurisdiction to enact criminal laws in the several states. That was made clear by Chief Justice John Marshall in the landmark case of *Cohens v. Virginia*, 19 U.S. (6 Wheat.) 264 (1821).<sup>8</sup> Nearly two centuries later, that federalist scheme was re-affirmed by another Chief Justice, William Rehnquist, in the watershed case *United States v. Morrison*, 529 U.S. 598 (2000).

*United States v. Morrison* involved a civil claim for damages filed pursuant to federal statute 42 U.S.C. §13981—which was part of the Violence Against Women Act of 1994, § 40302, 108 Stat. 1941-1942. As recited by the Court:

Section 13981 was part of the Violence Against Women Act of 1994, § 40302, 108 Stat. 1941-1942. It states that “[a]ll persons within the United States shall have the right to be free from crimes of violence motivated by gender.” 42 U.S.C. § 13981(b). To enforce that right, subsection (c) declares:

A person (including a person who acts under color of any statute, ordinance, regulation, custom, or usage of any State) who commits a crime of violence motivated by gender and thus deprives another of the right declared in subsection (b) of this section shall be liable to the party injured, in an action for the recovery of compensatory and punitive damages, injunctive and declaratory relief, and such other relief as a court may deem appropriate.<sup>9</sup>

That claim under §13981 was dismissed by the United States District Court for the Western District of Virginia, “because it concluded that Congress lacked authority to enact the section under either the Commerce Clause or § 5 of the Fourteenth Amendment.”<sup>10</sup> The District Court’s decision was affirmed by the Court of Appeals for the Fourth Circuit, concluding “that Congress lacked constitutional authority to enact § 13981’s civil remedy.”<sup>11</sup> There being a federal statute invalidated on constitutional grounds, the United State Supreme Court granted certiorari. 527 U.S. 1068 (1999).

<sup>8</sup> *Cohens v. Virginia*, 19 U.S. (6 Wheat.) 264, 426 (1821) (Marshall, C. J.): “Connected with the power to legislate within this District is a similar power in forts, arsenals, dock yards, &c. Congress has a right to punish murder in a fort or other place within its exclusive jurisdiction, but no general right to punish murder committed within any of the States.” *Id.* at 428: “It is clear that Congress cannot punish felonies generally, and, of consequence, cannot punish misprision of felony.”

<sup>9</sup> *United States v. Morrison*, 529 U.S. 598, 605 (2000).

<sup>10</sup> *Id.* at 604 (citing *Brzonkala v. Virginia Polytechnic and State Univ.*, 935 F. Supp. 779 (WD Va. 1996)).

<sup>11</sup> *Id.* at 605 (citing *Brzonkala v. Virginia Polytechnic and State Univ.*, 169 F.3d 820 (CA4 1999)).

The Supreme Court began its review of constitutional concerns by citing another landmark case by Chief Justice John Marshall:

Every law enacted by Congress must be based on one or more of its powers enumerated in the Constitution. “The powers of the legislature are defined and limited; and that those limits may not be mistaken, or forgotten, the constitution is written.” *Marbury v. Madison*, 1 Cranch 137, 176 (1803) (Marshall, C.J.).<sup>12</sup>

With that backdrop, Chief Justice Rehnquist then invoked the criteria enumerated in *United States v. Lopez*, 514 U. S. 549 (1995), by which the Court may “invalidate a congressional enactment only upon a plain showing that Congress has exceeded its constitutional bounds”<sup>13</sup>—an acknowledge major change in course from *NLRB v. Jones & Laughlin Steel Corp.*, 301 U. S. 1 (1937).<sup>14</sup>

As we observed in *Lopez*, modern Commerce Clause jurisprudence has “identified three broad categories of activity that Congress may regulate under its commerce power.” “First, Congress may regulate the use of the channels of interstate commerce.” “Second, Congress is empowered to regulate and protect the instrumentalities of interstate commerce, or persons or things in interstate commerce, even though the threat may come only from intrastate activities.” “Finally, Congress’ commerce authority includes the power to regulate those activities having a substantial relation to interstate commerce,... i.e., those activities that substantially affect interstate commerce.”<sup>15</sup>

## II. Regulation of Activity that Substantially Affects Interstate Commerce

In both *Morrison* and *Lopez* it was not contended that either of the first two categories, pertaining directly to interstate commerce, were applicable. Statutes in both cases plainly had “nothing to do with ‘commerce’ or any sort of

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<sup>12</sup> *Id.* at 607.

<sup>13</sup> *Id.*

<sup>14</sup> *Id.* at 607-608:

As we discussed at length in *Lopez*, our interpretation of the Commerce Clause has changed as our Nation has developed. See 514 U. S., at 552-557; *id.*, at 568-574 (Kennedy, J., concurring); *id.*, at 584, 593-599 (Thomas, J., concurring). We need not repeat that detailed review of the Commerce Clause’s history here; it suffices to say that, in the years since *NLRB v. Jones & Laughlin Steel Corp.*, 301 U. S. 1 (1937), Congress has had considerably greater latitude in regulating conduct and transactions under the Commerce Clause than our previous case law permitted. See *Lopez*, 514 U. S., at 555-556; *id.*, at 573-574 (KENNEDY, J., concurring).

<sup>15</sup> *Id.* at 608-609.

economic enterprise, however broadly one might define those terms.”<sup>16</sup> Rather, the statutes sought federal empowerment under the third category, “a regulation of activity that substantially affects interstate commerce.”<sup>17</sup> Unfortunately the rationale supporting the claims that interstate commerce was being substantially affected was not very effective—relying on attenuated causal chains by which national productivity, and thus interstate commerce, would be negatively impacted.<sup>18</sup>

We rejected these “costs of crime” and “national productivity” arguments because they would permit Congress to “regulate not only all violent crime, but all activities that might lead to violent crime, regardless of how tenuously they relate to interstate commerce.” We noted that, under this but-for reasoning:

Congress could regulate any activity that it found was related to the economic productivity of individual citizens: family law (including marriage, divorce, and child custody), for example. Under the[se] theories ... , it is difficult to perceive any limitation on federal power, even in areas such as criminal law enforcement or education where States historically have been sovereign. Thus, if we were to accept the Government’s arguments, we are hard pressed to posit any activity by an individual that Congress is without power to regulate.<sup>19</sup>

But unlike *Lopez*, in *Morrison* Congress had sought to buttress its ability to regulate the criminal activity in question by means of congressional findings alleging a substantial effect on interstate commerce. In *Lopez*, although the Court acknowledged that Congressional findings are not constitutionally necessary,<sup>20</sup> it also noted that the conclusion drawn from such findings “ain’t necessarily so”—as reiterated by the Court in *United States v. Morrison*:

As we stated in *Lopez*, “[S]imply because Congress may conclude that a particular activity substantially affects interstate commerce does not necessarily make it so.” 514 U. S., at 557, n. 2 (quoting *Hodel*, 452 U. S., at 311 (REHNQUIST, J., concurring in judgment)). Rather, “[w]hether particular operations affect interstate commerce sufficiently to come under the con-

<sup>16</sup> *United States v. Morrison*, 529 U. S. 598, 610 (2000).

<sup>17</sup> *Id.* at 609.

<sup>18</sup> *Id.* at 612.

<sup>19</sup> *Id.* at 612-613 (citing *United States v. Lopez*, 514 U. S. 549, 564 (1995)).

<sup>20</sup> *United States v. Lopez*, 514 U. S. 549, 562-563 (1995):

We agree with the Government that Congress normally is not required to make formal findings as to the substantial burdens that an activity has on interstate commerce.... But to the extent that congressional findings would enable us to evaluate the legislative judgment that the activity in question substantially affected interstate commerce, even though no such substantial effect was visible to the naked eye, they are lacking here.

stitutional power of Congress to regulate them is ultimately a judicial rather than a legislative question, and can be settled finally only by this Court.” 514 U. S., at 557, n. 2 (quoting *Heart of Atlanta Motel*, 379 U. S., at 273 (Black, J., concurring)).<sup>21</sup>

The Supreme Court in *Morrison* found the Congressional findings only led further down the slippery slope to a monocephalous national government, rather than adhering to the dual system of sovereignty<sup>22</sup> in our federal system, which for decades had not received the regard due it:

We are not the first to recognize that the but-for causal chain must have its limits in the Commerce Clause area. In *Lopez*, 514 U. S., at 567, we quoted Justice Cardozo’s concurring opinion in *A. L. A. Schechter Poultry Corp. v. United States*, 295 U. S. 495 (1935):

“There is a view of causation that would obliterate the distinction between what is national and what is local in the activities of commerce. Motion at the outer rim is communicated perceptibly, though minutely, to recording instruments at the center. A society such as ours ‘is an elastic medium which transmits all tremors throughout its territory; the only question is of their size.’” *Id.*, at 554 (quoting *United States v. A. L. A. Schechter Poultry Corp.*, 76 F.2d 617, 624 (CA2 1935) (L. Hand, J., concurring)).<sup>23</sup>

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<sup>21</sup> *United States v. Morrison*, 529 U. S. 598, 614 (2000).

<sup>22</sup> *Gregory v. Ashcroft*, 501 U.S. 452, 457 (1991) (O’Connor, J):

As every schoolchild learns, our Constitution establishes a system of dual sovereignty between the States and the Federal Government. This Court also has recognized this fundamental principle. In *Tafflin v. Levitt*, 493 U.S. 455, 458 (1990), “[w]e beg[an] with the axiom that, under our federal system, the States possess sovereignty concurrent with that of the Federal Government, subject only to limitations imposed by the Supremacy Clause.” Over 120 years ago, the Court described the constitutional scheme of dual sovereigns:

“[T]he people of each State compose a State, having its own government, and endowed with all the functions essential to separate and independent existence,” . . . “[W]ithout the States in union, there could be no such political body as the United States.” Not only, therefore, can there be no loss of separate and independent autonomy to the States, through their union under the Constitution, but it may be not unreasonably said that the preservation of the States, and the maintenance of their governments, are as much within the design and care of the Constitution as the preservation of the Union and the maintenance of the National government. The Constitution, in all its provisions, looks to an indestructible Union, composed of indestructible States.” *Texas v. White*, 7 Wall. 700, 725 (1869), quoting *Lane County v. Oregon*, 7 Wall. 71, 76 (1869).

<sup>23</sup> *United States v. Morrison*, 529 U.S. 598, 616 n.6 (2000)

### III. National Versus Local Issues in Activities of Commerce

The cited concurring opinion of Judge Learned Hand is an exemplary analysis of how to discern between the national and the local issues in activities of commerce. Judge Hand begins this analysis with the premise that Congress is not supreme in all respects “and the states merely political divisions without more autonomy than it chose to accord them,”<sup>24</sup> leading to the practical problem permeating interstate commerce jurisprudence:

In an industrial society bound together by means of transport and communication as rapid and certain as ours, it is idle to seek for any transaction, however apparently isolated, which may not have an effect elsewhere; such a society is an elastic medium which transmits all tremors throughout its territory; the only question is of their size.<sup>25</sup>

In *United States v. ALA Schechter Poultry Corporation*, 76 F.2d 617 (2d Cir. 1935), the Second Circuit Court of Appeals found that the minimum wage and maximum-hour workweek, promulgated pursuant to the National Industrial Recovery Act (by which Congress delegated to the President the power to approve various Codes of Fair Competition), could not be sustained as a valid federal exercise of power under the Commerce Clause. As the title of the case suggests, the particular wages and hours attempted to be regulated concerned poultry slaughterhouses. And although the Second Circuit Court of Appeals found the poultry inspection provisions of the code to be valid exercises of federal power,<sup>26</sup> not so with the regulation of local wages and hours. To which Judge Hand concurred:

There comes a time when imported material, like any other goods, loses its interstate character and melts into the domestic stocks of the state which are beyond the powers of Congress. So too there must come a place where the services of those who within the state work it up into a finished product are to be regarded as domestic activities. Generally the two will coalesce. Work upon material become domestic, can scarcely be other than domestic work; in this it differs from inspection and its ancillary accompaniments. For although inspection is immediately concerned with goods that have arrived, they are ordinarily still in transit; and moreover even were they

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<sup>24</sup> *United States v. ALA Schechter Poultry Corporation*, 76 F.2d 617, 624 (2d Cir. 1935) (Hand, J., concurring).

<sup>25</sup> *Id.*

<sup>26</sup> Other provisions of the National Industrial Recovery Act, such those pertaining to the inspection fowl, were also held to be unconstitutional in two ways—because of the impermissible delegation of Congress’s legislative power to the President, and Congress exceeding its power to regulate interstate commerce, which invaded powers reserved exclusively to the States. *A. L. A. Schechter Poultry Corp. v. United States*, 295 U.S. 495 (1935).

not, the purpose is directly to control the importation of future goods... But labor done to work up materials begins only after the transit is completed in law as well as in fact, and it is not directed towards the importation of future materials; it is a part of the general domestic activities of the state and is as immune as they from congressional regulation.<sup>27</sup>

Still, Supreme Court jurisprudence in the decades after *A. L. A. Schechter Poultry Corp. v. United States* came close to obliterating the distinction between what is national and what is local in interstate commerce law—at least until *United States v. Lopez*, 514 U. S. 549 (1995). And the pendulum of precedence had swung from Judge Learned Hand’s delineation of labor applied to physical goods as local or interstate, to identifying those seemingly rare human activities which would not have a “substantial effect” on interstate commerce.<sup>28</sup> As Justice Thomas protested in his *Lopez* concurrence, “This test, if taken to its logical extreme, would give Congress a ‘police power’ over all aspects of American life.” *United States v. Lopez*, 514 U.S. 549, 584 (1995) (Thomas, J., concurring). And that was the red line the United States Supreme Court would not pass.

#### IV. Federal Case Law and the Jurisdictional Element

The Freedom of Access to Clinic Entrances Act of 1994 has never been upheld directly by the Supreme Court. Prior to *Dobbs v. Jackson Women’s Health*, the Court chose not to review the several appellate federal cases<sup>29</sup> in

<sup>27</sup> *United States v. ALA Schechter Poultry Corporation*, 76 F.2d 617, 625 (2d Cir. 1935) (Hand, J., concurring) (citation omitted).

<sup>28</sup> See *EEOC v. Wyoming*, 460 U.S. 226, 247 (1983) (Stevens, J., concurring):

The development of judicial doctrine has accommodated the transition from a purely local, to a regional, and ultimately to a national economy.[n4]...[n4] See, e.g., *Wickard v. Filburn*, 317 U. S. 111, 317 U. S. 118-125 (1942) (Congress may constitutionally apply wheat marketing quota to wheat grown wholly for consumption on the farm, because of interdependence of national market).

*Contra EEOC v. Wyoming*, 460 U.S. 226, 265 (1983) (Powell, J., dissenting [with whom O’Connor, J., joined]) (“I join the Chief Justice’s dissenting opinion, but write separately to record a personal dissent from Justice Stevens’ novel view of our Nation’s history.”... [n4] The authority on which Justice Stevens primarily relies is an extrajudicial lecture delivered by Justice Rutledge in 1946.”). *Id.* at 275:

Justice Stevens’ concurring opinion recognizes no limitation on the ability of Congress to override state sovereignty in exercising its powers under the Commerce Clause. His opinion does not mention explicitly either federalism or state sovereignty. Instead, it declares that “[t]he only basis for questioning the federal statute at issue here is the pure judicial fiat found in this Court’s opinion in *National League of Cities v. Usery*.” *Ante* at 460 U. S. 248 (emphasis added). Under this view, it is not easy to think of any state function -- however sovereign -- that could not be preempted.

<sup>29</sup> *Norton v. Ashcroft*, 298 F.3d 547 (6th Cir. 2002), cert. denied, 537 U.S. 1172 (2003); *United States v. Gregg*, 226 F.3d 253, 267 (3d Cir.2000), cert. denied, 532 U.S. 971 (2001); *U.S. v. Hart*, 212

which FACE had been adjudged to be constitutional. This may be taken as an implicit substantive approval by the United States Supreme Court at the time. On the other hand, there was no split of opinion among federal jurisdictions to resolve,<sup>30</sup> nor did the lower courts invalidate a federal statute as in *Morrison*<sup>31</sup>—factors which tend to prompt the Supreme Court to grant certiorari. Be that as it may, we are now post *Dobbs v. Jackson Women’s Health* and the rational for those federal cases which found FACE constitutional is thereby suspect.

Even prior to the *Dobbs* decision, the rational in the federal FACE cases fell short of the jurisdictional requirements in *Lopez* and *Morrison*. That is because it is admitted in these federal cases upholding FACE that it does not contain a “jurisdictional element... a provision in a federal statute that requires the government to establish specific facts justifying the exercise of federal jurisdiction in connection with any individual application of the statute.” *U.S. v. Gregg*, 226 F.3d 253, 263 (3rd Cir. 2000). In this line of cases, the requirement of a jurisdictional element was dismissed for the sole reason that the statute had as its object the abortion industry; as the Third Circuit Court of Appeals postulated in *U.S. v. Gregg*, 226 F.3d 253, 263 (3rd Cir. 2000):

Although such an element would certainly lend support to the conclusion that FACE is tied to interstate commerce, we conclude that it was not necessary for Congress explicitly to limit<sup>32</sup> the civil remedy provision in the case of regulating anti-abortion activity directed at reproductive health clinics that are, by definition, directly engaged in the business of providing reproductive health services. See *Bird*, 124 F.3d at 675 (reasoning that a jurisdictional element is “not always a necessary” method to ensure that Congress does not exceed its commerce power).

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F.3d 1067 (8th Cir. 2000), cert. denied, 531 U.S. 1114 (2001); *United States v. Weslin*, 156 F.3d 292, 297 (2d Cir.1998), cert. denied, 525 U.S. 1071 (1999); *United States v. Bird*, 124 F.3d 667, 683-84 (5th Cir.1997), cert. denied, 523 U.S. 1006 (1998); *Hoffman v. Hunt*, 126 F.3d 575, 582-88 (4th Cir. 1997), cert. denied, 523 U.S. 1136 (1998); *Terry v. Reno*, 101 F.3d 1412, 1418-1421 (D.C.Cir.1996), cert. denied, 520 U.S. 1264 (1997); *United States v. Wilson*, 73 F.3d 675, 679-88 (7th Cir. 1995), cert. denied, 519 U.S. 806 (1996); *United States v. Soderna*, 82 F.3d 1370, 1374-77 (7th Cir.), cert. denied, 519 U.S. 1006 (1996); *United States v. Dinwiddie*, 76 F.3d 913, 921-24 (8th Cir.), cert. denied, 519 U.S. 1043 (1996); *American Life League, Inc. v. Reno*, 47 F.3d 642, 648-52 (4th Cir.1995), cert. denied, 516 U.S. 809 (1995).

<sup>30</sup> See Grant, Hendrickson, & Lynch, THE IDEOLOGICAL DIVIDE: CONFLICT AND THE SUPREME COURT’S CERTIORARI DECISION, 60 CLEV. ST. L. REV. 559 (2012).

<sup>31</sup> “Because the Court of Appeals invalidated a federal statute on constitutional grounds, we granted certiorari. 527 U.S. 1068 (1999).” *United States v. Morrison*, 529 U.S. 598, 605 (2000).

<sup>32</sup> “A jurisdictional element in a statute serves to define the limits of the regulated activity. Including such a requirement assures that the legislation is directed toward a defined scope of conduct, one more apt to be within the reach of the commerce power granted to Congress.” *U.S. v. Gregg*, 226 F.3d 253, 271 (3rd Cir. 2000) (Weis, J., dissenting).

In the cited case, *U.S. v. Bird*, 124 F.3d 667, 675 (5th Cir. 1997) (“*Bird I*”), the Fifth Circuit Court of Appeals in turn reasoned:

[T]hough a jurisdictional element may help to ensure that the exercise of Congress’s Commerce Clause authority extends only to those activities that substantially affect interstate commerce, it is only one method, and not always a necessary one, by which Congress may achieve that end. *See, e.g., Terry*, 101 F.3d at 1418 (“*Lopez’s* fundamental proposition is that Congress must ensure that its Commerce Clause power to regulate noncommercial activities extends to only those activities that substantially affect interstate commerce. Congress may do so either through its own legislative findings or by including a jurisdictional element in the statute; it need not do both.”)

Continuing down this daisy chain of rationales, the Fifth Circuit Court of Appeals in *Bird I* was quoting the District of Columbia Court of Appeals in *Terry v. Reno*, 101 F.3d 1412 (D.C. Cir. 1996). The Court in *Terry v. Reno* continued its line of thought, “Where, as here, detailed congressional findings support the conclusion that the activities prohibited by the Access Act substantially affect interstate commerce, the absence of a jurisdictional element is not fatal to the statute’s constitutionality.” *Id.* at 1418. It is readily apparent that the pre-*Morrison* federal case of *Terry v. Reno* adopted as its critical constitutional peg congressional findings of an aggregate effect on interstate commerce.

As demonstrated, that rationale was subsequently followed in *U.S. v. Gregg*, which was argued the month before *Morrison* was handed down, and decided a few months later (*Morrison* argued January 11, 2000, decided May 15, 2000; *Gregg* argued April 25, 2000, filed September 7, 2000). The Third Circuit Court of Appeals in *U.S. v. Gregg* went through the motions of complying with the Supreme Court’s *United States v. Morrison* decision, but it clung to the idea that congressional findings of a substantial aggregate effect on interstate commerce sufficed for federal jurisdiction:

Finally, in accordance with the fourth factor of *Morrison*, the findings set forth in the House and Senate Committee Reports demonstrate that Congress had a rational basis upon which to conclude that the activities governed by FACE have a substantial effect on interstate commerce. As set out in detail below, the findings show that a national market for abortion-related services exists in this country and that reproductive health clinics are directly engaged in interstate commerce. The findings further demonstrate that a national movement engaged in the activities proscribed by FACE has decreased the availability of abortion-related services in the national market and caused women seeking services and physicians providing services to travel interstate. Accordingly, the activity proscribed by FACE has a substantial effect on the interstate commerce of reproductive health services.<sup>33</sup>

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<sup>33</sup> *U.S. v. Gregg*, 226 F.3d 253, 263 (3rd Cir. 2000).



Thereby, the Third Circuit Court of Appeals reached a conclusion at odds with the holding in *United States v. Morrison*, in which the Supreme Court rejected “the argument that Congress may regulate noneconomic, violent criminal conduct based solely on that conduct’s aggregate effect on interstate commerce.” 529 U. S. at 617. The local criminal activity proscribed in the FACE Act is well within the historic police power of the several states. One can wonder how Chief Justice Rehnquist could have made that more clear, “The regulation and punishment of intrastate violence that is not directed at the instrumentalities, channels, or goods involved in interstate commerce has always been the province of the States.” 529 U. S. at 618. To paraphrase Judge Hand, “There comes a time when law, like imported physical goods, loses its interstate character and melts into the domestic laws of the state which are beyond the powers of Congress.”<sup>34</sup> *U.S. v. Gregg*, written right after the ink dried in *Morrison*, did nothing more than confirm Justice Thomas cautionary concurrence:

The majority opinion correctly applies our decision in *United States v. Lopez*, 514 U. S. 549 (1995), and I join it in full. I write separately only to express my view that the very notion of a “substantial effects” test under the Commerce Clause is inconsistent with the original understanding of Congress’ powers and with this Court’s early Commerce Clause cases. By continuing to apply this rootless and malleable standard, however circumscribed, the Court has encouraged the Federal Government to persist in its view that the Commerce Clause has virtually no limits. Until this Court replaces its existing Commerce Clause jurisprudence with a standard more consistent with the original understanding, we will continue to see Congress appropriating state police powers under the guise of regulating commerce.<sup>35</sup>

Yet the FACE Act had one very important factor in its favor not found in *Lopez* or *Morrison*—the object of its enactment was an alleged federal right established by the United States Supreme Court in *Roe v. Wade*. Though there may not have been any technical *de jure* linkage between the Fourteenth Amendment right per *Roe v. Wade* and any enforcement of the FACE Act under the Commerce Clause, a *de facto* linked jurisdictional element permeates federal case law. Accordingly, the Third Circuit Court of Appeals reasoned in *U.S. v. Gregg* that the lack of a jurisdictional element in FACE was thereby excusable, “[W]e conclude that it was not necessary for Congress explicitly to limit the civil remedy provision in the case of regulating anti-abortion activity directed at reproductive health clinics that are, by definition, directly engaged

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<sup>34</sup> See *United States v. ALA Schechter Poultry Corporation*, 76 F.2d 617, 625 (2d Cir. 1935) (Hand, J., concurring).

<sup>35</sup> *United States v. Morrison*, 529 U.S. 598, 627 (2000) (Thomas, J., concurring).

in the business of providing reproductive health services.”<sup>36</sup> Sixteen years later that line of reasoning was still strictly being adhered to in federal courts:

Congress had a rational basis for concluding that a national restriction on clinic violence and obstruction was appropriate to protect the economic welfare of clinics, their employees, and their customers. *See Gregg*, 226 F.3d at 265 (“when it enacted FACE, Congress sought to regulate a truly national problem”); *Norton*, 298 F.3d at 559 (“Given the detailed congressional record, we are satisfied that Congress had a rational basis to conclude that the activities prohibited by the Act disrupted the national market for abortion-related services and decreased the availability of such services”).<sup>37</sup>

But now, the object at the end of the thinly attenuated daisy chain of rationales is no longer protected by a hopelessly tangled web of irrational rationalizations—which was heretofore our federal abortion jurisprudence. Justice Alito cut through that Gordian Knot in *Dobbs v. Jackson Women’s Health* and wrote, “Accordingly, laws regulating or prohibiting abortion are not subject to heightened scrutiny. Rather, they are governed by the same standard of review as other health and safety measures.” *Dobbs v. Jackson Women’s Health Organization*, 597 U.S. \_\_\_\_, \_\_\_\_ (2022) (Alito, J.). In other words, abortion services are no more a matter of interstate commerce than any other medical procedure.

## Conclusion

If a person were to walk down a city street breaking windows on various retail storefronts, which are exhibiting merchandise obtained through interstate commerce, such local criminal activity would not be the object of federal regulation by any reasonable reading of *United States v. Morrison*. Any attempt by Congress to regulate such criminal behavior would realistically be found to be lacking a jurisdictional element. Although, if that city block also contained a Post Office,<sup>38</sup> then the damage to said Post Office could constitute a federal offence.<sup>39</sup> Yet if that hypothetical Post Office was closed prior to the vandalism, and its space taken over by a private carrier of packages, such as Federal Express or UPS, then the federal jurisdictional element would have disappeared along with the Post Office.

With the demise of the *Roe v. Wade* legal regime, FACE’s *de jure* Fourteenth Amendment jurisdictional element over abortion service providers has ceased to exist and, accordingly, FACE’s *de facto* linked jurisdictional element under the Commerce Clause is now a non sequitur in search of a fallacious

<sup>36</sup> *U.S. v. Gregg*, 226 F.3d 253, 263 (3rd Cir. 2000).

<sup>37</sup> *United States v. Dillard*, 184 F.Supp.3d 999, 1002 (D. Kan. 2016).

<sup>38</sup> “The Congress shall have Power... To establish Post Offices and post Roads.” U.S. CONST. art. I, § 8.

<sup>39</sup> 18 U.S.C. § 1361; see *U.S. v. LaPorta*, 46 F.3d 152, 158 (2nd Cir. 1994).

premise. Consequently, to the extent someone is unlawfully prevented from any such service by a third party, then that is a matter of state law—“Indeed, we can think of no better example of the police power, which the Founders denied the National Government and reposed in the States, than the suppression of violent crime and vindication of its victims.” *United States v. Morrison*, 529 U.S. 598, 618 (2000).



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# **The Pregnancy Continuum in Domestic Sex Trafficking in the United States: Examining the Unspoken Gynecological, Reproductive, and Procreative Issues of Victims and Survivors**

Laura J. Lederer,\* Theresa Flores,\*\* and McKamie J. Chandler\*\*\*

**ABSTRACT:** Crucial to the fight against sex trafficking<sup>1</sup> is understanding the experiences of victims and survivors. Survivor surveys have illuminated key areas to address, but a clear gap in the research is in the reproductive, gynecological, and procreative health issues of victims and survivors. This article opens the door to research and dialogue by publishing the findings of a pilot survivor survey focused on survivors' sexual and reproductive health. The retrospective survey offers preliminary findings for a larger national study underway in 2023 that will enable healthcare providers, service providers and other first

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<sup>1</sup> Definition of “sex trafficking” is taken from the Trafficking Victims Protection Act of 2000. “The term ‘sex trafficking’ means the recruitment, harboring, transportation, provision, obtaining, patronizing, or soliciting of a person for the purpose of a commercial sex act.” 22 U.S.C.A § 7102(12) (West).

## responders to identify and better meet the unique needs of victims and survivors of human trafficking in this area.

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### Introduction

*Growing up there was a lot of domestic violence in my household, a lot of things that were directly impacting me at a young age. When I was 13, I was placed in foster care, but the foster home wasn't that great. When I was there, I was raped and abused further. I didn't see any way out of it, and I attempted suicide. Then I was transferred to a psychiatric hospital. At the age of 15, they put me in in a group home, where I met a pimp who paid me a lot of attention and I thought he liked me. I didn't realize it at the time, but he had other ideas. Eventually forced me into prostitution. He was vicious and kept me under his control by abusing me physically and mentally. He battered, raped, and branded with irons. But, even with all that, I had a hard time leaving. As awful as the situation was, there were needs that I had that were being met. I was homeless, I felt like I didn't have anywhere to go, anywhere to get clothes or food or shelter. He was the only thing that was consistent in my life. In addition to selling me to others, he slept with me too. During the time I was trafficked, I had 3 abortions and 4 children, several by my trafficker.*

—Sherry, Survivor<sup>2</sup>

Sherry's story is one of many we heard during a set of focus groups in four cities in the United States. She and others were part of a pilot study for a national human trafficking survivor survey that is currently being conducted as of the publication of this paper. The survey considers the survivors' experiences along the pregnancy continuum during and after being trafficked. For the purposes of this study, the "pregnancy continuum" refers to a broad range women's health issues, from preconception to post-childbirth. The pregnancy continuum encompasses women's gynecological and procreative health, pregnancy, prevention of pregnancy, miscarriage, abortion, forced abortion, childbearing, and pre- and post-natal care. In this paper specifically, we consider pregnancy continuum issues in the context of sex trafficking in the United States.

This survey is a follow-on survey to a published 2014 study and article on the general health implications of sex trafficking.<sup>3</sup> In the course of administering that survey, and subsequent work, we heard stories from over 450

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<sup>2</sup> All survivor names have been changed to protect privacy.

<sup>3</sup> Laura J. Lederer & Christopher A. Wetzel, *The Health Consequences of Sex Trafficking and Their Implications for Identifying Victims in Healthcare Facilities*, 23 ANNALS OF HEALTH LAW 61 (2014).

survivors in over thirty cities in the U.S. in which survivors told us of methods of birth control, birth control failure, reproductive violence on the part of the trafficker, hundreds of miscarriages, hundreds of abortions, both voluntary and forced, and, perhaps most surprising to us at the time, hundreds of children born into trafficking situations. This survey is a pilot to test a national study that delves more deeply into these issues and includes questions on gynecological health and the disposition of children born before, during and after trafficking. This survey, unlike the previous study, attempts to capture differences in childbearing, and reproductive and general health before, during and after trafficking. This will allow us to examine the self-reported effects of trafficking on survivors' childbearing, and reproductive and gynecological health.

## I. Previous Literature & Context

This survey fills a gap in the growing body of literature on health and violence in the context of domestic sex trafficking. More specifically, this survey considers in depth an issue that became apparent in a previous survey conducted by the author and replicated in many subsequent studies.<sup>4</sup> While the previous surveys considered the health consequences of human trafficking overall, this survey specifically addresses the consequences relating to the pregnancy continuum. This survey is based on a preliminary survey that was conducted as part of a pilot project. The purpose of this pilot project was to perfect a survey instrument to be used in a nationwide, year-long survey.

Other studies related to the gynecological, reproductive, and procreative issues in human trafficking have been conducted. However, these studies were narrower in scope, or surveyed international participants. For example, a smaller 2015 study surveyed twenty-one women incarcerated on Rikers Island on issues related to contraception, infectious diseases, pregnancy and pre-natal care.<sup>5</sup> A 2017 study considered maternity care for trafficked women in the United Kingdom.<sup>6</sup> And another study considered coerced abortion outside the context of human trafficking.<sup>7</sup> These studies set the stage for our larger and more expansive study which surveys a larger sample size of human trafficking

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<sup>4</sup> Laura J. Lederer & Christopher A. Wetzel, *The Health Consequences of Sex Trafficking and Their Implications for Identifying Victims in Healthcare Facilities*, 23 ANNALS OF HEALTH LAW 61 (2014).

<sup>5</sup> Anita Ravi et. al., *Identifying Health Experiences of Domestically Sex-Trafficked Women in the USA: A Qualitative Study in Rikers Island Jail*, J. URBAN HEALTH (2017), available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5481207/>.

<sup>6</sup> Debra Bick et al., *Maternity Care for Trafficked Women: Survivor Experiences and Clinicians' Perspectives in the United Kingdom's National Health Service*, PLOS ONE (2017), available at: <https://pubmed.ncbi.nlm.nih.gov/29166394/>.

<sup>7</sup> Gregory K. Pike, *Coerced Abortion - The Neglected Face of Reproductive Coercion*, THE NEW BIOETHICS, DOI: 10.1080/20502877.2022.2136026.

survivors and the entire pregnancy continuum, rather than just one part of the continuum. This pilot study will be followed by a national survey of twenty cities, with a sample size of 300 survivors.

## II. Methodology

This survey collected data from female sex trafficking survivors.<sup>8</sup> The survey used a mixed-methods approach, combining qualitative data collection from focus groups and structured interviews with quantitative analysis. It consisted of four focus groups conducted between June and December of 2021 in four different cities.<sup>9</sup> On average, these focus groups consisted of eight participants. Participants were identified by using a snowball sampling method. Snowball sampling or chain referral sampling is a non-probability sampling technique where the subjects share difficult-to-find traits. The sample is gathered by asking an individual with the sought-after traits to refer the researcher to other individuals with the same traits. Each new individual is asked to make an additional referral until the target sample size is reached.<sup>10</sup> In total, thirty-one survivors were surveyed for this survey. All the participants were domestic survivors of sex trafficking, ranging between the ages of eighteen and sixty. During these focus groups, participants commented on and discussed a range of topics, emphasizing gynecological, reproductive, and procreative health issues. Following the focus group sessions, survivors completed an extensive health survey.<sup>11</sup>

In the survey, the survivors answered basic demographical questions relating to such factors, as age, socio-economic status, education, and the duration and location(s) of the trafficking experience. Another section of the survey included questions covering general physical and mental health. While the results of this section are not included in this article, they may be considered in future publications by the author.

The majority of the survey, however, focused on the pregnancy continuum.

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<sup>8</sup> The terms “survivor” and “trafficking survivor” will be used throughout to refer to the individuals interviewed in this survey. “Victim” and “trafficking victim” will refer generally to individuals who are victims of trafficking as defined by the Trafficking Victims Protection Act of 2000, 22 U.S.C.A. § 7102(17) (West).

<sup>9</sup> This initial pilot survey was conducted in Boston, Massachusetts; Trenton New Jersey; Las Vegas, Nevada; and Detroit, Michigan.

<sup>10</sup> (Snowball Sampling: Definition, Method, Advantages and Disadvantages); see also, “Snowball Sampling, Business Research Methodology, noting that one of the key advantages of snowball sampling is the ability to recruit hidden populations and collect primary data in a cost-effective manner. The article also notes that disadvantages include possible oversampling of a particular network of peers and there is no guarantee of the representativeness of the sample. <https://research-methodology.net/sampling-in-primary-data-collection/snowball-sampling/>

<sup>11</sup> See *infra*, Appendix # for a sample questionnaire completed by a survivor.



Questions related to all aspects of gynecological, reproductive, and procreative health. The survey asked questions relating to STD/STI exposure and gynecological infections or illnesses contracted during the trafficking experience. Focus group participants responding to the pilot survey were asked to address questions on issues related to reproduction and procreation, such as use of birth control, pregnancy, pre and postnatal care, and the outcomes of those pregnancies. Where pregnancy resulted in the birth of a child, the survey considered issues relating to childrearing. Additionally, questions went beyond medical symptoms and procedures. The survey also considered the survivor's subjective experiences. For example, the survey considered the survivor's perceived experience with healthcare providers and the characterizations of medical procedures.

Answers to yes or no questions from the survey were coded and entered in a spreadsheet using a binary coding system (1 if circled, 0 if not). Non-responsive answers were coded as "did not answer". For the open-ended second component, common answers were assigned a number. If survivors gave an unwieldy variety of answers, the least common answers were grouped into a single "other" category.

This coding system allowed the spreadsheet program to count how many survivors gave each response by counting how many cells in a column were filled with a given number. The totals were then calculated as percentages, both of all survivors and of those who answered the particular question. In the very few instances where clear discrepancies resulted from participant error or misunderstanding of a question, the survivor's responses were tabulated in the way that was most logical and consistent with other responses. For example, if a survivor indicated having two abortions, but reported zero pregnancies, we deduced that the survivor had two pregnancies and coded pregnancies as such. The coding system allowed for the use of only descriptive statistics—no inferential statistics or significance tests were used. The following results section analyzes the frequency with which individual symptoms and experiences were reported by the survivors in this survey as well as the percentages of survivors who reported at least one symptom or experience in a given category.

### III. Demographics

To assess health issues unique to the pregnancy continuum, all thirty-one survivor participants identified as female. Beyond this unifying feature, there was significant diversity among the women in addition to a few notable trends.

#### A. Race & Ethnicity

Of the thirty-one survivor participants, a majority identified as white (55%), 32 percent identified as Black or African American, 6% identified as Other; 3% identified as Asian American, 3% preferred Not to Answer. Other

choices were Latino, Native American, Alaskan Indigenous, and Other Indigenous, but none of the participants identified as these. In this sample, only 1 respondent identified as Preferred Not to Answer.

### B. Education

A majority of the survivor participants indicated that they had graduated from high school or trade school (55%). A smaller number reported that they did not finish high school (16%). Approximately a quarter reported graduating from college (13%) or a graduate school program (13%). Among the survivors, the rate of college graduation is considerably lower than the percent of college graduates in the general population (13% vs. 37.9%).<sup>12</sup>

### C. Sexual Orientation

A majority of the survivor participants identified as heterosexual (65%). However, nearly a third of survivor participants (32%) identified as LGBTQ.

**Table 1. Race and Ethnicity**

Race or Ethnicity	% of Survivors	Frequency (N=31)
African American or Black	32%	10
Asian American	3%	1
Caucasian or White	55%	17
Other	6%	2
Preferred Not to Answer	3%	1
Total	100%	31

**Table 2. Demographics: Education**

Highest Level of Education Achieved	% of Survivors	Frequency (N=31)
Did Not Graduate High School	16%	5
High School or Trade School Degree	55%	17
College Degree (Undergraduate)	13%	4
College Degree (Graduate)	13%	4
Preferred Not to Answer	3%	1
Total	100%	31

<sup>12</sup> Katherine Schaeffer, *10 Facts about Today's College Graduates*, PEW RESEARCH CENTER (Apr. 12, 2022), <https://www.pewresearch.org/fact-tank/2022/04/12/10-facts-about-todays-college-graduates/>.

**Table 3. Demographics: Sexual Orientation**

<b>Sexual Orientation</b>	<b>% of Survivors</b>	<b>Frequency (N=31)</b>
Heterosexual or Straight	65%	20
LGBTQ+	32%	10
Preferred Not to Answer	3%	1
Total	100%	31

**D. Age When Trafficked**

Most (77%) of the survivor participants were under twenty-four years of age when they were trafficked. Forty-two percent indicated that they were trafficked when they were under eighteen years of age. As the ages increased, representation dropped significantly. Only 10 percent reported that they were trafficked between the ages of twenty-five and thirty-four, and only 6 percent reported that they were trafficked between the ages of forty-five and sixty.

**Table 4. Demographics: Age When Trafficked**

<b>Age when Trafficked (in years)</b>	<b>% of Survivors</b>	<b>Frequency (N=31)</b>
Under 18	42%	13
18–24	35%	11
25–34	10%	3
45–60	6%	2
Preferred Not to Answer	6%	2
Total	100%	31

**IV. Results**

**A. Gynecological Issues**

*I had so many problems that I believe are connected to when I was trafficked. I had vaginal infections, UTIs, PID, (pelvic inflammatory disease), cysts and scar tissue from abortions. When I got out and married, I couldn't get pregnant, and my gynecologist said I would have to have an operation to make it possible for me to have children. Now I have uterine cancer.*

—Benia, Survivor

Among the survivors surveyed, gynecological health issues were widespread and severe. The survey considered twenty-five gynecological illnesses, infections, and symptoms.<sup>13</sup> Twenty-nine out of thirty-one survivor partic-

<sup>13</sup> The survey asked the survivor to indicated whether they had experienced any of the following during their trafficking experience: Anal fistula, Anal Infection or Inflammation, Bartholin's Cyst, Bladder Infection, Cancer (Cervical), Cancer (Ovarian), Cervical Infection, Cystitis, Dysmenorrhea, Endometriosis, Fistula-Obstetric, Infertility, Menstruation disorders,

ipants reported experiencing at least one gynecological infection, illness, or symptom while they were being trafficked. Twenty-six percent of participants reported ten or more problems. Among the whole sample, the average number of gynecological issues reported per survivor was seven. The highest number of gynecological issues reported by one survivor was sixteen. Table 1 highlights some of the most commonly reported gynecological issues.

**Table 5. Common Gynecological Health Problems Experienced by Human Trafficking Survivors**

<b>Gynecological Issue</b>	<b>% of Survivors Reporting</b>	
Issue while Being Trafficked	Frequency (N=31)	25
Vaginal Infection (Bacterial)	65%	20
Vaginal Discharge	58%	18
Pain during Sex	58%	18
Menstruation Disorders	55%	17
Vaginal Pain	52%	16
Urinary Tract Infections	52%	16
Dysmenorrhea	42%	13
Vaginal Bleeding	39%	12
Pelvic Pain	32%	10
Bladder Infection	29%	9
Ovarian Cyst	26%	8
Pelvic Inflammatory Diseases	23%	7
Cervical Infection	19%	6
Cancer (Cervical)	13%	4
<i>% Survivors Reporting at least One Gynecological Issue</i>	90%	28
<i>% Survivors Reporting Two or More Gynecological Issues</i>	84%	26

The prevalence of sexually transmitted infections (STIs) further reflects the physical toll of domestic sex trafficking on a woman’s gynecological health. Seventy-four percent of survivors surveyed reported that they had contracted at least one STI while being trafficked.<sup>14</sup> Of those reporting an STI, the average number of STIs reported was 1.6.

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Ovarian Cyst, Pain during sex, Pelvic Floor Prolapse, Pelvic Inflammatory Diseases, Pelvic Pain, Urinary Tract Infections, Uterine Fibroids, Vaginal Bleeding, Vaginal discharge, Vaginal Infection (Bacterial), Vaginal Infection (Yeast), or Vaginal Pain.

<sup>14</sup> The survey asked the survivor to indicated whether they had contracts any of the following STIs during the time they were trafficked: Chlamydia, Gonorrhea, Syphilis, Genital Herpes, Genital Warts, Hepatitis B, Trichomoniasis, or HIV/AIDs.

**Table 6. Prevalence of Sexually Transmitted Infections (STI) among Human Trafficking Survivors**

Reported STI	% of Survivors Reporting	Frequency (N=31)
Chlamydia	45%	14
Gonorrhea	35%	11
Genital Herpes	23%	7
Trichomoniasis	23%	7
Genital Warts (HPV)	19%	6
Syphilis	13%	4

**Table 7. Reported and Calculated Pregnancies among Human Trafficking Survivors**

Type of Pregnancy or Pregnancy Outcome	Number of Pregnancies and Pregnancy Outcomes Reported by Survivors
Reported Pregnancies	59
Calculated Pregnancies	119
Reported Pregnancies Carried to Term	44
Reported Abortions	42
Reported Miscarriages	32
Reported Still Births	1

**B. Birth Control & Pregnancy**

*“I was pregnant three times during the time I was trafficked and all of them were by different buyers.”*

—Maria, Survivor

*“I got pregnant twelve times—all of them by my trafficker/pimp. I had three abortions, three children, and many miscarriages”*

—Joanna, Survivor

Table 7 above reveals a large discrepancy between the reported number of pregnancies and the calculated number of pregnancies (sum of reported pregnancies carried to term, reported abortions, reported miscarriages, and reported still births). This discrepancy results from the fact that the survey asked participants to indicate the total number of pregnancies they have experienced, but later asked the survivor to indicate the number of pregnancies experienced that corresponded with a certain circumstance such as miscarriage or abortion. Some survivor participants were non-responsive to the question on total number of pregnancies but indicated multiple pregnancies when asked

**Table 8. Birth Control Methods Used While Being Trafficked**

<b>Birth Control Method</b>	<b>% of Survivors Reporting Using Method</b>	<b>Frequency (N=31)</b>
Condoms	77%	24
Pill	45%	14
Depo Provera or Other Birth Control Injection	13%	4
Morning after Pill (Plan B)	13%	4
Diaphragm	10%	3
Tubal Ligation or Other Operation	10%	3
IUD	3%	1

about specific circumstances. In such cases, the author considered the sum of the pregnancies indicated, rather than the non-responsive answer to the total number of pregnancies.<sup>15</sup> For the purposes of this article, statistics are based on the number of calculated pregnancies, rather than the reported number of total pregnancies.

Among the twenty-seven survivors indicating a pregnancy, there were at least 119 pregnancies. The most pregnancies indicated by one survivor was fifteen, and five other survivors reported experiencing between five and ten pregnancies. Ten survivors reported being impregnated at least once by their trafficker or pimp, and ten indicated that they were impregnated by their boyfriend/husband. Two survivors noted that for them, “boyfriend” and “trafficker” were synonymous. Four survivors reported being impregnated at least once by a customer, and three said they got pregnant by “other.” Those who indicated “other” answered further that the “other” was a drug dealer or family member.

Even though 87% of survivors reported using some kind birth control, 87% of survivors reported at least one pregnancy; and 65% reported two or more pregnancies.

### ***C. Pregnancy Outcome: Live Birth***

*I got pregnant while I was being trafficked, and I knew that I was going to keep the baby no matter what.*

—Mary, Survivor

<sup>15</sup> Similarly, in some cases participants were non-responsive to the overarching question about the number of pregnancies experienced but indicated a range of number of pregnancies in a later section. For example, a participant indicated experiencing 2-4 pregnancies, but was non-responsive when asked exactly how many pregnancies she had experienced. When this happened, we counted the number of pregnancies as the least of the parameters (two pregnancies).

**Table 9. Pregnancy and Childbirth-Related Problems Experienced by Victims of Human Trafficking**

Category	% of Survivors Reporting Experiencing at least One Problem	
	Problem	Frequency (N=31)
Pregnancy Problems Experienced during Trafficking	77%	24
Pregnancy Problems Experienced after Trafficking	35%	11
Problems Experienced during Child-birth	68%	21
Problems Experienced after Child-birth	42%	13

**Table 10. Children Born to Survivors of Human Trafficking**

Category	Number of Children Born
Children Born before Survivor was Trafficked	9
Children Born during Trafficking	44
Children Born after Trafficking	23

Although many instances of pregnancy were reported, the chances of the pregnancy resulting in live birth was much smaller. In total, the survivors reported forty-four pregnancies being carried to full term. Compared with the 119 total pregnancies reported, fewer than half of all reported pregnancies resulted in live birth (37%).<sup>16</sup> One survivor mentioned her pregnancy as an impetus for her to disclose to a health provider that she was being trafficked. Another said that being pregnant gave her hope for her child even though she felt hopeless in her own situation.

Thirty-seven percent (11/31) of survivor participants reported receiving full prenatal care. Over 13 percent (13.4 percent (4/31)) reported receiving partial prenatal care while pregnant and being trafficked. Only 23 percent (7/31) reported a problem-free pregnancy while being trafficked. After being trafficked, survivors continued to report pregnancy complications with 35 percent reporting problems during pregnancies.<sup>17</sup>

Eighteen-survivor participants reported the birth of forty-four children while they were being trafficked. Seven survivors reported having had nine

<sup>16</sup> According to a study conducted by the CDC, in 2010, 65% of pregnancies resulted in live birth, 17.9% of pregnancies resulted in abortion, and 17.1% of pregnancies resulted in miscarriage. Sally C. Curtin et al, *2010 Pregnancy Rates Among U.S. Women*, CDC (Dec. 2015), [https://www.cdc.gov/nchs/data/hestat/pregnancy/2010\\_pregnancy\\_rates.pdf](https://www.cdc.gov/nchs/data/hestat/pregnancy/2010_pregnancy_rates.pdf).

<sup>17</sup> Participants were asked whether they had a problem during pregnancy, but “problem” was not defined in this pilot study.

**Table 11. Childbirth Outcomes—Where did the Children of Human Trafficking Survivors Go?**

Category	Number of Survivors Reporting
Survivor Kept Child (or Children)	19
Survivor's Child (or Children) was Cared for by Relative	4
Survivor's Child (or Children) was Adopted	1
Survivor brought Child (or Children) to a Safe Haven Facility	0
Survivor's Child (or Children) was Taken by Authorities	4
Survivor's Child (or Children) was Taken by Trafficker	1

children before being trafficked, while twelve survivors had twenty-three children after they were trafficked.

Most of the survivors reported that they kept and raised their child or children. On the other hand, four survivors reported that their child was raised by relatives, one reported that she placed her child for adoption, four reported that their child was taken by authorities such as Child Protective Services, and one even reported that her child was taken by her trafficker.

#### **D. Pregnancy Outcome: Abortion & Miscarriage**

*I felt that, given the circumstances (we were living in one seedy hotel after another and I didn't see any end to it) I couldn't bring a baby into the world, so I had an abortion.*

—Amy, Survivor

The next most common pregnancy outcomes reported were abortion and miscarriage. Eleven survivors reported experiencing at least one miscarriage.<sup>18</sup> Nineteen survivors reported *at least one* abortion. The total number of abortions reported by the survivor participants was forty-two. Using the same total number of pregnancies previously reported, 35 percent of all pregnancies ended in abortion.

The responses given by the survivors show a clear lack of choice with regard to abortion. Seven women reported being forced to obtain at least one abortion by their trafficker, whereas six women reported feeling forced into at least one abortion by their circumstances. Four women reported feeling pressured by friends, family, or authority figures to abort their pregnancy. Among the survivors who reported at least one voluntary abortion, 82 percent reported feeling regret for their voluntary abortion.

<sup>18</sup> The most miscarriages reported by one survivor was nine.



**Table 12.1. Analyzing Human Trafficking Survivor’s Abortions**

<b>Category</b>	<b>% of Survivors Reporting (N=31)</b>
Obtained at least one Abortion	65% (N=20)

**Table 12.2. Analyzing Human Trafficking Survivor’s Abortions**

<b>Category</b>	<b>% of Survivors who Obtained at Least One Abortion (N=20)</b>
Obtained at Least One Abortion Forced by Trafficker	35% (N=7)
Obtained at Least One Abortion Forced by Circumstances	30% (N=6)
Obtained at Least One Abortion Urged, Counseled, or Pressured by Friend, Colleague, Health Provider, etc.	20% (N=4)
Obtained at Least One Voluntary Abortion	55% (N=11)

**Table 12.3. Analyzing Human Trafficking Survivor’s Abortions**

<b>Category</b>	<b>% of Survivors who Obtained at Least One Voluntary Abortion (N=11)</b>
Regrets at Least One Voluntary Abortion	82% (N=9)
Does not Regret Voluntary Abortion	19% (N=2)

**E. Abortion Alternatives**

*I didn’t want an abortion but I didn’t know there were places I could get help if I didn’t want an abortion.*

—Sandy, Survivor

The lack of choice represented in these survivors’ responses is elucidated by their responses to the questions on their knowledge of abortion alternatives. From a list of various abortion alternatives, only one survivor reported being aware of safe havens, where women can safely and anonymously leave newborns at hospitals and fire stations. Only six survivors reported that they were aware of adoption as an abortion alternative. And only seven survivors reported being aware of Pregnancy Helping Organizations (PHOs) or Pregnancy Resource Centers (PRCs). Considering this lack of awareness of abortion alternatives, it is unsurprising that only three survivors reported utilizing an abortion alternative.

**Table 13. Human Trafficking Victims' Awareness of Abortion Alternatives**

Category of Abortion Alternative	% of Survivors Reporting Awareness of Alternative	Frequency (N=31)
Knew about Adoption	19.4%	6
Knew about Safe Havens	3.2%	1
Knew about Pregnancy Resource Centers	22.6%	7
Utilized an Abortion Alternative	9.7%	3

**Table 14. Where do Victims of Human Trafficking Seek Healthcare?**

Type of Healthcare Provider	% of Survivors who Sought Healthcare at this Type of Provider	Frequency (N=31)
Hospital/ER	81%	25
Urgent Care Clinic	29%	9
Neighborhood Clinic	29%	9
Private Physician	35%	11
Planned Parenthood	29%	9
Women's Health Clinic	19%	6
Pregnancy Resource Center/Pregnancy Helping Organization	6%	2

### ***F. Interactions with Healthcare Providers***

*I must have gone to dozens of emergency rooms, clinics, and even private physicians and not one of them asked me or understood what was happening to me.*

—Jeneice, Survivor

Nearly every topic covered in the survey touched on some medical healthcare issue. Interaction with healthcare providers was inevitable. And yet, the survivors' experiences with healthcare providers are markedly disappointing. 90.32% of survivors reported that they sought healthcare at a hospital or emergency room, urgent care clinic, neighborhood clinic, Planned Parenthood, Pregnancy Resource Center or Pregnancy Helping Organization, women's health clinic, or private physician. Most women (80.64%) sought health care at a hospital or emergency room. 35.48% of survivors reported that they sought healthcare from a private physician. Various clinics, including urgent care clinics, neighborhood clinics, and Planned Parenthoods each had the same number of responses with 29.03% of survivors reporting seeking healthcare at one of these providers.

**Table 15. Human Trafficking Survivors’ Perception of Quality of Care Received from Healthcare Providers**

Statement on Quality of Care	% of Survivors Agreeing with Statement	Frequency (N=31)
Medical professionals delivered care with excellence.	12.9%	4
Medical professionals were trauma informed.	9.7%	3
Medical professionals made referrals that were helpful.	6.5%	2
Medical professionals followed up and provided aftercare.	9.7%	3

Even though most of the survivors reported interacting with medical professionals, when asked to characterize their general interactions with healthcare providers, only 9.7% of survivors reported agreeing with the statement that medical professionals “understood what happened to [them].” Only 12.9% believed the care they received was “excellent.” Only 9.7% reported that the medical professionals were “trauma informed.” Only 6.5% reported receiving helpful referrals. And only 9.7% reported that the medical professional followed up with them or provided aftercare.

**V. Recommendations**

Because this is a preliminary survey with a small sample size, we will not attempt to make formal recommendations until we complete the larger survey. However, we have identified a few possible areas for further exploration:

- A. Provide training for healthcare providers that includes information on gynecological, reproductive, and procreative problems of trafficking victims and survivors.
- B. Build capability in anti-trafficking service providers for understanding of pregnancy in trafficking and equip shelters and service providers to assist pregnant trafficking victims and survivors.
- C. Work to change systems, including hospital staff, health providers, and Child Protective Services, so that victims and survivors who are pregnant and/or have children can obtain assistance in having and keeping their children if they so choose.
- D. Broadly increase awareness of choices for trafficking victims and survivors, including alternatives to abortion and other services to help victims and survivors.

## **VI. Limitations of Survey**

This survey had several limitations. Because it is based on convenience sample rather than probability sample findings in this survey cannot be generalized beyond the sample. These are preliminary findings from a pilot survey, so the sample size is small. The survey is a retrospective self-reporting survey. Self-reporting is a time-honored survey method, but it may have several limitations, the main one being bias in reporting. The participants may not always answer honestly; they may choose the more socially acceptable answer rather than the truthful answer. In addition, participants may not always have the required introspective ability: they may not be able to assess themselves accurately. Participants also may not remember the past accurately—particularly if they involve traumatic events.

We strove to decrease these limitations by letting participants know that there were no “right” or “wrong” answers and that because this information about pregnancy and trafficking was being gathered for the first time, we needed their complete honesty in the answers.

One other limitation of the survey includes the fact that although participants may have experienced multiple pregnancies there was no place in the survey to address each pregnancy individually. Survey tabulations are therefore overall totals and summations rather than individual analyses of each pregnancy.

## **VII. Conclusion**

We know so little about pregnancy in the context of human trafficking. A national study with a larger sample size will tell us more. In the meantime, we can say that in human trafficking, especially sex trafficking, victims get pregnant, often multiple times and experience miscarriage, abortion, and forced abortion. They also decide to carry their children to term and bear children, many times without proper pre- and post-natal care. Finally, they raise children while being trafficked, and the indications from our small focus groups is that children suffer in these circumstances.

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# **Chemical Abortions: With and Without Medical Supervision**

American College of Pediatricians\*

**ABSTRACT:** Chemical abortions, otherwise known as “medication-induced” abortions, were approved by the FDA in September 2000, and now account for over 50% of abortions in the United States. Women are being encouraged to order and carry out their own abortion, without in-person supervision by health care professionals, contributing to increased risks of complications. This paper describes the use of synthetic chemicals to induce abortion and the complications faced by women who obtain care in a medical setting, including hemorrhage and incomplete abortions that may require surgical intervention. Additionally, it describes the increased risks for those women who use telemedicine or the Internet to obtain their chemical abortion, especially when those abortions are completed without physician supervision (self-managed). The risks may include an undiagnosed ectopic pregnancy, increased complications due to underestimated or understated gestational age, Rh isoimmunization, and undiagnosed infection. Intimate partner violence, reproductive coercion, and human trafficking are also less likely to be suspected in the absence of an in-person medical evaluation. The American College of Pediatricians strongly encourages health care professionals, policy makers, and women of all ages and their families to understand the serious risks associated with chemical abortions, especially when self-man-

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**aged. Additionally, pregnant women with regrets after starting chemical abortions need to be informed about the potential for abortion pill reversal.**

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## Introduction

The Planned Parenthood website states, “Medication abortion has been used safely in the U.S. for more than 20 years. Serious complications are really rare, but can happen.”<sup>1</sup> Because substances such as the chemicals used for those “medication” abortions are used to destroy life rather than to heal and save lives, the American College of Pediatricians (ACPeds) believes that their use in abortion should be called “chemical” rather than “medical” or “medication” abortions, because those terms imply a therapeutic benefit.

CBS News reported on May 17, 2017, “Taking abortion pills at home [is] as safe as in a clinic, study finds.”<sup>2</sup> This was a study published in the *British Medical Journal* of 1636 women in Ireland and Northern Ireland who obtained prescriptions for mifepristone and misoprostol by mail.<sup>3</sup> The study reported that 95% of the women confirmed their pregnancy had ended, with most being less than 9 weeks pregnant at the time the medication was prescribed. The researchers stated 9.3% of women reported potentially serious complications, with 7 women requiring a blood transfusion and 26 requiring antibiotics. However, follow-up data for 29% of the women was missing—a serious limitation of the study.

Despite these claims to the contrary, self-managed chemical abortion has potential for increased maternal complications, and it is extremely important that women (including pregnant adolescents) know the facts before deciding to use this method for abortion. ACPeds encourages all women to understand that abortion kills a living human being, and, in addition, no matter which method is used, the woman herself is at risk for serious complications, both at the time of the procedure and subsequently. This is especially true for women who have chemical abortions.

## Definitions

It is important to understand the terminology used in the medical literature regarding chemical abortions.

*Medication abortion or medical abortion* is the term used in most medical literature as well as by Planned Parenthood to describe those abortions induced by the use of two chemicals—mifepristone and misoprostol. *Chemical abortion* is the term mainly used in this position paper, and this method is often referred to by the public as the “abortion pill.”

*Telemedicine abortion* describes the prescription of chemical abortive agents without an in-person evaluation by a health care professional but includes a remote interaction with the provider, usually by video. Women may or may not be required to obtain laboratory or ultrasound evaluation when utilizing telemedicine.<sup>4,5</sup>

*Self-managed abortion* describes the process by which a woman may request a prescription for chemical abortive agents via the Internet. Her medical information may be reviewed by a licensed provider, her gestational age will most often be determined solely by her last menstrual period (LMP), and she will most likely not have an in-person video appointment with the provider. Various internet sites now offer this method to women aged 15 years of age or older who are in the first 10 - 12 weeks of pregnancy for a cost of \$175-\$350. Availability is dependent upon state regulations.<sup>6</sup>

Some Internet sites provide the dosage and cost information for misoprostol as a single drug protocol so individuals can purchase that medication without a prescription where it is available over the counter, e.g. Mexico.<sup>7</sup>

## History

Chemical abortion was originally approved in the United States in September, 2000, for pregnancies up to 49 days gestation (about 35 days post-conception). The approval process and subsequent protocol changes did not follow the usual United States Food and Drug Administration (FDA) policies, and, in fact, the French pharmaceutical company Roussel Uclaf that developed mifepristone initially prohibited the possibility of a new drug application with the FDA. However, under pressure from the Clinton administration, agreements were reached to allow the Population Council/ Planned Parenthood to file a new drug application with the FDA. The manufacture of mifepristone was transferred to Danco Laboratories, incorporated in the Cayman Islands. For additional information on the approval process, please see the referenced paper.<sup>8</sup>

Two chemicals are used. Mifepristone (Mifeprex or RU-486) is taken on day 1. As a synthetic steroidal anti-progesterone agent, it blocks the progesterone receptors in the uterus, leading to fetal death. This medication is then followed 24-48 hours later by the use of misoprostol (Cytotec), a synthetic prostaglandin, that induces contractions to force the embryo (or fetus if taken later in pregnancy) out of the uterus.<sup>9</sup>

The original prescribing requirements stated that 600 mg of mifepristone was to be taken orally in the doctor's office on day 1 and 400 mcg of misoprostol was to be taken orally in the doctor's office on day 3. Another office visit to the physician was required on day 14 for follow-up. The prescriber was required to be a licensed physician who was able to accurately diagnose the duration

of pregnancy, diagnose ectopic pregnancies and provide surgical intervention in the case of an incomplete abortion or severe bleeding. The physician also had to assure patient access to medical facilities that were equipped to provide blood transfusions and resuscitation, should that be required. The physician was obligated to report any serious complication, including hospitalizations, transfusions, ongoing pregnancies and other serious events.<sup>10</sup> The regimen has since been changed to 200 mg oral mifepristone and 800 mcg buccal misoprostol (dissolved in the cheek), and the prescriber no longer must be a physician.<sup>9</sup>

On May 17, 2006, the Subcommittee on Criminal Justice, Drug Policy and Human resources under the Committee on Government Reform held a Congressional Hearing on Mifeprex (RU-486).<sup>11</sup> The hearing was called because Mifeprex had been noted to be associated with “the deaths of at least 8 women, 9 life-threatening incidents, 232 hospitalizations, 116 blood transfusions, and 88 cases of infection. There are more than 950 adverse event cases associated with RU-486 out of only 575,000 prescriptions, at most.” The report goes on to state that at least five of the deaths were the result of a toxic shock-like syndrome initiated by *Clostridium Sordellii*, a bacteria normally found in the female reproductive tract that causes no illness unless the immune system is compromised.

Just prior to the Congressional hearing, the Centers for Disease Control and the Federal Drug Administration held a workshop entitled “Emerging Clostridial Disease” that further investigated the link between RU-486 and Clostridium infections.<sup>12</sup> Initial symptoms of the infection mimicked those expected after taking the drug—cramping, pain, nausea and vomiting, without fever. Infected women, then, did not recognize the presence of an infection, and each of the 5 women who were infected in the above series were dead within 5 to 7 days. Because of the seriousness of this infection associated with the use of Mifeprex, the medication insert warns of “Serious and sometimes fatal infections or bleeding,” and states, “A high index of suspicion is needed to rule out serious infection and sepsis.”<sup>13</sup>

In 2011, the FDA instituted a Risk Evaluation and Mitigation Strategy (REMS) for the abortion medications. This is a drug safety program that can be required by the FDA to monitor serious safety concerns, thus ensuring the benefits of the medications outweigh the risks. However, in 2016, the FDA relaxed the REMS and allowed the medication to be prescribed up until 70 days of gestational age (GA), with only one office visit required between days 7 - 14. The dosing regimen was also modified to lower the dose of mifepristone to 200 mg orally with a higher dose of 800 mcg of misoprostol given by the buccal route on day 2 or 3. In addition, the health care provider was not required to be a physician, but the prescription was still to be dispensed in a health care setting. More significantly, reporting requirements were relaxed so only deaths



were reported; reporting of serious complications, including hospitalizations, blood transfusions, and surgeries were no longer required.<sup>14</sup>

Several changes were instituted between July 2020 and December 2021 that culminated in the FDA removing the requirement that the chemicals be dispensed in healthcare settings, thus allowing pharmacists to dispense the chemicals, and no longer requiring any in-person visit. However, some individual states do have stricter laws in place. The Guttmacher Institute noted in August 2022, that 29 states still required the prescriber to be a physician, with 19 states prohibiting telemedicine for chemical abortion and 2 states prohibiting chemical abortion after a specific GA.<sup>15</sup>

In January 2023, the FDA revised prescription and dispensing requirements for mifepristone, allowing the chemical to be dispensed “by or under the supervision of a certified prescriber, or by certified pharmacies on prescriptions issued by certified prescribers.”<sup>16</sup> Pharmacies were allowed to ship the medication to patients. Other changes included the elimination of the black box warning that previously required patients to be told to inform emergency department health care providers of their chemical abortion should they require emergency care.<sup>17</sup> CVS immediately announced plans to “seek certification to dispense mifepristone where legally permissible” and Walgreens announced its intention “to become a certified pharmacy under the program.”<sup>18</sup>

As of 2020, the Guttmacher’s survey of abortion providers in the U.S. indicated that chemical abortions account for 54% of all abortions in this country.<sup>19</sup>

## **Chemical Abortion Side Effects**

Bleeding, cramping, and abdominal pain are commonly associated with a chemical abortion, and approximately 8% of women will experience bleeding for more than 30 days afterwards. Planned Parenthood acknowledges the following possible complications after a chemical abortion: bleeding, infection, allergic reaction, retained fetal tissue, and incomplete abortion.<sup>5</sup> Rh sensitization is possible with both surgical and chemical abortions when Rhogam is not administered at the time of the abortion. Side effects of the individual chemicals are discussed below.

## **Chemical Abortion Contraindications**

The medication insert for mifepristone lists contraindications, including confirmed or suspected ectopic pregnancy and specifically states that ectopic pregnancy must be excluded prior to treatment.<sup>20</sup> In addition, the insert states that the presence of an intrauterine device is a contraindication and that prevention of Rh immunization should be provided as needed.

Contraindications to the use of misoprostol, as with mifepristone, include confirmed or suspected ectopic pregnancy as well as the presence of an intrauterine device.<sup>21</sup>

Additional contraindications to a chemical abortion include hemorrhagic disorders, anticoagulant therapy, allergies to either medication, as well as long-term systemic corticosteroid use.<sup>21</sup> Women who have serious systemic disease require individual assessment prior to any form of abortion. The Practice Bulletin of The American College of Obstetricians and Gynecologists (ACOG), “Medication Abortion Up to 70 Days of Gestation” states, “The safety of medication abortion in patients with anemia is unknown because studies have excluded patients with anemia who have hemoglobin levels of less than 9.5 or 10 g/dL.”<sup>22</sup> The bulletin acknowledges that the transfusion rates are tenfold higher for patients who undergo a chemical abortion (0.1%) compared with those who have a surgical abortion (0.01%)

## Medication Information

### *Mifepristone (Mifeprex)*

#### *Mechanism of action*

Mifepristone is an anti-progesterone medication (termed a progesterone receptor modulator) that binds to the progesterone receptors with a greater affinity than does progesterone. However, it does not activate the receptor, so the drug functions as an anti-progesterone hormone. Since progesterone is required at the onset of pregnancy to prepare the endometrium for implantation and also necessary for the maintenance of pregnancy, progesterone receptor modulators that decrease the effects of progesterone will interfere with pregnancy. The endometrium and placenta will not develop appropriately and the implanted fetus will detach from the uterine lining.

In addition, at higher doses mifepristone blocks cortisol at the glucocorticoid receptors in the central nervous system and in peripheral tissues. This effectively blocks cortisol stimulation of gluconeogenesis and lipolysis, decreasing hyperglycemia associated with Cushing’s syndrome.<sup>23</sup> Thus, the two main FDA-approved indications for mifepristone are pregnancy termination and management of hyperglycemia associated with Cushing’s syndrome. This medication has a long half-life of at least 30 hours.

#### *Common side effects*

Common side effects of mifepristone include nausea, vomiting, abdominal pain, diarrhea, fever, chills, fatigue, and headache. The medication insert prepared by Danco Labs states “About 85% of patients report at least one adverse reaction following administration of MIFEPREX and misoprostol, and many can be expected to report more than one such reaction.”<sup>23,24</sup> Less commonly, side effects such as peripheral edema, hypotension, hypoglycemia, and anemia may occur, while anaphylactic reactions are rare.

### *Rare complication*

A rare, serious, and usually fatal infection with *Clostridium sordellii* has been associated with mifepristone. (See Congressional Hearing on Mifeprex above under “History.”) The Canadian Medical Association released a Health and Drug Alert in August 2005 in response to the report of the first four deaths of women with sepsis after mifepristone.<sup>25</sup>

Mifepristone blocks cortisol’s negative feedback receptors in the hypothalamus and anterior pituitary, resulting in an increased release of cortisol from the adrenal cortex. This same blockade, when it occurs in the glucocorticoid receptors in leukocytes, inhibits the secretion of interleukin-10 (IL-10), a very powerful anti-inflammatory cytokine, thus impairing the immune system and its ability to prevent the spread of the *Clostridium* infection through the endometrium.<sup>26</sup> The bacteria itself also releases potent exotoxins and endotoxins, contributing to the rapid onset of sepsis. The infection has been fatal for nearly all women who developed infections after a chemical abortion or delivery.<sup>27,28</sup>

### **Misoprostol (Cytotec)**

#### *Mechanism of action*

Misoprostol is a synthetic prostaglandin E1 analog that inhibits gastric acid secretion and protects gastric mucosa by stimulating prostaglandin E1 receptors on the stomach’s parietal cells. The drug also induces secretion of bicarbonate and causes edema of the mucosa, so the mucosa can regenerate. Misoprostol’s effects in the reproductive tract occur because it binds with myometrial cells in the uterus to produce uterine contractions.

Misoprostol is approved by the FDA to prevent and treat gastric ulcers, especially in those on long-term nonsteroidal anti-inflammatory drugs (NSAIDs). The medication is also used in obstetrics for induction of labor and the control of postpartum hemorrhage.

#### *Side effects*

Side effects of this medication include nausea, vomiting, diarrhea, headache, dizziness, and fever and chills.<sup>29</sup> So, it follows that these are the same symptoms that are commonly experienced by women who have chemical abortions. Less common moderate to severe reactions include hypotension, myocardial infarction, uterine rupture and pulmonary embolism.

#### *Rare side effect*

The ACOG Practice Bulletin on “medication” abortion recommends that patients be counseled about the teratogenicity of misoprostol in case the abor-

tion is unsuccessful.<sup>30</sup> This is because the use of misoprostol in pregnancy has been associated with an increased risk for Mobius Sequence in the baby, a rare disorder of cranial nerve palsies.<sup>31,32</sup> It has also been associated with other major fetal malformations, including terminal transverse limb defects like syndactyly.

## Risks of Chemical Abortion

It is difficult to determine the exact number of women adversely affected by chemical abortion in the United States. First, there is no federal law that mandates states or abortion providers report abortion data. In fact, the Supreme Court, in *Thornburgh v. American College of Obstetricians and Gynecologists*, invalidated state reporting laws.<sup>33</sup> Two organizations currently provide national abortion data (the Guttmacher Institute, and the U.S. Centers for Disease Control and Prevention), but the data is voluntary and incomplete, especially since California does not report its data and yet may account for approximately one-fourth of all abortions in the United States. Without knowing the accurate number of abortions provided or complications associated with them, it is impossible to calculate the complication rate.

In addition, the risks of chemical abortion are most likely underreported due to incorrect coding in emergency room visits. A longitudinal study of 423,000 women who had abortions and 121,283 emergency room visits within 30 days of their procedure found “Miscoded spontaneous abortion visits are nearly 4 times as high for chemical abortions, reaching 8.9% of total visits and 60.9% of abortion related visits by 2015.”<sup>34</sup> This means that 60.9% of abortion-related ER visits following a chemical abortion were miscoded as miscarriage.

The authors subsequently evaluated 4273 women who had a surgical abortion and 408 who had a chemical abortion and found that women who had a chemical abortion that had been misclassified as a miscarriage during their initial ER visit were more likely to have a hospital admission and require surgical removal of retained products of conception.<sup>35</sup> Thus, miscoding not only affects the data showing ER visits, but also subsequent need for hospitalization and surgical intervention.

International data may be more accurate, given the national registries link abortions and complications, avoiding the high loss of follow up data in the United States. Data from Sweden and Finland is provided below.

As noted above, chemical abortions may be provided in several settings. A patient may visit a health care professional in person, or via telemedicine, or can obtain the medicine via the Internet, without an in person interview. Since a physical examination and ultrasound may not be performed, the duration of pregnancy may not be accurately assessed, and an ectopic pregnancy will likely be missed in the absence of an ultrasound. If the appropriate laboratory

work is not performed, the risk for Rh isoimmunization, as well as possible maternal infections, may also be missed.

With this in mind, it is important to understand that most safety and efficacy studies regarding chemical abortions are from clinical settings in which the procedures were done under medical supervision. Also, many of the studies that purport to demonstrate the safety of chemical abortions are limited by inadequate follow up of patients. Determining the actual complication rates after chemical abortions is also affected by diagnostic coding assigned to emergency room visits that may neglect to connect the complication to the chemical abortion. However, in order to present the evidence, this paper will evaluate the research presented by those promoting chemical abortions as safe.

A systematic review by Chen, et al. in 2015 evaluated 20 studies that included 33,846 women, with over 75% of the data coming from two studies, one by Gatter, et al. in 2015 (13,373 women) and one by Goldstone, et al. in 2012 (11,155 women).<sup>36,37,38</sup> Both of these studies had a large number of patients who were lost to follow-up—15.5% in the Gatter study and 16.6% in the Goldstone study. Neither study evaluated emergency room visits and the 2012 one did not evaluate hospitalizations. Very few of studies in the review study had data regarding visits to emergency departments, but the two that did have such data found 2.9% and 3.7% ED visits after chemical abortion attempts. Six studies reported the number of patients requiring surgical evacuation for reasons other than continuing pregnancy, and these numbers ranged from 1.8% to 4.2% of patients. In addition, data on women treated between 64 and 70 days gestation was limited because only about 1% of chemical abortions were performed during that gestational age range, but 2.9% of patients in that GA had ongoing pregnancies compared with 1.8% of those women between 57 - 63 days gestation.

### ***Comparison of Chemical with Surgical Abortion***

A 2015 retrospective cohort study at Planned Parenthood in Los Angeles compared outcomes for women who experienced a chemical versus a surgical abortion before 64 days of gestation.<sup>39</sup> Electronic medical records were reviewed for 30,146 women (13,221 chemical abortions and 16,925 surgical abortions), with sociodemographic and clinical characteristics similar in the chemical and surgical abortion groups. The authors state, “The medication abortion group was more likely to undergo an unanticipated aspiration, for ongoing pregnancy or persistent pain, bleeding, or both (2.1% compared with 0.6%).” The frequency of any adverse event is stated to be “low at 1.9%,” but “this risk was higher in the medical abortion group than the surgical abortion group (OR 6.6, 95% CI 5.5-8.0)” —a six-fold increase in adverse events in the patients who had a chemical abortion. Despite this notable risk for post-abortion problems, the authors conclude, “Medication abortion and surgical abortion before

64 days of gestation are both highly effective with low complication rates.” The authors also note that the likelihood of ongoing pregnancy increased by 50% for each week of gestation with chemical abortion. Further, in this study, 15.9% of those undergoing chemical abortion were lost to follow-up, and the authors assumed those women had an uncomplicated complete abortion.

A systematic review published in 2019 searched PubMed and Cochrane databases for articles evaluating chemical abortions late in the first trimester (>63 to <84 days GA) that utilized various protocols and dosages of mifepristone and misoprostol.<sup>40</sup> Although the search found 3384 articles, only nine met the authors’ inclusion criteria, three of which were prospective cohort studies. They reported, “Medical abortion, as compared with surgical abortion, was effective in the late first trimester (94.6% versus 97.9% complete abortion).” Those comparative rates were based on one study. Complete abortion rates for various chemical regimens in the other studies with varying protocols ranged from a low of 78.6% to 94.6%, with higher rates achieved with extra misoprostol.

### ***International Data on Chemical Abortions***

Data from Sweden on 4945 induced abortions from 2008-2015 was evaluated.<sup>41</sup> All women had a pre-abortion evaluation with a gynecologist in a clinic, including a pelvic exam and an ultrasound as well as screening for infection. This study showed that in women who had a chemical abortion prior to 12 weeks, 4.1% had an incomplete abortion (the most common complication) and the overall complication rate was 7.3%. Interestingly, the complication rate increased from 4.2% to 8.2% between 2008 and 2015. The authors speculated that the increased share of complications with chemical abortions might be from increased home abortions that may present with more complications.

In 2009, Niinimaki, et al. reported on 42,619 abortions up through 64 days gestation in Finland between 2000 and 2006.<sup>42</sup> Data was obtained from the National Health Registry, and women were followed for 6 weeks post procedure. The authors summarize their results by stating, “The overall incidence of adverse events was fourfold higher in the medical compared with surgical abortion cohort (20.0% compared with 5.6%,  $P<.001$ ). Hemorrhage (15.6% compared with 2.1%,  $P<.001$ ) and incomplete abortion (6.7% compared with 1.6%,  $P<.001$ ) were more common after medical abortion.”

Another study from Finland found that the risks of chemical abortion increased significantly in the second trimester compared with the first.<sup>43</sup> Women who underwent chemical abortions between 2003 and 2006 ( $N=18,258$ ) were evaluated and followed for six weeks post procedure. The need for surgical intervention increased from 7.9% during the first trimester to 38.5% when the abortion was performed during the second trimester. The risk of infection also increased from 1.9% to 4%.

### ***Telemedicine for Chemical Abortion***

In early 2020, as the COVID pandemic interfered with patient-physician in-person visits, the need for telemedicine increased, and proponents of abortion quickly encouraged the use of telemedicine to allow women to access chemical abortions. Even before this, a systematic review had been published in August 2019 that evaluated the outcomes of chemical abortions provided by telemedicine.<sup>44</sup> Using a search of the literature through November 2017, the researchers found 13 articles that met their study criteria, only one of which was a prospective, cohort study and none were randomized trials. The other articles reported on retrospective or descriptive studies, with nearly all the studies limiting participants to those who were less than 10 weeks gestation. Most significantly, nearly all the participants received ultrasounds prior to taking the abortion-inducing medications. This would more accurately determine GA as well as rule out ectopic pregnancies. In addition, all study groups were middle to high income, outcomes were self-reported, and 5 - 57% of women in the studies were lost to follow-up.

The rates for continuing pregnancy ranged from 0 to 1.9%, with need for surgical evacuation ranging from 0.9% to 19.3% in chemical abortions done at ten weeks or earlier. For those women whose gestational age was greater than 10 weeks, the need for surgical evacuation was 8.5% to 20.9%. The authors concluded, “A systematic review of medical abortion through telemedicine shows outcome rates similar to in-person care,” but acknowledged that their analysis was based mainly on self-reported data. They acknowledged methodological limitations and so “rated the quality of evidence for all selected outcomes as low, on the premise that all studies were observational and most lacked a comparison group for the effect measured.” In addition, they stated, “the risk of selection bias was high.”

Researchers in Iowa conducted a retrospective cohort study for all chemical abortions performed by telemedicine or in person between July 2008, and June 2015.<sup>45</sup> During that interval, 19,170 abortions were performed, with 45% of those via telemedicine. All patients were evaluated by clinic staff with a focused physical examination, a hemoglobin measurement, and an ultrasound. A total of only 49 “clinically significant adverse events” were reported with no case requiring surgical intervention. However, the researchers specifically excluded reporting on “non serious adverse events that were treated in the outpatient setting,” and did not report on “cases of ongoing intrauterine pregnancy, because this is a known possible outcome of medical abortion.”

A study of telemedicine abortion provided in five states over a 32-month time frame evaluated 248 women who were sent medications via mail, after having been screened with pre-treatment laboratory tests and ultrasound examination.<sup>46</sup> In this study, 23% of patients were lost to follow-up. Of those

who were followed, 93% had completed abortions and 8% required emergency room care. Of the patients who were Rh negative, 31% did not receive Rhogam. One patient was hospitalized for excessive bleeding and 27 other women presented for clinical evaluations. Again, despite the above real and potential problems along with poor follow-up, the authors state, “This direct-to-patient telemedicine abortion service was safe, effective, efficient, and satisfactory.”

A retrospective cohort study was reported by researchers at the University of California, San Francisco, evaluating 141 patients who received “fully remote” telehealth chemical abortions between October 2020 and January 2021.<sup>47</sup> Even though this study was designed to demonstrate the safety of telehealth chemical abortions, of the 110 (86%) women available for follow-up, 24 (17%) had a pre-abortion ultrasound. Most (95%) of the women experienced a complete abortion without further intervention, while 5% required undefined medical care to complete the abortion. Although 14 (9.9%) of the women were Rh negative, none of them received Rhogam. Researchers acknowledged the study was “small with some loss to follow-up, and thus some adverse events and ongoing pregnancies may have been undetected. However, it reflects real-world data, which increases generalizability. This study provides preliminary evidence that suggests medication abortion care, administered by telehealth and delivered via mail, is feasible, safe, and efficacious.” This small study was promoted in the media as proving telemedicine abortion was safe, including in an article on Healthline that was headlined, “Telemedicine abortion still safe during pandemic.”<sup>48</sup>

A larger prospective cohort study performed during the COVID pandemic of 663 women in Scotland was reported in February 2021.<sup>49</sup> GA was based upon patient-reported last menstrual period alone in 552 (78.7%) of women. Although pre-abortion ultrasound was not routinely required, 23.3% of the women did have an ultrasound, and one of those women was found to have an ectopic pregnancy. Four women (0.6%) had incomplete abortions, 5 (0.8%) had an ongoing pregnancy, and 123 (18.5%) women sought advice for a medical concern, with 56 (8.4%) of those attending a clinic for further evaluation. None of the women received Rhogam as the authors state, “In line with national guidance introduced in relation to COVID-19, anti-D prophylaxis was not provided or considered necessary for rhesus-negative women having medical abortion in the first trimester.” (Rhogam is discussed in more detail later in this article.)

While acknowledging that “the study size, while considerable, is still too small to detect changes in rare events,” the authors still state, “This model of telemedicine medical abortion without routine ultrasound is safe, and has high efficacy and high acceptability among women.”

Researchers reported on a study from 13 states between May 2016 and September 2020 with results available on 1157 (83%) of the 1390 packages of chemicals mailed.<sup>50</sup> Of those for whom follow-up was known, 95% had a



complete abortion, 6% (70) sought emergency room care, with 10 serious adverse events noted, including 5 women who required transfusions. Although a screening ultrasound was normally required, 52% of the women who had abortions during the COVID pandemic (346/669) did not have an ultrasound. Again, with 17% of women lost to follow-up and less than half of patients having a pre-abortion ultrasound to rule out ectopic pregnancies, the authors state, "Medical abortion using telemedicine and mail is effective and can be safely provided without a pretreatment ultrasound."

A retrospective study of online telemedicine abortion services provided by Aid Access between March 2018 and March 2019 reported on the safety of self-managed chemical abortion.<sup>51</sup> Patients completed an online consultation form that included weeks gestation calculated by LMP or an ultrasound (obtained in only 9.6% of women). Women had to be within 60 minutes of a hospital in case emergency care was required. Chemicals were mailed to 4584 people, but follow-up was only available on 3186 (70%) and 2797 confirmed use of the chemicals. Of those with confirmed use, 14% (395) reported having a GA of 10 weeks or more. Of the total, 96.4% reported successfully terminating their pregnancies without surgical intervention, but the risk for surgical intervention was greater in those with gestational age of 10 weeks or more (6.1%) versus 2.0% in those with a lower GA. Serious adverse events included hemorrhage, with 18 women (0.6%) requiring a blood transfusion and 15 (0.5%) needing IV antibiotics. Again, adverse events were more common in those with a gestational age of 10 weeks or greater (2.3%) versus 0.8% in those with less than 10 weeks gestation. Women who chose not to use the chemicals (389) were surveyed, and 0.5% stated they had symptoms of an ectopic pregnancy for which they received treatment. The authors acknowledge the study had several limitations, including the follow-up rate of 70%, and also stated the rate of serious adverse events was higher than that reported for abortions occurring in a clinical setting.

A Canadian study evaluated population-based administrative data from Ontario, Canada, before and after implementation of mifepristone available abortions.<sup>52</sup> Data was also evaluated when mifepristone was available only under REMS restrictions and then after mifepristone was available without any restrictions. All women were included who had received abortion services between January 2012 and December 2016 (when mifepristone was available only off-label and only 2.2% of abortions were chemical), between January 1-November 7, 2017 (when mifepristone/misoprostol were available under regulations similar to US REMS and 8.3% of total abortions were chemical), and between November 7, 2017, and March 15, 2020, (when mifepristone/misoprostol were available by ordinary prescription and chemical abortions rose to 31.4% of the total). Records were linked to hospital visits and outpatient prescriptions. Follow-up occurred at 6 weeks after the abortion. There were

314,859 abortions, with annual numbers slowly declining, though the rate of decline slowed after prescription chemical abortions became available.

Although the authors state “Abortion safety outcomes remained stable” after mifepristone became available with a regular prescription,” the need for uterine evacuation increased from 1.0% to 2.2% and the ongoing pregnancy rate increased from 0.03% to 0.08%. In addition, “Ectopic pregnancy that was detected after abortion increased from 0.15% to 0.22%.” These were trends that did not reach statistical significance. The paper did not report on the GA, use of ultrasound or other routine prenatal testing.

### **Risks of Misoprostol Alone**

Since misoprostol is more easily obtained, some abortion advocates are promoting its use as a one drug regimen for chemical abortion. A double-blind study of 400 women who were less than 64 days gestation and randomized to either mifepristone plus misoprostol or misoprostol alone demonstrated a significant increase in incomplete abortions in the misoprostol only group.<sup>53</sup> Abortion was completed for 76.2% of women in the misoprostol only group versus 96.5% of those who received both chemicals.

A systematic review of 12,829 women who were treated with misoprostol alone found overall 22% required surgical uterine evacuation to complete their abortion, and 13% required intervention with the most efficacious regimen.<sup>54</sup>

Despite this high failure rate, the single chemical regimen is promoted to help circumvent state laws restricting prescribing chemical abortions.

### **Risks of Self-Managed Abortion**

A self-managed abortion, as noted earlier, describes the process by which a woman may request a prescription for chemical abortive agents via the Internet. This means the woman has not personally been examined by a health care provider, has generally not received any pretreatment laboratory evaluations to determine her Rh status, nor has she necessarily had an ultrasound to determine GA and assure the absence of an ectopic pregnancy. The woman who has a self-managed abortion is therefore more likely to have an inaccurate GA and therefore be at higher risk for medical complications which occur with greater frequency as GA increases. She may also be more likely to experience an undiagnosed ectopic pregnancy, and, if Rh negative, she may be more likely to become sensitized, risking future children. In addition, infections that may impact maternal health are less likely to be diagnosed or treated, and there will be no built-in opportunity for a health care provider to identify and assist victims of intimate partner violence or human trafficking. Each of these topics will be further addressed below.

Evaluating the safety of chemical abortions with screening based solely upon the woman’s medical history, Upadhyay, et al, reported on 3779 patients

who were treated at 14 Planned Parenthood clinics in the United States between February 1, 2020, and January 31, 2021.<sup>55</sup> There was no follow-up data on 954 patients (25.2%) and no abortion outcome data on another 428 patients (11.3%). The study excluded women who had any pre-abortion testing. Four women (0.17%) were known to have been treated for ectopic pregnancies and 12 women (0.42%) had major abortion-related adverse events such as hospital admission or surgery. Overall, 125 women (5.2%) reporting results did not initially completely abort with the chemicals given: Of those, 79 required additional intervention to complete an incomplete abortion, 46 initially had a viable embryo or fetus; and, of these, 35 then had a surgical abortion, one took additional misoprostol, and 9 had no further intervention which the authors assumed meant an ongoing viable pregnancy.

### ***Unknown Gestational Age***

It is important to note that complications from chemical abortions increase with increasing GA. Hence the original authorization was limited to the first 49 days of gestation and is still limited now to the first 70 days.

Traditionally, the first day of the LMP has been used to determine the GA, and thus the expected date of the baby's natural delivery. This assumes a woman has a regular menstrual cycle of 28 days with ovulation on the 14th day, so it does not account for irregularities in menstrual cycles, nor variations in the timing of ovulation. Nor does it consider a woman's inaccuracy in recall of LMP, so there are inaccuracies in using LMP alone to determine GA. The study by Upadhyay, et al, described in more detail under Ectopic Pregnancies below, documents one patient screened by history alone who was judged to be less than 10 weeks pregnant when mifepristone was supplied but passed a stillborn 33-week infant.<sup>50</sup> Infants born at this gestational age not only tend to survive, but can do so with minimal medical intervention.

The ACOG Committee Opinion "Methods for Estimating the Due Date" states, "Ultrasound measurement of the embryo or fetus in the first trimester (up to and including 13 6/7 weeks of gestation) is the most accurate method to establish or confirm gestational age."<sup>56</sup> In fact, ACOG acknowledges in this position paper that only approximately one-half of women accurately recall their LMP. One study of 104 women who were randomly assigned to either first or second trimester ultrasound screening found that 41.3% of women screened in the first trimester had their GA adjusted after measurement of crown-rump length.<sup>57</sup>

A 2012 South African study enrolling 225 women sought to determine the feasibility of using the LMP pregnancy wheel calculator to determine GA prior to chemical abortions.<sup>58</sup> All women were interviewed by a community health worker who recorded the LMP and calculated the GA. All women then underwent an ultrasound examination to determine their eligibility for a chemical

abortion. Researchers found that the mean GA by LMP was 5 - 9 days less than by ultrasound determination. In 12% of women, the LMP inaccurately indicated the woman was within <63 days gestation when, in fact, her GA was greater than that and she would be considered ineligible for a chemical abortion. Even for women who were very certain that their LMP was within 56 days, 3% had ultrasounds demonstrating a GA >70 days.

A systematic review of articles through October 2013 that compared LMP to ultrasound for GA dating to determine eligibility for chemical abortion was reported by Schonberg, et al. in 2014.<sup>59</sup> Of 318 articles identified, only five met inclusion criteria, and authors state, "Three studies reported that 2.5 - 11.8% of women were eligible for medication abortion by LMP and ineligible by U/S." Even though the researchers stated that most women (90.5 - 99.1%) in the studies "knew their LMP" and 70.8 - 90.5% "with certainty," the number of women who underestimated their gestational age using LMP ranged from 1.8 to 14.8%. Women with GA less than 63 days did have higher accuracy than those with later GAs. The authors concluded that identifying GA by LMP prior to a chemical abortion would be acceptable in women with a GA of less than 63 days, but "Further research...is needed to confirm the safety and effectiveness of providing medication abortion using LMP alone to determine GA."

This is important because Internet web sites offering prescriptions for chemical abortions rely on maternal history of LMP to determine eligibility for a chemical abortion.<sup>60</sup> A lawsuit was filed in the Supreme Court of New York in January 2021 against Planned Parenthood because a woman delivered a stillborn 30-week infant after having been given the chemical abortion pills without an ultrasound to document fetal age.<sup>61</sup> The 18-year-old woman stated she was prescribed the chemicals via a fifteen minute telehealth conference and was advised that she was six weeks pregnant based on her LMP, demonstrating the unreliability of relying upon maternal LMP to determine fetal age.

### ***Ectopic Pregnancies***

An ectopic pregnancy is one that is outside of the uterus, with the most common site being the Fallopian tube. Pregnancies occurring outside of the uterus are almost never viable. Most occur in a Fallopian tube which will rupture as long as the fetus keeps growing, causing bleeding and potential maternal death. There are factors that increase the risk for ectopic pregnancies (previous ectopic pregnancy, damage to Fallopian tubes, previous pelvic infection or surgery, advanced maternal age, and smoking), but approximately one-half of women who have an ectopic pregnancy diagnosed do not have any known risk factors.<sup>62</sup>

The number of women who have known risk factors for an ectopic pregnancy may actually be significantly lower. In a 10-year retrospective analysis of pregnancy-related records in a tertiary care center in Germany, of the 30,247

pregnancies, 1.05% had ectopic pregnancies.<sup>63</sup> Of those, only 18.15% had one or more risk factors for ectopic pregnancy.

This is important if Internet web sites offering prescriptions for chemical abortions rely on maternal history of risk factors to determine likelihood of needing an ultrasound prior to initiating the procedure. In the ACOG Practice Bulletin noted above, the paper states 2% of all pregnancies are ectopic. However, the authors acknowledge this likely underestimates the true incidence since national surveillance data had not been updated since 1992 at the time the paper was written. Despite this, the Bulletin states that between 2011 and 2013, ruptured ectopic pregnancies accounted for 2.7% of pregnancy-related deaths. A review of emergency department data published in 2020 reviewed trends in ectopic pregnancies that were diagnosed in emergency departments.<sup>64</sup> There were approximately 12.3 ectopic pregnancies for every 1000 live births, with an increase noted between 2006 and 2010 in all age groups. As noted in the Schummer's study discussed earlier, the rate of ectopic pregnancy increased from 0.15% to 0.22% after introduction of chemical abortion without restrictions in Canada.<sup>65</sup>

Symptoms of ectopic pregnancy include vaginal bleeding, abdominal pain, nausea and vomiting. These symptoms are also common with chemical abortion, and so the patient may inaccurately attribute symptoms of an ectopic pregnancy to the abortion itself rather than seeking care that could diagnose the more serious ectopic pregnancy. Ectopic pregnancies are most commonly diagnosed via ultrasound, and authors of one review article state, "Transvaginal ultrasound imaging is pivotal in diagnosing suspected ectopic pregnancy."<sup>66</sup> The treatment for ectopic pregnancy is often considered emergent. Therefore, to ensure the accurate diagnosis and necessary prompt treatment of ectopic pregnancy, it is crucial for the woman's health that an ultrasound is obtained as a routine component of pregnancy care, whether or not an abortion is considered.

Ectopic pregnancies can cause maternal death if not diagnosed and treated expeditiously, but with the use of ultrasound, the diagnosis is made earlier and treatment is more successful. One study showed mortality rates from ectopic pregnancy have decreased, from 1.15 per 100,000 live births in 1980 to 0.5 deaths per 100,000 live births between 2003 and 2007—a decline of 56.6%.<sup>67</sup> In the United States between 1980 and 2007, 876 maternal deaths were attributed to ectopic pregnancies.

However, another article that evaluated all women who were hospitalized for ectopic pregnancy in the state of Washington between 1987 and 2014 showed that hospitalizations declined from the beginning to the end of the study.<sup>68</sup> But mortality for the women hospitalized increased from 0.29 per 1000 women in the early years to 1.65 per 1000 women in the last years. The authors attribute this to the more skilled use of high-definition ultrasound that

made the diagnosis earlier in most women, allowing for outpatient treatment with methotrexate. It was the more severely ill women who were hospitalized and faced increased risk of mortality.

Thus, ectopic pregnancy, although rare, remains a serious and potentially life-threatening event for women in the United States and requires early diagnosis via ultrasound followed by intervention. This is less likely when a woman self-prescribes a chemical abortion without a preceding ultrasound.

Treatment of an ectopic tubal pregnancy currently involves only methods that are lethal to the embryo or fetus, whether or not treatment is provided, the embryo or fetus may die with almost no chance of live birth. If nothing is done, the Fallopian tube may rupture and hemorrhage, endangering the mother's life. There is universal agreement that, as no treatment is available at present to save both the mother and developing infant, treatment to preserve the life of the mother is ethically acceptable.

### **Rh Isoimmunization**

Red blood cells contain surface proteins that determine an individual's blood type, such as A, B, O, and AB. The presence of the Rh protein determines whether an individual is Rh positive or Rh negative. The Rh-negative blood type is more frequent in individuals of European and North American descent (15 - 17%) compared with those from Africa and India (3 - 8%). Asians have the lowest frequency of Rh-negative blood (0.1 - 0.3%).<sup>69</sup>

Although the circulatory systems of the mother and unborn baby are separate, fetal red blood cells can enter the maternal circulation during obstetrical procedures. Managing spontaneous as well as elective abortions, amniocentesis, ectopic pregnancy, and delivery can cause this to occur. It is estimated that nearly 50% of women who give birth at term will experience a fetal-maternal blood exchange.<sup>70</sup> When Rh negative mothers are exposed to fetal Rh positive red blood cells, an immune response is often initiated by the mother that targets and destroys the fetal Rh positive blood cells, causing anemia in the unborn child. This is termed hemolytic disease of the newborn or *Erythroblastosis fetalis*. Depending upon the timing and degree of fetal-maternal hemorrhage and immune response, current and future pregnancies can be affected. Before the development of treatment with anti-D prophylaxis (RhoGAM), this condition developed in 14 - 16% of Rh-negative women and was estimated to be responsible for fetal death in 1% of pregnancies.<sup>71</sup>

Prophylactic treatment with anti-D immune globulin is now routinely provided to Rh-negative mothers in order to prevent Rh hemolytic disease of the newborn. In its 2017 Practice Bulletin, ACOG recommends, "All pregnant women should be tested at the time of the first prenatal visit for ABO blood group and Rh D type and screened for the presence of erythrocyte antibodies."<sup>72</sup> The same guidelines state "Rh D immune globulin should be given to Rh

D-negative women who have pregnancy termination, either medical or surgical.” However, it would be impossible to follow either of these recommendations if a woman self-prescribes her chemical abortion, as she would not have laboratory evaluation to determine her blood type and possible need for Rh immunoprophylaxis.

AidAccess, an Internet website that offers self-managed abortion, discusses the risks of Rh isoimmunization.<sup>73</sup> Under FAQ, “What if you have an RH Negative blood type?” the webpage states, “If you are more than 12 weeks pregnant, we advise you to get an RH negative antiglobulin injection within 72 hours after the bleeding started when you used the abortion pills.” Women who are unsure of their blood type are informed they can determine their blood type through a test at Walmart. This webpage is concerning for several reasons. First, there is the acknowledgment that some women will obtain chemical abortions after 12 weeks of pregnancy, when known risks of complications are increased. In addition, the risk of Rh isoimmunization is acknowledged on the site, even though the risks before 12 weeks gestation are minimized.

Not testing and prophylaxing with chemical abortions has the potential to cause harm to future pregnancies,<sup>68</sup> but studies looking at benefit of prophylaxis with abortions are limited. One systematic review screened 2649 studies of women undergoing any type of abortion who were followed for isoimmunization but the authors found only two studies worthy of full evaluation.<sup>74</sup> Even though the authors determined that neither study was of high quality, both studies found a small percentage of women who did not receive RhoGAM at the time of their abortion became sensitized, whereas none of those receiving RhoGAM developed antibodies. The authors concluded, “Further research is needed to define alloimmunisation and immunoglobulin benefit to update standards of care.”

More recently, the Society of Family Planning published a committee consensus in which Rh testing and Rhogam are not recommended prior to spontaneous or induced “medical” or aspiration abortions prior to 12 weeks gestation, though it “may be considered at patient request as part of shared decision making process.”<sup>75</sup>

It is possible that Rhogam is not necessary in early pregnancy loss for Rh negative women, but given the proven efficacy of a single dose of Rhogam against the severe morbidity of erythroblastosis fetalis in future pregnancies, is it not medical negligence to advocate foregoing this simple preventive measure until and unless studies show that future children are unaffected by its omission?

### ***Infection Screening***

The immune systems of pregnant women are suppressed, placing them at an increased risk of infection. In addition, some infections during pregnancy

place subsequent children at risk (i.e. Chlamydia which increases the risk of future ectopic pregnancy, HIV, etc). Uterine infections are much less likely to be diagnosed and treated when women do not receive prenatal care with appropriate testing. Prenatal screening is also an excellent way to identify and then treat women who have asymptomatic sexually transmitted diseases.

The Centers for Disease Control and Prevention (CDC) “recommends that all pregnant women get tested for HIV, hepatitis B virus (HBV), hepatitis C virus (HCV), and syphilis during each pregnancy.”<sup>76</sup>

In addition, as ACOG notes on its informational FAQ page, most pregnant women are also tested for tuberculosis, rubella, gonorrhea, and chlamydia.<sup>77</sup>

Unfortunately, women who self-prescribe a chemical abortion will miss the opportunity to have these screening tests and appropriate treatment if indicated.

### ***Anemia and Bleeding Disorders***

The Practice Bulletin of The American College of Obstetricians and Gynecologists (ACOG), “Medication Abortion Up to 70 Days of Gestation” states, “The safety of medication abortion in patients with anemia is unknown because studies have excluded patients with anemia who have hemoglobin levels of less than 9.5 or 10 g/dL.”<sup>78</sup> The bulletin acknowledges that the transfusion rates are tenfold higher for patients who undergo a chemical abortion (0.1%) compared with those who have a surgical abortion (0.01%).

In addition, the package insert for mifepristone lists “hemorrhagic disorders or concurrent anticoagulant therapy” as contraindications for its use.<sup>79</sup>

Therefore, basic screening for anemia and bleeding disorders would be protective for women undergoing chemical abortions.

### ***Identification of Intimate Partner Violence, Coercion, and Trafficking Victims***

Unfortunately, women who have experienced violent relationships, including intimate partner violence (IPV) and human trafficking, are at risk for unintended pregnancies, and so may seek treatment from health professionals, either for pregnancy care or induced abortion.

Women seeking abortion are at a much greater risk for having experienced physical and/or sexual abuse than are women who choose to continue their pregnancy. A prospective study of 1003 women compared 350 who presented for voluntary termination of their pregnancies with 653 women who received pregnancy-affirming prenatal care.<sup>80</sup> Researchers found those women who chose an elective abortion were almost three times more likely to have experienced intimate partner violence than those who chose to continue their pregnancy.



Other studies confirm that women who have unintended pregnancies and/or seek abortions are at greater risk for physical violence. The Pregnancy Risk Assessment Monitoring System provides state-specific population-based data from 14 states.<sup>81</sup> A review of the data for 39,348 women between 1996 and 1997 showed, “Women who had mistimed or unwanted pregnancies reported significantly higher levels of abuse at any time during the 12 months before conception or during pregnancy (12.6% and 15.3%, respectively) compared with those with intended pregnancies (5.3%).” Thus, women who did not intend to become pregnant had 2.5 times the risk of experiencing physical abuse.

A prospective cross-sectional study of 7102 pregnant women in six European countries using a validated questionnaire to assess abuse found that 19.2% of all women reported the current pregnancy was unintended.<sup>82</sup> The prevalence of an unintended pregnancy among women who reported recent abuse was 38.5%, three times greater than that for women who had not experienced abuse.

Human trafficking can also lead to unintended pregnancies. This is an international concern, and in the United States alone there are estimates that 400,000 individuals are so enslaved and abused.<sup>83</sup> Most of these victims are women and children, with the majority involved in the sex industry.

In an article reviewing the status of abortions following the decision of the U.S. Supreme Court in *Dobbs v. Jackson Women’s Health Organization*, the authors state the risks to women who experience human trafficking. “Currently, there is no meaningful or effective way to prevent bad actors like disgruntled boyfriends, pimps, sex traffickers, or abusers from ordering mifepristone. Women and girls forced into sex trafficking, and those who choose to work as prostitutes, may experience forced abortion. The risk for coerced abortion using online abortifacient drugs is significant.”<sup>84</sup>

Victims of human trafficking sometimes present to health care professionals for urgent and emergent care, with one small study showing that 28% of trafficked victims had sought health care.<sup>85</sup> Lederer’s report in 2014, however, stated that 87.8% of victims had contact with a health care provider, the majority (63.3%) in an emergency room.<sup>86</sup>

In order to improve the recognition of victims of human trafficking, ACOG states in a Committee Opinion, “Obstetrician-gynecologists and other women’s health care providers should be aware of human trafficking, recognize signs of human trafficking, and be prepared to assist patients who are victims or who have been victims of human trafficking.”<sup>75</sup>

Reproductive coercion is defined as “behavior that interferes with the autonomous decision-making of a woman, with regards to reproductive health.”<sup>87</sup> Intimate partner violence may include attempts to control a partner’s reproduction, and studies have found coercion rates of 5 - 13.5% in young women attending family planning clinics.

Some states, such as Wisconsin<sup>88</sup> and Michigan,<sup>89</sup> require abortion providers to screen for reproductive coercion, but it is unclear whether this applies to chemical abortions provided via the Internet.

Those who abuse women are aware of the availability of chemical abortions and have accessed the chemicals to force their partners or victims to involuntarily abort their pregnancies. Newspaper reports documenting this phenomenon are available at the Students for Life website, updated in 2022.<sup>90</sup>

Women with unintended pregnancies who seek abortion services are at a greater risk for having experienced abuse. It is these women who especially would benefit from an in-person evaluation with a healthcare professional, trained to identify victims of abuse and provide appropriate resources. Women who utilize the Internet to access chemical abortions are deprived of this intervention, and abusers or traffickers may acquire the chemicals to induce abortions in unsuspecting pregnant women.

### ***Mental Health***

Data is lacking on potential mental health issues related specifically to chemical abortions or to self-managed chemical abortions. Since the woman may be alone and may observe the embryo or fetus in the toilet, self-managed abortion raises the question of increased mental health sequelae. This is an area that needs further study.

### ***Follow-up***

In order to assess the risk that women will present for emergency room services, researchers utilized a population-based longitudinal cohort of 423,000 women who obtained abortions and evaluated 121,283 emergency room visits that occurred within 30 days of the procedure.<sup>91</sup> They found the emergency room visits were more likely to occur after a chemical abortion than after a surgical abortion, and often the diagnosis was miscoded as a spontaneous abortion.

Given the above research that documents the need for a significant percentage of women to obtain urgent or emergent care after a chemical abortion, it is important to ask the question, “Who will provide medical or surgical services after a self-managed abortion?” Women who require such services will most likely present to an emergency room and be treated by providers who do not know them or their personal histories.

A review article in *Medscape* specifically states, “Medical abortion is also contraindicated in women with no access to emergency services and no partners or family to be with the patient during the heaviest bleeding times.”<sup>92</sup>

### ***Adolescents and Chemical Abortions***

There is little research on the risks of chemical abortions in adolescents, whether they are self-managed or not. An article from Finland provides data

on 27,030 women who underwent a chemical abortion between 2000 and 2006.<sup>93</sup> Of these, only 3024 were performed in adolescents. The researchers state that the adolescents had a higher rate of chlamydia infections (5.7% versus 3.7% in adults), but the risk of bleeding, incomplete abortion and need for follow up surgical procedures were lower in the adolescent patients.

It is important to note that this study does not provide details regarding the clinical evaluation (examination, laboratory evaluation, and ultrasound) provided to each patient before the abortion procedure. However, given the fact that women were evaluated for Chlamydia infections, it can be assumed that patients were evaluated in a clinic setting prior to the procedure.

### **Additional Risks of Abortion**

Discussion of other long-term risks of induced abortion (such as increased maternal morbidity and mortality compared to childbirth over the following decade) is beyond the scope of this paper. For further information, see related position papers from the American College of Pediatricians.

When Human Life Begins:

<https://acped.org/position-statements/when-human-life-begins>

Risks of induced abortion: <https://acped.org/position-statements/induced-abortion-risks-that-may-impact-adolescents-young-adults-and-their-children>

Risk of breast cancer:

<https://acped.org/position-statements/reproductive-choices-of-young-women-affecting-future-breast-cancer-risk>

## **Abortion Pill Reversal**

Women should be made aware that it is possible to reverse the effects of mifepristone should they change their mind about pursuing the abortion within 24-72 hours of taking mifepristone and prior to taking misoprostol. This is accomplished by using high dose progesterone to overcome the blocking effects of mifepristone.<sup>94</sup> Abortion providers are claiming this protocol is non-efficacious and unproven, and are strongly opposing its use. The ACOG practice bulletin from 2020 on “medication” abortions claims there is no evidence that prescribing progesterone increases the rate of continuing pregnancies after mifepristone alone when a woman changes her mind after taking mifepristone, but their sole reference for making this statement is a 2015 article that cites a single paper with a case series of only 7 patients.<sup>95,96</sup>

A 2020 paper written by the Bixby Center for Global Reproductive Health from the University of California, San Francisco reviews the timeline of research done on abortion pill reversal protocols and discusses a more pertinent paper that the ACOG Bulletin ignored.<sup>97</sup> The observational case series of 754 women reported by Delgado demonstrated a reversal rate of 64-68% with no

apparent increased risk of birth defects in the children.<sup>83</sup> In comparison, this paper also cites older studies of pregnancy survival when mifepristone was used as the only abortive medication. The survival rates ranged from 8-25%, much lower than the 64-68% survival the researchers achieved with IM and high dose oral progesterone rescue. For statistical purposes, the researchers used the highest historical number, 25% without progesterone, as the control. One of the primary purposes of the study was to discover the most efficacious route and dose of the progesterone. Success rates varied from 32% (vaginal suppositories, non-significant) to 68% (high dose oral progesterone) with all other routes and doses significant ( $p < .001$ ). The study consisted of 764 women who contacted a hotline after regretting starting a chemical abortion. Of these, 38 women (5%) did not meet study criteria (either over 72 hours since taking mifepristone or had already taken misoprostol); 57 women (8%) chose to complete the abortions, and 112 (15%) were lost to follow-up before 20 weeks gestation. So the Delgado study actually involved and analyzed 547 women who took progesterone to attempt to salvage their pregnancies after starting a chemical abortion.

This paper has been criticized for several reasons, including the number of women lost to follow-up (15%).<sup>86,98</sup> Although this is a limitation, it is actually a lower percentage than noted in most other research studies evaluated in this paper. Other criticisms of the paper involved the lack of an institutional review committee, the lack of a comparison group, and “lack of safety studies.” In fact, the study did receive an Institutional Review Board waiver, and the comparison group was an historical one, with the historical rate of 23% ongoing pregnancies after mifepristone alone cited in the ANSIRH Issue Brief. The authors of the Delgado paper believed it would be unethical to use a prospective case control study which would necessitate withholding a potentially lifesaving medication from the women requesting it and cited progesterone’s over 50 year record of safety in pregnant women and its approval in pregnancy by the American Society of Reproductive Medicine.

The Delgado study was designed to evaluate the most efficacious route and dose of progesterone. While the overall survival rate was 48% (approximately twice the historical control rate with mifepristone alone), all doses and routes except vaginal suppositories significantly enhanced fetal survival. High dose oral progesterone (400 mg bid x 3 days then at bedtime through the first trimester) had a 68% survival and IM progesterone (200 mg IM for 3 days then every other day for 7 or more days) had a 64% survival and was most efficacious with 6 or more injections.

The 2018 Delgado study was an encouraging start, and ACPeds looks forward to a larger, more in-depth study in the near future. Meanwhile, ACPeds supports the use of this life-saving treatment for women who decide to choose life after starting a chemical abortion.

## Conclusion

Induced abortions, whether chemical or surgical, can have serious complications that include hemorrhage, infection, and incomplete abortion. These complications may be increased when women self-administer chemical abortion drugs without benefit of an in-person evaluation by a provider. In addition, the failure to accurately evaluate GA, the failure to diagnose ectopic pregnancy with an ultrasound, and the lack of medical testing to screen for Rh status and sexually transmitted infections could potentially increase the risk associated with such self-managed abortions. Finally, without an in-person exam when the pills are dispensed and first dose taken, there is no way to assure that the person requesting the abortifacient is the same person who will be taking it, which could facilitate sexual abuse/trafficking. Women of childbearing age should be made aware of these risks, as well as the potential to reverse the deadly intent of chemical abortions.

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# **The Teenage Brain: Under Construction**

American College of Pediatricians\*

**ABSTRACT:** Can sexual activity, alcohol and drug use, violent video games, pornography and other activities, including use of social media, damage adolescent minds? Early high-risk behaviors appear to have significant harmful effects on the brain’s development. Evidence suggests that the hormones and neural patterns triggered may lead to addictive, and other high-risk behaviors, social withdrawal, and depression. Compounding these concerns are the immature decision-making processes during adolescence. Fortunately, parents can positively impact the brain development of adolescents as they assist in decision-making, provide structure to the adolescent’s environment, and monitor the adolescent’s activities.

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## **Introduction**

Shakespeare wrote, “I would there were no age between ten and three and twenty... For there is nothing in the between but getting wenches with child, wronging the ancientry, stealing, fighting.” (*The Winter’s Tale*, Act III, Sc. iii) It is amazing that over 400 years later, scientists are confirming Shakespeare’s observation that the adolescent’s brain is not fully mature until approximately 23 - 25 years of age. New and ongoing scientific research, utilizing functional magnetic resonance imaging (fMRI), demonstrates that during adolescence nearly every aspect of the brain is undergoing dramatic changes—changes that are not just genetically determined, but are greatly affected by experiences and environment. The “nature versus nurture” debate is no longer relevant, as research clearly documents that both have

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impressive impact. Environment affects the growth and development of brain cells, impacts the wiring of these cells, and affects which cells live or die. More importantly, it is possible through epigenetics for environmental influences such as alcohol and other drugs to turn on or off genes within the genome that is contrary to the usual expression of those genes.<sup>1,2</sup> Thus, activities and experiences have the potential to impact the development and functioning of the brain, not just during the adolescent years, but for a lifetime.

### Structural Changes in the Brain

The brain undergoes extensive structural remodeling beginning at approximately 12 years of age, and continuing through young adulthood.<sup>3</sup> During adolescence each lobe of the brain changes in its composition of grey and white matter, in its connections with other lobes, and in its hormonal environment. These changes do not occur simultaneously, but rather each area of the brain undergoes structural remodeling on its own timeline, with the prefrontal cortex being one of the last areas to fully mature. As each lobe matures, it also develops increased connections with other areas of the brain, thus allowing for improved communication with better coordination and integration of perceptions, emotions, and actions.<sup>4</sup>

Some specific changes include increased myelination of the brain neurons as well as pruning of unused neurons. Myelin, an insulating sheath of lipids and proteins, encircles the neurons, allowing stimuli to be transmitted more rapidly and facilitating the coordination between various areas of the brain. This is visualized as increased white matter on brain imaging.

As the brain experiences crowding of the nerves, there is competition for space and nutrients. Consequently, growth is followed by a time of “pruning,” when underutilized nerve cells are deprived of nutrition and atrophy, often referred to as the “use it or lose it” principle. MRIs show this as a decrease in the grey matter volume of the brain. The pruning process allows the adolescent brain to function more rapidly for tasks that are already known, but decreases the brain’s capacity to learn new tasks or acquire new skills.<sup>5</sup>

The frontal lobe serves as the judgment center of the brain, allowing the individual to contemplate and plan actions, to evaluate consequences of

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<sup>1</sup> Masten AS, Faden VB, Zucker RA, et al. Underage drinking: A developmental framework. *Pediatrics*.2008;121(Suppl 4): S235-S251

<sup>2</sup> Berger SL, Kouzarides T, Shiekhattar R, Shilatifard AI. An operational definition of epigenetics. *Genes and Development*. 2009; 23:781-783.

<sup>3</sup> Blakemore S-J. Imaging brain development: The adolescent brain. *NeuroImage*. 2011; doi:10.1016/j.neuroimage.2011.11.080

<sup>4</sup> Crone EA and Konijn EA. Media use and brain development during adolescence. *Nature Communications*. 2018;9:588

<sup>5</sup> Giedd JN. Structural magnetic resonance imaging of the adolescent brain. *Annals N.Y. Acad Sci* 2004;1021:77-85.

behaviors, to assess risk, and to think strategically. It is also the “inhibition center” of the brain, discouraging the individual from acting impulsively. The frontal lobe ultimately develops connections to many other areas of the brain, enabling experiences and emotions to be processed through the judgment center. The frontal lobe does not fully mature both anatomically and functionally until approximately 23 - 25 years of age when all areas are myelinated and connected to the frontal lobe.<sup>6</sup>This lack of maturation helps explain the adolescent’s relative limitations to properly interpret experiences in the environment and arrive at appropriate considered decisions.<sup>7</sup>

Many other areas of the brain likewise are not completely myelinated until the early 20s. The amygdala, which is the emotion center of the brain, is immature in adolescents and not fully connected to the frontal lobe. Adolescents, then, may have a more difficult time interpreting their emotions, as well as the emotions of others.<sup>8</sup>More importantly, since the amygdala is poorly connected to the judgment center of the brain, the adolescent is more likely to make decisions based upon emotional impact rather than upon logic. As Pustilnik and Henry state, “Executive function and emotional responses are not just less developed or different in teens: These two capacities are also less closely linked than in the typical adult brain. As a result, a teen may intellectually understand an issue and emotionally have a response to that issue, but those two processes may occur nearly in parallel rather than in dialogue. Emotional and executive functions must work together to bring about almost any kind of decision.”<sup>9</sup>

The hippocampus, the memory center of the brain, is also immature and is very susceptible to the effects of alcohol and marijuana. Alcohol and marijuana can hinder the ability to develop memories and thereby impact learning. Adolescents who binge drink are particularly susceptible to the negative effects of alcohol on the developing hippocampus.<sup>10</sup>

Another area of the developing brain deserving of attention are the cells that compose the mirror neuron system. Mirror neurons are those cells that

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<sup>6</sup> National Institute of Mental Health (2001). Teenage Brain: A work in progress. National Institute of Mental Health publication accessed March 22, 2011 at: <http://www.nimh.nih.gov/health/publications/teenage-brain-a-work-in-progress-fact-sheet/index.shtml>.

<sup>7</sup> Diekema DS Adolescent brain development and medical decision-making. *Pediatrics*. 2020; 146(s1): e20200818F

<sup>8</sup> National Institute of Mental Health (2001). Teenage Brain: A work in progress. National Institute of Mental Health publication accessed March 22, 2011 at: <http://www.nimh.nih.gov/health/publications/teenage-brain-a-work-in-progress-fact-sheet/index.shtml>.

<sup>9</sup> Pustilnik AC, and Henry LM. Adolescent Medical Decision Making and the Law of the Horse *Journal of Health Care Law and Policy* 2012; 15:1-14. (U of Maryland Legal Studies Research Paper 2013-14).

<sup>10</sup> Brown A, Tapert S, Granholm E. et. al. Neurocognitive functioning of adolescents: Effects of protracted alcohol use. *Alcoholism: Clinical and Experimental Research*. 2000; 24: 164-171.

assist in the development of empathy and compassion as the cells are active when an individual either experiences an emotion or observes that emotion being experienced by another person. This is ‘cognitive empathy’—the ability to take another person’s perspective—and this system is also undergoing dramatic changes during adolescence. Researchers from UCLA studied the impact of cell phone use and screen time on the ability of adolescents to interpret the emotions of others. Sixth graders who attended a science and nature camp and who went without smartphone or digital screen time for just five days improved in their ability to interpret facial expressions seen in photos and videos. The authors state, “The displacement of in-person social interaction by screen interaction seems to be reducing social skills.”<sup>11</sup>

It is also important to note there are many sexual differences in the developing brain as documented by brain imaging techniques.<sup>12</sup> The amygdala, the center of emotions noted above, grows faster in adolescent boys than in girls and there are more testosterone receptors in the amygdala of males.

The hippocampus, however, appears to grow faster in adolescent girls and this area has more estrogen receptors.<sup>13,14</sup> Even the cerebellum, an area of the brain utilized in complicated problem solving, differs in size between males and females, being 10 – 13% larger in adolescent males.<sup>15</sup> These sexual variations are important to understand as their onset may begin with in utero development and will contribute to the different way males and females tend to respond to learning environments, risk seeking, and even discipline; yet each human male and female is an individual with considerable variation between different areas of the brain and considerable overlap in brain features among men and women.<sup>16</sup>

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<sup>11</sup> Uhls YT, Michikyan M, et al. “Five days at outdoor education camp without screens improves preteen skills with nonverbal emotion cues” *Computers in Human Behavior*. Oct 2014 39:387-392. <http://www.sciencedirect.com/science/article/pii/S0747563214003227>.

<sup>12</sup> Ruigrok AN, Salimi-Khorshidi G, Lai MC, et al. A meta-analysis of sex differences in human brain structure. *Neuroscience and Biobehavioral Reviews*. 2014; 39:34-50.

<sup>13</sup> Blakemore SJ, Burnett S, and Dahl RE. The Role of Puberty in the Developing Adolescent Brain. *Human Brain Mapping*. 2010; 31:926-933.

<sup>14</sup> Gillies GE and McArthur S. Estrogen actions in the brain and the basis for differential action in men and women: a case for sex specific medicines. *Pharmacol Rev*. 2010 62(2): 155-198.

<sup>15</sup> Tiemeier H, Lenroot RK, Greenstein DK, et al. Cerebellum development during childhood and adolescence: a longitudinal morphometric MRI study. *Neuroimage*. 2010; 49(1): 63-70.

<sup>16</sup> Joel D, Berman Z, Tavor I, et al. Sex beyond the genitalia: The human brain mosaic. *Proceedings of the National Academy of Sciences*. 2015; 112 (50): 15468-15473.

## Hormonal Changes in the Brain

Along with changes in the number of neurons, the brain also experiences changes in its hormonal environment. It has been known for decades that adolescence is characterized by surges in sex hormones—estrogen and testosterone. Recently it has been demonstrated that receptors for these hormones exist in many organs of the body, including the brain. In addition, other hormones and neurotransmitters such as oxytocin, vasopressin, dopamine, and serotonin also influence brain development.

Dopamine, the neurotransmitter most responsible for feelings of pleasure, has a powerful impact. The early adolescent brain, with its increased number of nerve cells, has higher levels of dopamine circulating in the prefrontal cortex, but dopamine levels in the reward center of the brain (nucleus accumbens) are changing throughout adolescence. These changes in the dopamine levels in the reward center suggest that the adolescent requires more excitement and stimulation to achieve the same level of pleasure as an adult.<sup>17,18</sup> So the teenager will attempt riskier behaviors to achieve elation. Dopamine is also the neurotransmitter secreted when individuals participate in various addictive behaviors. Drug use, gambling, video gaming, pornography, and sexual experiences can all become addicting as the individual strives to achieve a dopamine-mediated pleasure. As their brains are under construction and nerve pathways are forming, adolescents become addicted more easily.<sup>19</sup> This vulnerability of the developing brain may well explain why these addictive behaviors identified in adults often have their onset during adolescence or early adulthood. For example, 40% of adult alcoholics identify onset between 15 and 19 years of age.<sup>20</sup> In addition, adolescents are more likely to become addicted with even minimal exposure to a high-risk behavior. Although an adolescent may smoke fewer cigarettes than an adult, the adolescent demonstrates higher rates of addiction.<sup>21</sup>

Recent research has investigated the influence genes exert on an individual's willingness to take risks. Dopamine receptor DRD4 appears to play a ma-

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<sup>17</sup> Galvan A, Adolescent development of the reward system. *Frontiers in Human Neuroscience* 2010; 4:1-9.

<sup>18</sup> Spear LP, Adolescent Neurodevelopment. *J Adolescent Health*. 2013; 52(2 0 2): S7-13. doi:10.1016/j.jadohealth.2012.05.006.

<sup>19</sup> Spear LP, Neurobehavioral changes in adolescence. *Current Directions in Psychological Science*.2000;9:111-114.

<sup>20</sup> Helzer JE, Burnam MA, McEvoy LT. Alcohol abuse and dependence. In Robins LN, Regier DA, eds. *Psychiatric Disorders in America: The Epidemiologic Catchment Area Study*. New York: Free Press;1991: 81-115.

<sup>21</sup> Chambers RA, Taylor JR, Potenza MN. Developmental neurocircuitry of motivation in adolescence: A critical period of addiction vulnerability. *Am J Psychiatry*.2003;160: 1041-1052.

major role in determining the risk-taking behavior of the individual. Adolescents may be viewed as either “high risk takers” or “low risk takers” depending upon their genetic propensity to seek excitement through risky behaviors. Alcohol can affect the expression of the risk-taking gene, causing adolescents who are not generally considered “high risk takers” to take risks when under the influence of alcohol.<sup>22</sup>

Research also demonstrates that adolescents who drink alcohol are more likely to participate in other high-risk behaviors, including sexual activity. Marijuana is another drug that can affect an adolescent’s decision making, decrease inhibitions, and thereby increase risk-taking behaviors.<sup>23</sup>

These behaviors in turn further modify the structure and function of the brain.

Oxytocin and vasopressin function as “bonding” hormones. Oxytocin, a peptide secreted during labor, delivery, and breastfeeding, is also powerfully active in the female brain during physical touch or even intense gazing. Oxytocin release increases the likelihood that the female will trust her sexual partner but decreases the functioning of her frontal cortex, the judgment center. The hormone serves to bond the woman to her mate with repetitive touches and sexual relations increasing the likelihood of monogamy.<sup>24</sup> Vasopressin serves much the same role in men.

Adolescents who initiate sexual activity early are more likely to have more sexual partners by early adulthood. The Centers for Disease Control and Prevention documented that 49.2% of girls and women report more than five lifetime sexual partners if their sexual debut occurred younger than 16 years of age. However, if sexual debut occurred at age 20 years or older, only 9.0% had more than five sexual partners during their lifetime.<sup>25</sup> Since sexual touching brings pleasure and raises dopamine levels, the developing adolescent brain, in its craving for repetitive elevations of dopamine, overrides the healthy bonding effects of oxytocin and vasopressin. This, in turn, makes it more difficult for the adolescent to maintain a monogamous relationship later in life, as demonstrated by studies reporting that married adults who have experienced premarital sex are more likely to suffer divorce than those who abstained.<sup>26</sup>

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<sup>22</sup> Helzer JE, Burnam MA, McEvoy LT. Alcohol abuse and dependence. In Robins LN, Regier DA, eds. *Psychiatric Disorders in America: The Epidemiologic Catchment Area Study*. New York: Free Press; 1991: 81-115.

<sup>23</sup> Lane SD, Cherek DR. Risk taking by adolescents with maladaptive behavior histories. *Experimental and Clinical Psychopharmacology*. 2001; 9: 74-82.

<sup>24</sup> Brizendine L. *The Female Brain*. New York: Morgan Road Books; 2006: 68-10.

<sup>25</sup> Chandra A, Martinez FM, Mosher WD, et al. Fertility, family planning, and reproductive health of U.S. women: Data from the 2002 National Survey of Family Growth. National Center for Health Statistics. *Vital and Health Statistics*. 2005; 23(25):1-160.

<sup>26</sup> Heaton T. Factors contributing to increasing marital stability in the United States. *Journal of Family Issues*. 23; April 2002; 392-409.



Unfortunately research also documents that adolescents who initiate early sexual activity are more likely to experience depression and anxiety, with subsequent increased risk of substance abuse, thus demonstrating the interconnection of many of the high risk behaviors.<sup>27,28</sup> Given all these changes, we see that adolescence is a time of great vulnerability.

## Adolescent Brain Development and Decision-making

Researchers investigating decision-making in adolescents often use hypothetical dilemmas in a laboratory setting. In one early study investigators demonstrated that 14 year olds did not differ significantly from 18 and 21 year olds in their ability to make informed decisions and went so far as to conclude that “children as young as 9 appear able to participate meaningfully in personal health-care decision making.”<sup>29</sup>

This article, along with many other similar laboratory-based studies, were used to develop health care policies allowing adolescents to obtain confidential care for sexual health related concerns, including abortion. Based on evaluations of decision-making that focused on the adolescent’s ability to understand and make rational decisions, bioethicists Weir and Peters argued that health care professionals should presume “all adolescent patients between fourteen and seventeen have the capacity to make health care decisions, including end-of-life decisions” except in unusual circumstances.<sup>30</sup>

However, newer research is evaluating two areas of decision-making: the various components of decision making as well as the ability to make decisions in real-life situations that may be emotionally charged, stressful, or peer influenced. Studies confirm that adolescents, when faced with real life decisions, are much more likely to demonstrate an immaturity that is more dependent upon emotions and peer pressure with less use of the cognitive reasoning of the frontal lobe and less concern for future consequences. Thus the new schema for decision-making demonstrates that there are two systems in the brain that are utilized—“a socioemotional system composed largely of limbic and paralimbic structures and a cognitive-control system composed of prefrontal and parietal cortical structures.”<sup>31</sup>

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<sup>27</sup> Baiden P, Panish LS, et al. Association between first sexual intercourse and sexual violence victimization, symptoms of depression, and suicidal behaviors among adolescents in the United States: Findings from 2017 and 2019 National Youth Risk Behavior Survey. *Int J Environ Res Public Health*. 2021. 18:7922.

<sup>28</sup> Cioffredi L-A, Kamon J, Turner, W. Effects of depression, anxiety and screen use on adolescent substance use. *Preventive Med Reports*. 2021; 22:101362.

<sup>29</sup> Weithorn LA, Campbell SB. The competency of children and adolescents to make informed treatment decisions. *Child Dev*. 1982; 53(6):1589-1598

<sup>30</sup> quoted in Diekema DS Adolescent brain development and medical decision-making. *Pediatrics*. 2020; 146(s1):e20200818F

<sup>31</sup> Diekema DS Adolescent brain development and medical decision-making. *Pediatrics*. 2020; 146(s1): e20200818F

As one might expect, the socioemotional system often involves intuitive responses that are made rapidly and unconsciously as the individual responds to personal feelings, while the cognitive-control system is much more reasoned and deliberate. Coordination between both systems is important in order to make good decisions, and neither system is mature during adolescence.

Although it appears that the socioemotional system matures earlier in adolescence than the cognitive-control system, the relative imbalance means the adolescent is less able to regulate and understand personal emotions, is more susceptible to peer influence, is less likely to delay gratification and more likely to engage in risky behaviors when benefits appear to outweigh the risks. Diekema describes adolescents as experiencing “prefrontal cortex deficit disorder” as they lack the control provided by a mature prefrontal lobe. So he cautions, “the desire to respect adolescent decisions must be coupled with the recognition that decision-making, even of mature adolescents, may occasionally be flawed,” and suggests, “the current age of majority (18-21 years of age depending upon the state) is not clearly supported by empirical data...it may well be that the age of majority should be reconsidered.”<sup>32</sup>

Other researchers have termed a similar phenomenon the “maturity gap” when psychosocial maturity (the ability to restrain one’s actions during times of emotional stress) lags behind cognitive capacity (the important determination of logical thinking). In a study of 5227 individuals between 10 and 30 years of age from 11 countries, researchers demonstrated “Juveniles may be capable of deliberative decision making by 16, but even young adults may demonstrate ‘immature’ decision making in arousing situations.”<sup>33</sup>

A study of over one hundred 13 – 25 year olds showed “diminished cognitive performance” when the individuals were exposed to emotionally charged situations, even in those 18 – 21 years of age compared to adults over 21. The researchers were able to correlate this reduction in performance with changes on fMRI scans that showed decreased activity in the fronto-parietal circuitry that is important in cognitive control. Conversely there was increased activity in the emotional processing areas of the brain (ventromedial prefrontal cortex).<sup>34</sup>

Adolescents (and young adults) are also more susceptible to peer influence than adults age 24 and older. In a study of 306 individuals between 13 and 24 years of age, researchers found risk taking and risky decision making increased

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<sup>32</sup> Diekema DS Adolescent brain development and medical decision-making. *Pediatrics*. 2020; 146(s1): e20200818F

<sup>33</sup> Icenogle G, Steinberg L, Duell N, et al. Adolescents’ cognitive capacity reaches adult levels prior to their psychosocial maturity: Evidence for a “maturity gap” in a multinational, cross-sectional sample. *Law Hum Behav*. 2019; 43(1):69-85.

<sup>34</sup> Cohen AO, Breiner K, Steinberg L, et al. When is an adolescent an adult? Assessing cognitive control in emotional and nonemotional contexts. *Psychological Science*. 2016; 27(9):549-562.

when in peer groups. Significantly even the young adults aged 18 – 22 years of age were more strongly affected by their peers than were older adults.<sup>35</sup>

Interestingly, another component of decision making may also be immature in adolescents. The ability to integrate personal ethics and values into the cognitive process is obviously important, especially as an individual encounters more significant, high stakes decisions. Researchers utilizing fMRI imaging in 13 to 20 year olds found that younger adolescents (13 – 18) did not increase their cognitive control performance when faced with high stakes decisions, and this was most likely due to decreased connectivity in their corticostriatal pathways. In other words, adolescents are less likely than adults to improve their decision making when faced with a more significant and important decision.<sup>36</sup>

This research all demonstrates the adolescent brain is immature, not just in structure, but in function, and clearly reveals the adolescent's need for adult assistance when facing difficult and emotionally charged decisions.

## Impact of Exercise on Brain Development

There is mounting evidence that regular exercise is beneficial for physical and emotional well-being. The World Health Organization recommends that children and adolescents should experience 60 minutes of moderate-to-vigorous physical activity daily. Unfortunately, in the United States, only 24% of children between 6 and 17 years of age daily participate in physical activity.<sup>37</sup>

Now studies are demonstrating that physical activity is linked to school performance and cognition because of its effects on brain structure and function. In one study from Minnesota, involving 4746 middle and high school students, those who participated in team sports with regular physical activity had higher grade point averages.<sup>38</sup> Similar results have been found in studies from other countries.<sup>39</sup>

In addition, research is showing a link between aerobic exercise and distinct cognitive abilities that are important for academic achievement, including attention, planning, problem solving, working memory, spatial learning,

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<sup>35</sup> Gardner M and Steinberg L. Peer influence on risk taking, risk preference, and risky decision making in adolescence and adulthood: an experimental study. *Dev Psychol.* 2005; 41(4): 625–35.

<sup>36</sup> Insel C, Kastman EK, Glenn CR and Somerville LH. Development of corticostriatal connectivity constrains goal-directed behavior during adolescence. *Nature Communications.* 10.1038/s41467-017-01369-8

<sup>37</sup> (CDC, 2017 <https://www.cdc.gov/healthyschools/physicalactivity/facts.htm>)

<sup>38</sup> Fox CK, Barr-Anderson D, Neumark-Sztainer D, Wall M. Physical activity and sports team participation: associations with academic outcomes in middle school and high school students. *J Sch Health.* 2010; 80(1):31–37.

<sup>39</sup> Haverkamp BF, Oosterlaan J, et al. Physical fitness, cognitive functioning and academic achievement in healthy adolescents. *Psychology Sport Exercise.* 2021; 57:102060

and inhibitory control. Utilizing MRI scans and diffusion MRI, Herting and Chu evaluated the brain structure and white matter microstructure in adolescents who exercised regularly compared with lean controls who did not exercise. Improved aerobic fitness was related to larger hippocampal volumes as well as other structural brain changes.<sup>40</sup>

There is evidence from other studies that exercise may influence how the brain encodes new memories in the hippocampus and may improve the teens' ability to efficiently process task requirements.<sup>41</sup> In one prospective 4 month study 67 adolescents were randomized to three different groups who were assigned varying levels of physical activity. Those students in the high intensity group improved their school grades as well as their cognitive performance on specialized testing that included verbal and non-verbal ability, abstract reasoning, spatial ability, numerical ability.<sup>42</sup>

### Impact of Sleep on Brain Development

During early adolescence there is a delay in the circadian timing system so that melatonin, the sleep inducing protein, is excreted later in the evening, leading to delays in bedtimes. In combination with the normal increase in activity during adolescence and use of social media at night, adolescents fall asleep later and experience less total sleep than is healthy for brain development. Despite the recommendations that adolescents should sleep 8 – 10 hours daily, 72.7% of high school students in grades 9 – 12 report not getting enough sleep on school nights.<sup>43</sup>

Sleep may actually play a role in sculpting the adolescent brain, and one study demonstrated that children and adolescents who experienced more sleep had corresponding increases in hippocampal grey matter.<sup>44</sup> Interestingly, sleep studies demonstrate progressive changes in the sleeping EEG during adolescence, so that as grey matter decreases and white matter increases, sleep slow-wave activity decreases.<sup>45</sup>

Numerous studies link sleep deprivation with health risks including obesity, diabetes, injuries, poor mental health, and problems with learning, memory,

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<sup>40</sup> Herting MM and Chu X. Exercise, cognition, and the adolescent brain. *Birth Defects Res.* 2017; 109(20):1672-79.

<sup>41</sup> Herting MM and Nagel BJ. Differences in brain activity during a verbal associative memory encoding task in high and low-fit adolescents. *J Cogn Neurosci.* 2013; 25(4):595-612,

<sup>42</sup> Ardoy DN, Fernandez-Rodriguez JM, et al. A physical education trial improves adolescents' cognitive performance and academic achievement: the EDUFIT study. *Scandinavian J Med Sci Sports.* 2014; 24:e52-61.

<sup>43</sup> <https://www.cdc.gov/healthyschools/features/students-sleep.htm>

<sup>44</sup> Tarokh L, Saletin JM, and Carskadon MA. Sleep in adolescence: physiology, cognition and mental health. *Neurosci Biobehav Rev.* 2015; 70:182-188.

<sup>45</sup> Buchmann A, Ringli M, et al. EEG sleep slow-wave activity as a mirror of cortical maturation. *Cerebral Cortex* 2011;21:607-615

attention and behavior, so it is crucial for adolescents' lives to be structured in ways that promote optimal sleep.

## Impact of Alcohol on Brain Development

Alcohol remains the most commonly abused substance among adolescents and young adults. According to the National Center for Drug Abuse Statistics for 2020, over 1 million 12 to 17 year olds reported binge drinking within the last month and over 400,000 teens of the same age actually met criteria for Alcohol Use Disorder.<sup>46</sup> Because of the immaturity of the adolescent brain, and its unique susceptibilities and vulnerabilities to addiction, it is not surprising that alcohol can have a greater adverse impact on adolescents than on adults.

Researchers following adolescents prospectively have noted that binge drinking or excessive drinking is associated with decreased performance on visuospatial and memory abilities as well as attention difficulties in adolescents and adults.<sup>47</sup> This has been correlated with brain imaging studies showing reduced grey matter volume.<sup>48</sup> A longitudinal study from the Netherlands in which three separate cohorts of children were followed evaluated participants between 8 and 29 years of age via neuroimaging.<sup>49</sup> The authors stated, "Alcohol use was associated with adolescent's brain morphology showing accelerated decrease in grey matter volumes."

Especially impacted is the hippocampus, the area of the brain that is important for learning and memory. One study of adolescents aged 15 - 18 years of age showed that those who abused alcohol demonstrated hippocampal asymmetry and a reduced left hippocampal volume compared to non-using controls. This correlated with difficulties with verbal learning.<sup>50</sup>

This decrease in hippocampal volume may also impact the ability of the adolescent to pay attention. Smaller hippocampal volumes were associated with auditory omission errors and longer auditory response times in a study of 115 children and adolescents.<sup>51</sup>

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<sup>46</sup> <https://drugabusestatistics.org/teen-drug-use/>

<sup>47</sup> Hanson KL, Medina KL, Padula C, et al. Impact of adolescent alcohol and drug use on neuropsychological functioning in young adulthood: 10-year outcomes. *J Child Adolesc Subst Abuse*. 2011; 20(2):135-154.

<sup>48</sup> Heikkinen N, Niskanen E, et al. Alcohol consumption during adolescence is associated with reduced grey matter volumes. *Addiction*. 2017; 112(4):604-613.

<sup>49</sup> Marroun HE, Klapwijk ET, et al. Alcohol use and brain morphology in adolescence: A longitudinal study in three different cohorts. *Eur J Neurosci*. 2021; 54:6012-6026.

<sup>50</sup> Medina KL, Schweinsburg AD, Cohen-Zion M, et al. Effects of alcohol and combined marijuana and alcohol use during adolescence on hippocampal volume and asymmetry. *Neurotoxicol Teratol*. 2007; 29(1): 141-152.

<sup>51</sup> Kim T-H, Choi E, Kim H, et al. The association between hippocampal volume and level of attention in children and adolescents. *Frontiers in Systems Neuroscience*. 2021; 15:671735,

## Impact of Marijuana on Brain Development

Tetrahydrocannabinol (THC) is the main psychoactive component of the marijuana plant and specifically acts upon the cannabinoid receptors in the brain that are predominantly found in the areas of the brain that are involved with concentration and thinking, pleasure and memory formation, and coordination. THC over activates the endocannabinoid system, causing the high and other effects that users experience. These effects include distorted perceptions, psychotic symptoms, difficulty with thinking and problem solving, disrupted learning and memory, and impaired reaction time, attention span, judgment, balance and coordination.<sup>52</sup> Since these areas of the brain are all rapidly changing during early adolescence, they are vulnerable to any adverse influences.

Reports of adverse effects of marijuana on the brain include structural abnormalities in the density and volume of the gray matter, reduced connectivity in the prefrontal networks that control the executive functions and reduced volume and connectivity in the hippocampus, the learning center of the brain.

More significant are the associations between marijuana use and mental health concerns, especially with the higher concentrations of THC now available. One of the first studies linking marijuana use with schizophrenia was reported in 1987. A prospective study of 45,570 Swedish conscripts interviewed the adolescents at age 18 years and followed them for 15 years. By 1983, 246 (0.54%) had been diagnosed with schizophrenia. In the group of individuals who had never used marijuana, only 0.47% were diagnosed with schizophrenia. However, in the group of 752 who had smoked more than 50 times by age 18, 21 cases were diagnosed or 2.8% of the group—a six fold increased risk.<sup>53</sup>

More recently, a review of ten studies found a 10 - 25% increased risk of psychosis among cannabis users versus non users.<sup>54</sup> A systematic review and meta-analysis of 15 studies found just one dose of THC could induce psychosis in adults who had no history of previous mental illness.<sup>55</sup> Risk has also been shown to increase with younger age at initiation of drug use, higher potency cannabis and use of synthetic cannabinoids.<sup>56</sup> In fact, the authors state that their research indicates “if high-potency cannabis were no longer available, 12.2% of cases of first-episode psychosis could be prevented across the 11 sites” they studied.

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<sup>52</sup> Nistler C, Hodgson H, Nobrega FT, Hodgson CJ, Wheatley R, Solberg G. Marijuana and adolescents. *Minn Med*.2006 Sept:49-51

<sup>53</sup> Andreasson S, Allebeck P, Engstrom A, and Rydberg U. Cannabinoids and schizophrenia. A longitudinal study of Swedish conscripts. *Lancet*. 1987; 26(2):1483-6.

<sup>54</sup> Gage SH, Hickman M and Zammit S. Association between cannabis and psychosis: Epidemiologic evidence. *Biol Psychiatry*. 2016; 79(7):549-556.

<sup>55</sup> Hindley G, Beck K, Borgan F, et al. Psychiatric symptoms caused by cannabis constituents: a systematic review and meta-analysis. *Lancet Psychiatry*. 2020;7:344-353

<sup>56</sup> Di Forti M, Quattrone D Freeman TP, et al. *Lancet Psychiatry* 2019; 6:427-36

A systematic review of 124 studies that evaluated all behavioral sequelae of cannabis use identified negative effects on “cognition, motivation, impulsivity, mood, anxiety, psychosis, intelligence and psychosocial functioning.”<sup>57</sup> In addition, these authors also found “frequency of cannabis use, THC (but not CBD) content, age of onset and cumulative cannabis exposure can all contribute to these adverse outcomes in individuals without a pre-existing medical condition or psychiatric disorder.”

Other studies have linked marijuana use with depression and suicidal ideation.<sup>58</sup> In addition, there may be genes that increase risk for developing psychosis with THC use.<sup>59</sup>

Not only are the effects on mental health of adolescents serious enough to encourage total abstinence during the years of rapid brain development, but there are also other adverse effects noted with the use of THC during early and mid-adolescence, including difficulties learning and remembering,<sup>60</sup> permanently lowered IQ,<sup>61</sup> and difficulties processing information.<sup>62</sup>

In chronic adolescent users, marijuana’s adverse impact on learning and memory persists long after the acute effects of the drug wear off. A major study published in 2012 in *Proceedings of the National Academy of Sciences* provides objective evidence that marijuana is harmful to the adolescent brain.<sup>63</sup> As part of this large-scale study of health and development, researchers in New Zealand administered IQ tests to over 1,000 individuals at age 13 (born in 1972 and 1973) and assessed their patterns of cannabis use at several points as they aged. Participants were again IQ tested at age 38, and their two scores were compared as a function of their marijuana use. The results were striking: Participants who used cannabis heavily in their teens and continued through adulthood showed a significant drop in IQ between the ages of 13 and 38—an average of eight points for those who met criteria for cannabis dependence. Those who started

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<sup>57</sup> Sorkhou M, Bedder RH, George TP. The behavioral sequelae of cannabis use in healthy people: A systematic review. *Frontiers in Psychiatry*. 2021; 12:1-19.

<sup>58</sup> Hallfors DD, Waller MW, Ford CA, et al. Adolescent depression and suicide risk: association with sex and drug behavior. *Am J Prev Med*. 2004;27(3):224-230

<sup>59</sup> Di Forti M, Iyegbe C, et al. Confirmation that the AKT1(rs2494732) genotype influences the risk of psychosis in cannabis users. *Biol Psychiatry*. 2012; 72(10):811-816.

<sup>60</sup> Nistler C, Hodgson H, Nobrega FT, Hodgson CJ, Wheatley R, Solberg G. Marijuana and adolescents. *Minn Med*. 2006 Sept:49-51

<sup>61</sup> Meier MH, Caspi A, Harrington H, et al. Persistent cannabis users show neuropsychological decline from childhood to midlife. *Proc Natl Acad Sci* 2012 Oct 2;109(40):E2657-64

<sup>62</sup> Kelleher LM, Stough C, Sergejew AA, Rolfe T. The effects of cannabis on information-processing speed. *Addict Behav*. 2004 Aug;29(6):1213-9. doi: 10.1016/j.addbeh.2004.03.039. PMID: 15236825.

<sup>63</sup> Meier MH, Caspi A, Harrington H, et al. Persistent cannabis users show neuropsychological decline from childhood to midlife. *Proc Natl Acad Sci* 2012 Oct 2;109(40):E2657-64. Available at <http://www.ncbi.nlm.nih.gov/pubmed?term=persistent%20cannabis%20users%20and%20meier>.

using marijuana regularly or heavily after age 18 showed minor declines. By comparison, those who never used marijuana showed no declines in IQ.

In addition, it is important to remember that adolescent females who experiment with drugs are also at high risk for pregnancy. Although the risk of using marijuana during pregnancy is unrecognized by the general public, research demonstrates infants and children exposed prenatally to marijuana have a higher incidence of neurobehavioral problems. THC and other compounds in marijuana mimic the human brain's cannabinoid-like chemicals, thus prenatal marijuana exposure may alter the developing endocannabinoid system in the fetal brain, which may result in attention deficit, difficulty with problem solving, and poorer memory.<sup>64</sup> Evidence especially suggests an association between prenatal marijuana exposure and impaired executive functioning skills beyond the age of three. Specifically, children with a history of exposure are found to have an increased rate of impulsivity, attention deficits, and difficulty solving problems requiring the integration and manipulation of basic visual perceptual skills.<sup>65</sup> These changes occur even when mothers discontinue marijuana after learning they are pregnant.<sup>66</sup>

## Impact of Media on Brain Development

Since adolescence is a period of time during which parental influence decreases while peer acceptance is increasingly desired, the impact of social media on teens is intensified. Giedd mentions three characteristics of adolescence that contribute to the attraction of digital / social media: teens seek human connectedness, have a desire for adventure, and want to learn.<sup>67</sup>

Today the social interactions of adolescents increasingly consist of media-related activities where they make connections, seek peer acceptance, and monitor peer activities.<sup>68</sup> Adolescents in the United States currently average over 7 hours of screen time each day, and this does not include time spent doing homework.<sup>69</sup> There are numerous social media sites available to adolescents,

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<sup>64</sup> Drug Facts. National Institute on Drug Abuse. [www.drugabuse.gov/drugs-abuse/marijuana](http://www.drugabuse.gov/drugs-abuse/marijuana). Published December 2012.

<sup>65</sup> Fried PA, Smith AM. A literature review of the consequences of prenatal marijuana exposure. An emerging theme of a deficiency in aspects of executive function. *Neurotoxicol Teratol*. 2001;23(1):1-11.

<sup>66</sup> Paul SE, Hatoum AS, Fine JD, et al. Associations Between Prenatal Cannabis Exposure and Childhood Outcomes: Results From the ABCD Study. *JAMA Psychiatry*. 2021;78(1):64-76. doi:10.1001/jamapsychiatry.2020.2902

<sup>67</sup> Giedd JN. The natural allure of digital media. *Dialogues in Clinical Neuroscience*. 2020; 22(2):127-133.

<sup>68</sup> Anderson M and Jiang J. Teens, Social Media & Technology. Pew Research Center. May 31, 2018. Retrieved from <https://www.pewinternet.org/2018/05/31/teens-social-media-technology-2018/>.

<sup>69</sup> The Common Sense Census: Media Use by Tweens and Teens in 2019. Common sense media. <https://www.commonsensemedia.org/research/the-common-sense-census-media-use-by-tweens-and-teens-2019>



with YouTube, Instagram and Snapchat now more popular than Facebook, according to the Pew Research Center's report in 2018, and teens generally access more than one platform. For example, 85% of adolescents report using YouTube, 72% Instagram, 69% Snapchat and 51% Facebook.<sup>70</sup>

Adolescents themselves acknowledge both the positive and negative aspects of social media. The positive effects include the ability to connect with family and friends, the ability to meet others who have similar interests, and as a means of self-expression. Negative effects reported by teens include bullying, harmful effects on relationships with lack of personal contact, giving an unrealistic view of others' lives and causing distraction or peer pressure.<sup>71</sup>

Since adolescence is a time of rapid brain development, it is important to evaluate the impact of media, especially social media, during this vulnerable time. As noted in *Nature Communications*, "...changes in grey matter volume are observed most extensively in brain regions that are important for social understanding and communication such as the medial prefrontal cortex, superior temporal cortex and temporal parietal junction."<sup>72</sup>

Social connection involves several different neuroanatomical circuitries in the brain but the reward system is especially active. Many stimuli such as the desire for hunger, sleep, and sex stimulate this reward system, but social connections, particularly during the adolescent years, also contribute to activity in this region of the brain.

One of the ways brain development of children and adolescents may be impacted by social media is via social rejection. Researchers have utilized functional MRI neuroimaging to evaluate the impact of rejection on social media on brain activity of 7 - 10 year olds and have found changes in several regions of the brain associated with judgment and emotions.<sup>73</sup> In addition, when adolescents perceive rejection in research situations, they often respond more aggressively towards those who have rejected them.<sup>74</sup>

Conversely, acceptance on social media (receiving "likes") generates brain responses that are similar to receiving rewards such as money with increased

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<sup>70</sup> Anderson M and Jiang J. Teens, Social Media & Technology. Pew Research Center. May 31, 2018. Retrieved from <https://www.pewinternet.org/2018/05/31/teens-social-media-technology-2018>.

<sup>71</sup> Anderson M and Jiang J. Teens, Social Media & Technology. Pew Research Center. May 31, 2018. Retrieved from <https://www.pewinternet.org/2018/05/31/teens-social-media-technology-2018>.

<sup>72</sup> Crone EA and Konijn EA. Media use and brain development during adolescence. *Nature Communications*. 2018. 9:588.

<sup>73</sup> Achterberg M, van Duijvenvoorde ACK, van der Meulen, et al. The neural and behavioral correlates of social evaluation in childhood. *Developmental Cognitive Neuroscience*. 2017;24:107-117.

<sup>74</sup> Achterberg M, van Duijvenvoorde ACK, Bakermans-Kranenburg MJ and Crone EA. Control your anger! The neural basis of aggression regulation in response to negative social feedback. *Social Cognitive and Affective Neuroscience*. 2016; 11(5):712-720.

activity in the brain regions associated with pleasure and reward (the ventral striatum).<sup>75,76</sup>

Both rejection and acceptance on social media appear to be moderated by the dorsolateral prefrontal cortex, the area of the brain associated with executive functions, such as judgment. Since this area is not fully mature until around 24 years of age, the adolescent may be more susceptible to the emotional content of social media.<sup>77</sup> More specifically, the adolescent may be more sensitive to rejection, peer influence and emotional interactions on social media.

### **Relationship Between High Risk Behaviors**

All this research demonstrates the adolescent's brain is immature—in virtually every area that has been studied. The adolescent's brain is prone to seek excitement at a time when the frontal lobe is not mature enough to moderate such behavior. This is also the time when the developing brain is at greatest risk to form neuronal connections that may lead to addictions and impact future emotional well-being and decision making. Making matters worse, modern media portrays high-risk behaviors as admirable, exciting, and even safe, while discouraging parental involvement that would positively modify the behaviors.

There is a clear link between high-risk behaviors and subsequent depression and even suicide. In the National Longitudinal Study on Adolescent Health, 13,491 adolescents in grades 7 to 11 were interviewed in 1995 and again one year later. The authors differentiated the cause and effects of depression and found that early high-risk behaviors, including sexual activity and drug use, were linked with later depression, but early depression did not cause high-risk behaviors.<sup>78</sup>

Further analysis of the same study revealed that adolescents who had involvement in any drinking, smoking, and/or sexual activity were significantly more likely to suffer from depression, suicidal ideation, and suicide attempts.<sup>79</sup>

### **Impact of Parents on Adolescent Brain Development**

The good news is that parents play a pivotal and crucial role during the adolescent years, and the influence of parents can positively impact the

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<sup>75</sup> Crone EA and Konijn EA. Media use and brain development during adolescence. *Nature Communications*. 2018. 9:588.

<sup>76</sup> Davey CG, Allen NB, Harrison BJ, et al. Being liked activates primary reward and midline self-related brain regions. *Human Brain Mapping*. 2010. 31(4):660-668.

<sup>77</sup> Crone EA and Konijn EA. Media use and brain development during adolescence. *Nature Communications*. 2018. 9:588.

<sup>78</sup> Hallfors DD, Waller MW, Bauer D, et al. Which comes first in adolescence—sex and drugs or depression? *Am J Prev Med*. 2005; 29:163-70.

<sup>79</sup> Hallfors DD, Waller MW, Ford CA, et al. Adolescent depression and suicide risk: association with sex and drug behavior. *Am J Prev Med*. 2004; 27:224-31.

developing brain. Since their prefrontal cortex is immature, adolescents will benefit from the wisdom and guidance of their parents in making decisions and strategizing. Limit setting, structure, and communication that help minimize exposure to high-risk behaviors will protect the adolescent, not just during the adolescent years, but also long term. Parents can even take advantage of the need for excitement by seeking positive experiences for their adolescents. Parents can challenge their teens to find excitement in learning new things. For academic teens it might be learning a new language or skill. For athletic teens it might be learning how to dive or some other physical skill. These challenges produce the same sort of dopamine high that teens receive from things that are risky, dangerous and sometimes illegal.<sup>80</sup>

Participating in exciting activities together will also help parent and teen to bond and connect with each other. Research from the National Longitudinal Study on Adolescent Health demonstrated that adolescents are less likely to participate in high risk behaviors when they are highly connected to their parents.<sup>81</sup> Alan Booth, a researcher at Pennsylvania State University, evaluated the role of parenting on adolescent high-risk behaviors and found that even adolescents who are more prone to them will be less likely to participate if they have a close relationship with their parents.<sup>82</sup>

Parents not only protect their adolescent when they have a close relationship, they can also prevent high risk behaviors by decreasing the teen's opportunities to participate in those dangerous activities. Researchers at the National Center on Addiction and Substance Abuse (CASA) at Columbia University (now called [drugfree.org](https://www.drugfree.org)) demonstrated that adolescents with "hands-on" parents (those who monitored the activities of their adolescents and participated in family dinner hour together) are at one-fourth the risk of substance abuse as those with "hands-off" parents.<sup>83</sup> An international study of over 5000 adolescents and young adults between 10 and 30 years of age from 11 countries showed that adolescents in all countries experienced heightened risk taking. However, risk taking is manifest in various ways depending upon the cultural context, so the authors of the study state, "the broader context in which adolescents develop exerts a powerful impact on the extent to which young people

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<sup>80</sup> Galvan A. Adolescent development of the reward system. *Frontiers Human Neuroscience*. 2010; 4(6)10.3389/neuro.09.006.2010

<sup>81</sup> Resnick MD, Bearman PS, et al. Protecting Adolescents From Harm—Findings From the National Longitudinal Study on Adolescent Health. *JAMA* 1997; 278:823-832.

<sup>82</sup> Booth, A, Johnson DR, et al. Testosterone and child and adolescent adjustment: The moderating role of parent-child relationships. *Developmental Psychology*. 2003; 39(1):85-98.

<sup>83</sup> WebMD Health News. Hands-on parents help teens say no to drugs. 2001. Accessed February 1, 2022 at <https://www.webmd.com/parenting/news/20010221/hands-on-parents-help-teens-say-no-to-drugs#:~:text=Results%20released%20Wednesday%20by%20the,hands%20off%20parents.>

engage in risky and health-compromising behavior.”<sup>84</sup> In an interview with the *New York Times*, the lead author, Dr. Laurence Steinberg stated the lowest rates of adolescent risk-taking occur in cultures that “encourage self-control from a very early age and structure adolescence in a way that doesn’t give kids a lot of free, unstructured time to get into a lot of trouble.”<sup>85</sup>

Improved connection between parents and adolescents even helps to buffer the effects of social exclusion and peer victimization. In a study of 166 Mexican-origin adolescents who were recruited from a ten year longitudinal study, researchers demonstrated specific changes in MRI brain scans when students faced a hostile school environment and found those students were more likely to later demonstrate social deviance.<sup>86</sup> However, connectedness with their family protected the adolescents from the neurobiological changes on MRI that correlated with the risk for social deviance.

Parents can help shape their adolescent’s environment, affect the adolescent’s tendency to participate in high-risk behaviors, and can help them in their decision-making and critical thinking skills. An adolescent’s close relationship with his/her parent is protective despite other negative environmental factors. Research clearly shows that parents play a critical role in the healthy development of their adolescents. Health care professionals should acknowledge this, encourage parents to develop healthy relationships with their children, and support them in the parenting role. On a broader level, public health policies that currently treat adolescents as young adults in their abilities to problem solve and make decisions should be re-evaluated and revised based on this new research and will need continued revision as new information emerges.

## Conclusion

In summary, evidence-based research on brain development should serve as an impetus for adults who interact with and care for adolescents to reconsider the health information provided to youth. The adolescent brain is under construction and can be adversely affected by high-risk behaviors and the teen’s environmental milieu and experiences. The judgment center is immature, contributing to poor decision making. The dopamine pleasure system is in a state of rapid change, leading to higher potential for participation in high-risk behaviors and addictions. Oxytocin and vasopressin are present and ready to emotionally bond the teenager to any individual with whom he or she has

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<sup>84</sup> Steinberg L, Icenogle G, Shulman EP, et al. Around the world, adolescence is a time of heightened sensation seeking and immature self-regulation. *Developmental Science*. 2017; Feb 01

<sup>85</sup> Damour L. Teenagers Do Dumb Things, but There Are Ways to Limit Recklessness. *The New York Times*. March 8, 2017.

<sup>86</sup> Schriber RA, Rogers CR, Ferrer E, et al. Do hostile school environments promote social deviance by shaping neural responses to social exclusion? *J Res Adolesc*. 2018; 28(1): 103-120.

sexual experiences, and heighten the consequences of the likely ending of the relationship.

Clearly, the adolescent years are a time of rapid brain development, a time of susceptibility. Those who care about the future of the adolescent must acknowledge that high-risk behaviors encountered during these vulnerable years can have lasting adverse consequences and should be avoided. The importance of parental supervision, coaching, and assistance in decision making cannot be overstated.

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