



Original research article

## Perceptions of health risks associated with pregnancy compared to oral contraceptive use



Anita L. Nelson<sup>a,b,\*</sup>, Salma Shabaik<sup>c</sup>, Pamela Xandre<sup>d</sup>, Roshni Kakaiya<sup>e</sup>, Joseph Awaida<sup>f</sup>, Michelle Mellon<sup>g</sup>, Andrew Schiller<sup>h</sup>, Hindi E. Stohl<sup>i</sup>

<sup>a</sup> Los Angeles BioMedical Research Institute at Harbor UCLA Medical Center, Torrance, California

<sup>b</sup> Western University of Health Sciences, Pomona, California

<sup>c</sup> Charles R. Drew University of Medicine and Science, Los Angeles, California

<sup>d</sup> School of Nursing at California State University, Long Beach, California

<sup>e</sup> Touro University California, Vallejo, California

<sup>f</sup> California State University, Long Beach, California

<sup>g</sup> Western University of Health Sciences College of Osteopathic Medicine Northwest, Lebanon, Oregon

<sup>h</sup> College of Osteopathic Medicine, Western University of Health Sciences, Pomona, California

<sup>i</sup> Harbor-UCLA Medical Center, David Geffen School of Medicine at UCLA, Los Angeles, California

### ARTICLE INFO

#### Article history:

Received 25 October 2018

Received in revised form 12 April 2019

Accepted 14 April 2019

#### Keywords:

Reproductive health literacy  
Oral contraceptive health risks  
Pregnancy health risks  
Shared decision making  
Oral contraceptive safety

### ABSTRACT

**Objective:** To assess beliefs about the safety of oral contraceptives compared to pregnancy to determine if men and women possess accurate information to make informed choices.

**Study design:** In each of six surveys conducted in Southern California from 2008 to 2017, participants were asked “Which do you think is more hazardous to a woman’s health – birth control pills or pregnancy?”

**Results:** A total of 28.4% of all 1839 male and female respondents and 29.1% of the 1712 female respondents answered correctly that the health risks posed by pregnancy were greater. In subgroup analyses, 64.4%–81.9% rated oral contraceptives at least as hazardous to a woman’s health as pregnancy.

**Conclusion:** The vast majority of respondents incorrectly believed that oral contraceptives are more hazardous than pregnancy.

**Implications:** Health decision making relies upon patients’ understanding of the relative risks and benefits of each available option. Most sexually active women do not understand that there is no contraceptive method current guidelines would offer them that is as hazardous to their health as pregnancy. Such misconceptions can lead to risky decisions. Clinicians need to explicitly provide their sexually active patients more accurate and balanced information, putting contraception in the context of its probable alternative – pregnancy.

© 2019 Elsevier Inc. All rights reserved.

## 1. Introduction

Combined hormonal contraceptives have been used by 82% of sexually active American women. However, studies show that most women are concerned about the safety of oral contraceptives despite the fact that, for women in every reproductive age group, the risk of death with pregnancy is greater than it is with use of hormonal contraception [1–5].

Over the last several years, we have conducted surveys from convenience samples of women and men investigating beliefs about a variety of reproductive health issues [1,6–8]. Each of those surveys has included a question asking about the health risks posed by pregnancy compared to oral contraceptive use. While the responses to that question have

often been individually reported, it has always been a minor secondary outcome. Because these results have been so consistent over time and so significantly incorrect, we summarize them in this brief report.

## 2. Materials and methods

The six surveys form the basis for this study. They were conducted from 2008 to 2017 in Southern California – primarily on the campus of the Los Angeles BioMedical Research Institute at Harbor-UCLA Medical Center (LA BioMed). In each survey, the participant was asked “Which do you think is more hazardous to a woman’s health – birth control pills or pregnancy?” Each project was approved by the John F. Wolf Human Subjects and the Research Committees of LA BioMed (Project Nos. 30329-01, 31225-01, 31106-01 and 30638-01) on an exempt basis. Potential participants provided verbal consent after the purpose

\* Corresponding author. Tel.: +1 310 937 7226.

E-mail address: [AnitaNelson1@gmail.com](mailto:AnitaNelson1@gmail.com) (A.L. Nelson).

of the study was explained, and they were assured that participation was entirely voluntary.

Information about the participant's gender; age group; level of education; language; and, for women, parity and pregnancy status was collected. Virtually all surveys were conducted in person, one-on-one in either English or Spanish after directly approaching them; only one survey had an online component. Subgroup analyses were conducted to identify potential differences.  $\chi^2$  was used to test for statistical differences; a p value less than .05 was chosen as the probability threshold.

### 3. Results

The response rates to the individualized surveys ranged from 68% to 88%. Altogether, 1839 people provided answers to the demographic questions and the pivotal study question. Table 1 displays the dates, topics and numbers of participants in each of the studies. Overall, study size varied from 246 to 493 respondents. There was no improvement in knowledge over time.

Table 2 displays the demographic information of the participants; 93.1% were women. Over half were between 18 and 30 years of age. About one third (36.8%) had no more than high school education equivalency, but 38.6% had at least a college degree. One sixth (16.9%) spoke only Spanish. Most women were familiar with pregnancy; 58.2% were parous; 10.7% were pregnant.

Overall, 522 (28.4%) of those surveyed recognized that pregnancy was more hazardous to a woman's health than oral contraceptives; 1248 (67.9%) said oral contraceptives were at least as hazardous to a woman's health as pregnancy; and 69 (3.8%) were unable to commit to an answer.

Table 3 examines potential differences in responses of all participants (female and male) by age group, gender, education level and language. In none of these subgroups did a majority of respondents correctly rate the health risks of pregnancy as being greater than those of oral contraceptive use.

Table 4 analyzes the responses for the 1712 women surveyed; 499 (29.1%) said that pregnancy was more hazardous to a woman's health than oral contraceptives, 1146 (66.9%) reported that pills were at least as hazardous, and 67 (3.9%) could not provide an answer. Again, in every subgroup, the majority of women provided incorrect answers. Even those women who were most highly educated, who were parous and who had previously recognized that the risks of thromboembolism, diabetes and hypertension increased in pregnancy overwhelmingly rated oral contraceptives as being more hazardous than pregnancy [8].

**Table 1**

Surveys conducted from 2007 to 2017 that posed the pivotal question: "Which is more hazardous to a woman's health – pregnancy or oral contraceptives?"

Year	Survey focus	Population studied <sup>a</sup>	Number of respondents	Percent answering pregnancy more hazardous than oral contraceptives
2007	Knowledge of health risks of pregnancy [8]	Nonpregnant, reproductive-aged, English-speaking women in women's care clinic waiting rooms, campus staff and visitors	246	24%
2013–2014	Reproductive life planning attitudes – English-speaking women [6]	Nonpregnant, reproductive-aged, English-speaking women in women's health care clinic waiting room	250	34.1%
2013–2014	Reproductive life planning attitudes – Spanish-speaking women [7]	Nonpregnant, reproductive-aged, Spanish-speaking women in women's health care clinic waiting room	263	21.3%
2015	Beliefs about contraceptive safety and efficacy [2]	Nonpregnant, reproductive-aged, English-speaking women in women's health clinic waiting room, campus staff and visitors	493	43.8%
2017	Muslim women's beliefs about their religion's position on the appropriateness of contraception [11]	Nonpregnant women approached in mosques, religious fairs and online from list servers provided by the president of each of the mosques	276 (102 online) Women 159	18.5%
2017	Knowledge of health risks of pregnancy	English- or Spanish-speaking pregnant women in prenatal clinic and men who attended visits with them	Men 125 Total 284	25% 18%

<sup>a</sup> In all surveys, staff associated with obstetrics and gynecology department were excluded.

**Table 2**

Description of characteristics of respondents to pivotal question included in surveys conducted between 2007 and 2017 in Southern California

Category	All respondents	
	Number	Percent (%)
<b>Age</b>		
≤25	523	28.4
26–30	460	25.0
31–35	358	19.5
≥36	498	27.1
<b>Years of education</b>		
<9	93	5.1
9–11	165	9.0
12, GED	380	20.7
13–15	489	26.6
16	440	23.9
>16	270	14.7
<b>Gender</b>		
Female	1712	93.1
Male	127	6.9
<b>Language</b>		
English	1528	83.1
Spanish	311	16.9
<b>Parity (women only)</b>		
Nulliparous	715	41.8
Parous	997	58.2
<b>Currently pregnant (women only)</b>		
No	1528	89.3
Yes	184	10.7

In the subgroups of women, only 20.8% to 35.4% correctly understood that pregnancy posed greater health risks.

### 4. Discussion

Our survey found that independent of age, educational attainment, income levels or prior pregnancy experience, around two thirds of respondents were unaware of the fact that pregnancy is more hazardous to a woman's health than oral contraceptives. This raises the question: do they underestimate the risks of pregnancy or overestimate pill use risks? Our analysis suggests that the problem is primarily the latter. While most women are unaware of pregnancy health risks, even women who knew that the risks of thrombosis, hypertension and diabetes increased in pregnancy still rated pills at least as risky as pregnancy.

**Table 3**

Proportion of respondents reporting that pregnancy is more hazardous to health than oral contraceptives

	Total number in category	Respondents reported pregnancy more hazardous Percent (%)
<b>Total</b>	1839	28.4
<b>Age in years</b>		
<25	523	26.8
26–30	460	30.0
31–35	358	30.4
≥36	498	27.1
		p=.49
<b>Education (highest grade completed)</b>		
<11	258	26.4
12, GED	380	22.6
13–15	489	29.4
16	440	29.1
>16	270	35.6
		p=.008
<b>Gender</b>		
Female	1712	29.1
Male	127	18.1
		p=.008
<b>Language</b>		
English	1528	30.0
Spanish	311	20.6
		p≤.001

Surveys conducted since the introduction of synthetic combined hormonal contraception in 1960 have demonstrated that people harbor significant misgivings about pill safety [1,9]. Even in a recent survey of educated subjects, 49% believed that there were substantial health risks with oral contraceptive use [10].

One limitation of this study is that it represents only one geographic area. However, the subjects are diverse and the responses have remained constant over time. Only bivariate analysis was performed.

From an ethical perspective, it is disturbing that sexually active women, who are to be engaged in shared decision making to make informed choices between contraception or pregnancy, do not possess correct information upon which to make such a decision [4]. Most people in our studies were profoundly misinformed about a very fundamental core principle. There is no form of contraception that practice guidelines would endorse (or that the FDA would approve) that would be as hazardous to a woman's health as pregnancy. We hope this study will encourage clinicians to emphasize risks associated with both pregnancy and oral contraceptive pills so that the women can make informed choices.

### Acknowledgments

The authors wish to extend their gratitude to Azadeh Rezvan, M.D., for her tireless work interviewing nonpregnant women; to LeRoy Nelson for his data analysis; to the staff in each of the clinics who welcomed us; and to the women and men who answered our surveys.

### Declarations

Anita L. Nelson, M.D., declares that she has the following affiliations. Grants and research: Agile Therapeutic, ContraMed/Sebela, Evofem Inc., FHI (MonaLisa), Mithra Pharma. Honoraria/Speakers Bureau: Bayer,

**Table 4**

Proportion of female respondents reporting that pregnancy is more hazardous to health than oral contraceptives

Variable	Total number in category	Respondents reporting pregnancy greater hazard Percent (%)
<b>Total all respondents</b>	1712	29.1
<b>Age in years</b>		
≤25	487	28.1
26–30	416	31.0
31–35	337	30.9
≥36	472	27.3
		p=.54
<b>Educational level (highest grade completed)</b>		
≤ 11	240	26.3
12, GED	319	25.1
13–15	460	30.0
16	423	29.1
>16	268	35.4
		p=.07
<b>Language (all women)</b>		
English	1424	30.8
Spanish	280	20.8
		p≤.001
<b>Language (nonpregnant women)</b>		
English	1265	31.8
Spanish	263	21.3
		p≤.001
<b>Parity</b>		
Nulliparous	715	31.7
Parous	997	27.3
		p=.45
<b>Currently pregnant women</b>		
No	184	22.3
Yes	1528	30.0
		p=.03

CooperSurgical, Merck. Consultant/Advisory Board: Agile Therapeutics, AMAG Pharma, Bayer, ContraMed/Sebela, CooperSurgical, Merck.

None of the other authors has any relevant affiliations to declare.

### References

- [1] Daniels K, Mosher WD. Contraceptive methods women have ever used. United States, 1982–2010. *Natl Health Stat Report* 2013;14:1–15.
- [2] Kakaiya R, Lopez LL, Nelson AL. Women's perceptions of contraceptive efficacy and safety. *Contraception and Reprod Med* 2017;2:19.
- [3] Peipert JF, Zhao Q, Allsworth JE, Petrosky E, Madden T, Eisenberg D, et al. Continuation and satisfaction of reversible contraception. *Obstet Gynecol* 2011;117:1105–13.
- [4] Dehlendorf C, Fitzpatrick J, Steinauer J, et al. Development and field testing of a decision support tool to facilitate shared decision making in contraceptive counseling. *Patient Educ Couns* 2017;100:1374–81.
- [5] Maguire K, Westhoff C. The state of hormonal contraception today: established and emerging noncontraceptive health benefits. *Am J Obstet Gynecol* 2011;4:54–8 Suppl.
- [6] Nelson AL, Shabaik S, Xandre P, Awaida JY. Reproductive life planning and preconception care 2015: attitudes of English-speaking family planning patients. *J Womens Health (Larchmt)* 2016;25:832–9.
- [7] Xandre P, Shabaik S, Nelson AL. Reproductive life plans of Spanish speaking women. *Womens's. Healthcare www.NPWomensHEALTHCARE.com* 2015;2:1–4.
- [8] Nelson AL, Rezvan A. A pilot study of women's knowledge of pregnancy health risks: implications for contraception. *Contraception* 2012;85(1):78–82.
- [9] American College of Obstetrician and Gynecologists Practice perspectives: ACOG poll reveals doubts on oral contraceptive safety, ACOG Newsletter 1994:38.
- [10] Peipert JF, Gutmann J. Oral contraceptive risk assessment: a survey of 247 educated women. *Obstet Gynecol* 1993;82:112–7.
- [11] . Shabaik S, Awaida J, Xandre P, Nelson AL. Contraceptive beliefs and practices of Muslim women surveyed in southern California. *J Womens Health (Larchmt)*. Accepted 04/10/2019.