



Commentary

Breast Implants, Self-Esteem, Quality of Life, and the Risk of Suicide


 Diana M. Zuckerman, PhD^{a,*}, Caitlin E. Kennedy, PhD^{a,1}, Mishka Terplan, MD, MPH^b
^a National Center for Health Research, Washington, District of Columbia

^b Department of Epidemiology and Public Health, University of Maryland School of Medicine, Baltimore, Maryland

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Breast augmentation is the most common cosmetic surgery in the United States, with approximately 300,000 surgeries annually ([American Society for Aesthetic Plastic Surgery, 2012](#)). Many women seek breast augmentation to improve their lives, self-esteem, or relationships ([Crerand, Infield, & Sarwer, 2007](#)); however, numerous research reviews have concluded that suicide rates are higher for women with implants ([Crerand et al., 2007](#); [Lipworth & McLaughlin, 2010](#); [McLaughlin, Lipworth, Murphy, & Walker, 2007](#); [Rohrich, Adams, & Potter, 2007](#); [Sansone & Sansone, 2007](#); [Sarwer, Brown, & Evans, 2007](#)). These studies raise a key question: Do implants increase the risk of suicide or do preexisting mental health problems increase the likelihood of undergoing breast implant surgery and also increase suicide risk?

Several researchers and plastic surgeons have suggested that implants are a symptom of depression, rather than a cause ([Lipworth & McLaughlin, 2010](#); [Rohrich et al., 2007](#); [Sarwer et al., 2007](#)) or that higher suicide rates were confounded by age, smoking, and marital status ([Joiner, 2003](#); [Spear & Heden, 2007](#)), despite similar suicide rates when these factors were statistically controlled ([Brinton, Lubin, Burich, Colton, & Hoover, 2001](#); [Koot, Peeters, Granath, Grobbee, & Nyren, 2003](#); [Pukkala et al., 2003](#)). The authors that challenged the link between suicide and implants disclosed financial ties to breast implant manufacturers or cosmetic surgery. Although suggesting the need for better research, they did not cite relevant studies of women with implants that could help to explain the link to suicide.

This commentary is the first to synthesize information from the studies of suicide and breast implants with relevant studies measuring self-esteem, self-concept, mental health, and quality

of life among women before and after getting breast implants. We sought to review what is known about the link between breast implants and suicide and identify credible hypotheses deserving of future study.

Updating and Examining the Data on Implants and Suicide

We systematically reviewed the published literature on suicide and breast implants, searching keywords in bibliographic databases (Embase, PubMed, PsycInfo, and Scopus) to capture English-language, peer-reviewed literature. Two authors (C.E.K. and M.T.) conducted full-text review of 52 articles; seven were based on original data, and five of these had been included in at least one previous literature review.

Suicide Trends

All seven studies ([Table 1](#)) found higher suicide rates among women with implants, whether compared with women of similar ages and races who underwent other plastic surgery ([Brinton, Lubin, Murray, Colton, & Hoover, 2006](#); [Jacobsen et al., 2004](#); [Villeneuve et al., 2006](#)); compared with women of the same age using national mortality statistics from the same countries (Sweden: [Lipworth et al., 2007](#); Finland: [Pukkala et al., 2003](#)); in postmenopausal women with implants compared with those without implants ([Rubin et al., 2010](#))²; or in mastectomy patients with implants compared with mastectomy patients without implants ([Le et al., 2005](#)). The ratio of observed-to-expected deaths (standardized mortality ratios) for cosmetic augmentation patients ranged from 1.6 to 3.2 in five studies with those comparisons.

Suicide rates were highest for the two studies not included in previous literature reviews. Our statistical analysis based on the [Rubin et al. \(2010\)](#) study found that postmenopausal women

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* Correspondence to: Diana M. Zuckerman, PhD, National Center for Health Research, 1001 Connecticut Ave NW, Suite 1100, Washington, DC 20036. Phone: 1-202-223-4000; fax: 1-202-223-4242.

E-mail address: dz@center4research.org (D.M. Zuckerman).

¹ Present Address: Google, 1600 Amphitheatre Parkway, Mountain View, CA 94043.

² Because no statistical analysis was done in original study, we conducted a Fisher's exact test.

Table 1
Outcomes of Seven Studies Examining Breast Implants and Suicide

Author (year)	Study Objective	Reason for Surgery	Location	Study Design	Comparison Group	Follow-up Period	Outcome (suicide)
Brinton et al. (2006)	Examine mortality among women with breast implants	Cosmetic	North America (United States)	Mortality rates in 1) women with cosmetic breast implants ($n = 12,144$); 2) women with other plastic surgery ($n = 3,614$; via medical records and National Death Index database)	Women with other first plastic surgeries (nonbreast implants)	M = 20.5 years (for implants); M = 18.9 years (for control group)	Implant group: 29 suicides (0.24% of group), SMR = 1.63 (95% CI, 1.1-2.3); other plastic surgery group: 4 suicides (0.11% of group), SMR = 0.85 (95% CI, 0.3-2.3)
Jacobsen et al. (2004)	Examine mortality among Danish women with breast implants (also: examine the baseline prevalence of psychopathological disorders)	Cosmetic	Europe (Denmark)	Mortality rates in 1) women with cosmetic breast implants ($n = 2,761$); 2) women who had breast reduction surgery ($n = 7,071$); 3) women with other plastic surgery ($n = 1,736$; via Danish National Mortality Files)	2 groups: 1) women who had breast reduction surgery; 2) women with other plastic surgery	Overall mean = 11.5 years	Implant group: 14 suicides (0.51% of group), SMR = 3.1 (95% CI, 1.7-5.2); breast reduction group: 22 suicides (0.31% of group), SMR = 1.6 (95% CI, 1.0-2.5); other plastic surgery group: 0 suicides (0% of group), SMR = 0.0 (95% CI, 0.00-1.5)
Le et al. (2005)	Examine mortality of women with breast implants following mastectomy	Reconstruction after mastectomy	North America (United States)	Mortality rates in 1) breast reconstruction patients ($n = 1,018$); 2) breast cancer patients without reconstruction implants ($n = 3,950$; via Surveillance, Epidemiology and End Results Breast Implant Surveillance Study)	Women who had been diagnosed with breast cancer, had a mastectomy, but did not receive breast reconstruction implants	4-11 years since breast cancer diagnosis	Implant group: 3 suicides (0.29% of group); no implant group: 1 suicide (0.03% of group); implant group's suicide rate significantly higher than that of no implant group ($p = .02$)
Lipworth et al. (2007)	Examine mortality among Swedish women with breast implants	Cosmetic	Europe (Sweden)	Mortality rates in women with cosmetic breast implants ($n = 3,527$; via Swedish Inpatient Registry and official Swedish death statistics)	No comparison group (compared with the general female population's rates, using age and calendar year specific person-years)	M = 18.7 years (range, 0.1-37.8)	Implant group: 24 suicides (0.68% of group), SMR = 3.0 (95% CI, 1.9-4.5)
Pukkala et al. (2003)	Examine mortality among Finnish women with breast implants	Cosmetic	Europe (Finland)	Mortality rates in women with cosmetic breast implants ($n = 2,166$; via medical records and nationwide mortality database of Statistics Finland)	No comparison group (compared with the general female population's rates, using age and calendar year specific person-years)	M = 10.3 years	Implant group: 10 suicides (0.46% of group), SMR = 3.19 (95% CI, 1.53-5.86)
Rubin et al. (2010)	Examine the health outcomes, health behaviors, morbidity, and mortality of women with breast implants	Cosmetic	North America (United States)	Health outcomes, health behaviors, morbidity, and mortality rates in 1) women with cosmetic breast implants ($n = 1,257$); 2) women without breast implants ($n = 86,686$; via NIH's Women's Health Initiative study and annual follow-up surveys)	Women's Health Initiative participants without breast implants	Varied; for most, it had been 20-30 years from implant surgery to beginning of study	Implant group: 3 suicides (0.24% of group); no implant group: 20 suicides (0.02% of group); implant group's suicide rate significantly higher than that of the no implant group ($p < .01$)

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Table 1 (continued)

Author (year)	Study Objective	Reason for Surgery	Location	Study Design	Comparison Group	Follow-up Period	Outcome (suicide)
Villeneuve et al. (2006)	Examine mortality among Canadian women with breast implants	Cosmetic	North America (Canada)	Mortality rates in 1) women with cosmetic breast implants (n = 24,588); 2) women with other plastic surgery (n = 15,893; via medical records and Canadian Vital Statistics Database)	Women with other types of plastic surgery	1 year postoperative date through date of death or 12/31/97 (max possible range, 1–23 years)	Implant group: 58 suicides (0.24% of group), SMR = 1.73 (95% CI, 1.31–2.24); Other plastic surgery group: 33 suicides (0.21% of group), SMR = 1.55 (95% CI, 1.07–2.18)

Abbreviations: CI, confidence interval; SMR, standardized mortality ratio.

with cosmetic implants were 12 times as likely to commit suicide than postmenopausal women without implants ($p < .01$; Fisher's exact test). Among mastectomy patients, women with implants were almost 10 times as likely to commit suicide as women who did not undergo reconstruction with breast implants (Le et al., 2005).

Comparisons with other cosmetic surgery patients contradict the hypothesis that low self-esteem or depression predates augmentation surgery. Two of the three studies comparing augmentation patients with other female plastic surgery patients found that the latter had lower suicide rates than augmentation patients (Brinton et al., 2006; Jacobsen et al., 2004; Villeneuve et al., 2006), and two of the three studies found other female plastic surgery patients' suicide rates to be lower than that of the general female population when controlling for age (Brinton et al., 2006; Jacobsen et al., 2004) and race (Brinton et al., 2006). Women who underwent breast reduction surgery had a nonsignificant increased risk of suicide that was approximately one-half that for augmentation patients (Jacobsen et al., 2004). Villeneuve et al. (2006) found an increased risk of suicide in women who had undergone other types of plastic surgery that was somewhat lower than the suicide risk for women with breast implants.

Only two of the seven studies assessed depression, mental health, or quality of life. Jacobsen et al. (2004) found that Danish women who underwent augmentation surgery, particularly at public hospitals, were slightly more likely to have been admitted to a psychiatric hospital previously (8%) compared with breast reduction (5%) or other plastic surgery patients (6%). However, the difference is small, and Jacobsen et al. point out that some Danish public hospitals required a psychiatric diagnosis before the government health service would cover breast augmentation, thus creating an incentive to seek psychiatric care if women wanted free surgery. Moreover, only 7% of these psychiatric admissions were for depression or other affective disorders.

Rubin et al. (2010) assessed depression, mental health, and quality of life for women who had implants, but did not include comparison data before the implant surgery. They reported that women with implants were more depressed and "reported overall poorer quality of life and emotional well-being" than women without implants.

Demographic factors were influential, but all of the studies found increased suicide rates in women with implants compared with other women with similar demographic characteristics. The standardized mortality ratios for women with implants from Sweden (Lipworth et al., 2007), Denmark (Jacobsen et al., 2004), and Finland (Pukkala et al., 2003) were 3.0 or higher compared with other women in those same countries; this is almost twice the standardized mortality ratios of 1.6 to 1.7 for women with implants in the United States (Brinton et al., 2006) or Canada (Villeneuve et al., 2006). Age may also be influential; the greatest increases in suicide associated with implants were in postmenopausal women (Rubin et al., 2010) and mastectomy patients, whose average age was 47 years (Le et al., 2005). Two other studies noted that suicide risk was greatest for women who had their first augmentation surgery at the age of 40 or older (Brinton et al., 2006; Villeneuve et al., 2006).

Other studies of cosmetic surgery and mental health can shed light on the increase in suicides. Contrary to expectation, studies of women seeking augmentation or other cosmetic surgery have not found a higher prevalence of mental illness before the operation based on self-reports (Kjøller et al., 2003) or

standardized psychometric measures (Sarwer, Pertschuk, Wadden, & Whitaker, 1998; Sarwer, Nordmann, & Herbert, 2000). Claims that augmentation increases self-esteem are based on studies using self-reports after surgery rather than pre/post comparisons on validated measures (e.g., Swanson, 2013). Although it might seem logical that women choosing plastic surgery have low self-esteem and therefore might be more vulnerable to suicidal thoughts, there is no reason to assume that depression or low self-esteem is unique to women choosing breast implants but not other cosmetic surgery patients. Yet implant patients were consistently more likely to commit suicide than other cosmetic surgery patients.

Comparisons of women's self-esteem, self-concept, and quality of life before and 2 years after getting implants were analyzed in studies submitted to the U.S. Food and Drug Administration (FDA) by implant manufacturers and scrutinized by FDA scientists (FDA, 2005a, 2005b). The two companies, Inamed and Mentor, each analyzed data from three groups of women with implants: augmentation patients, reconstruction (postmastectomy) patients, and women who received replacement implants for either augmentation or reconstruction. Self-esteem on the Rosenberg Scale, positive self-concept on the Tennessee Self-Concept Scale, and quality of life on the Short Form-36 Health Survey Scale (SF-36) tended to be lower 2 years after implant surgery than before. In the Inamed study, the only improvement for all three groups was self-concept regarding feeling sexy (statistically significant for augmentation patients only).

Contrary to the hypothesis that women considering implants are depressed or have low self-esteem, the FDA noted that augmentation patients had higher self-esteem scores before getting implants than women in the general population. Even after women's self-esteem and positive self-concept scores decreased in most of the studies two years after getting implants, they were still higher than those of the average woman (FDA, 2005a, 2005b).

Suicide Among Mastectomy Patients

Breast cancer patients have an increased risk of suicide for up to 15 years after their cancer diagnosis (Riihimäki, Thomsen, Brandt, Sundquist, & Hemminki, 2012; Misono, Weiss, Fann, Redman, & Yueh, 2008). However, in the Le et al. (2005) study, the suicide rate was 10 times higher for implant (reconstruction) patients compared with other mastectomy patients. It is inappropriate to generalize based on one study. Nonetheless, it is worth noting that the study's mastectomy patients all had early stage breast cancer; therefore, they chose to undergo what most physicians would consider a medically unnecessary mastectomy instead of an equally effective lumpectomy that would not require an implant (Fisher et al., 1995). Reconstruction with implants immediately after mastectomy is often encouraged by surgeons, despite questions about its benefits (D'Souza, Darmanin, & Fedorowicz, 2011). A federal law requires insurance companies to cover postmastectomy reconstruction with implants (Women's Health and Cancer Rights Act of 1998), thus encouraging the procedure.

Could Implants Increase the Risk of Suicide?

Because data do not support the preexisting mental health problem hypothesis, is there evidence to support the hypothesis that breast implants may increase the risk of suicide? There are no well-designed long-term studies of implant

patients to measure postoperative issues that explain or predict suicide. However, von Soest, Kvalen, and Wichstrom (2012) found increased anxiety and depression symptoms in young women who had undergone cosmetic surgery compared with other young women, controlling for demographic traits. In another study (Breiting et al., 2004), women whose problem implants were removed and replaced were more likely to be taking antidepressants than women who still had their original implants. This study suggests depression could potentially stem from implant problems, but without comparison data before implants, no conclusions are possible. It may be relevant, however, that in the FDA analyses of manufacturers' studies, augmentation patients and revision patients reported lower scores on the SF-36 scale for "general health" self-concept 2 years after implants than before they underwent implant surgery (FDA, 2005a, 2005b). Health problems are not likely owing to aging in this young population. In the context of the other studies, these findings suggest that healthy women who undergo cosmetic surgery might find it difficult to cope with consequences or complications related to that surgery.

Implications for Practice and/or Policy

With millions of women with breast implants, consistent evidence that breast implants are associated with higher suicide rates requires careful scrutiny, including systematic measurement and longitudinal tracking of implant patients. Valid, reliable mental health screening should be administered before implant surgery to identify women who may be vulnerable to depression or suicide. The high suicide rate clearly suggests that breast implant surgery should not be considered a solution for low self-esteem or depression, as is sometimes suggested in advertisements and was policy in some European public hospitals and for British and Australian military women (Deans, 2001; Squires, 2007). Instead, implants should be considered with caution in these high-risk groups, and appropriate psychological counseling or treatment should be provided. Additionally, multiyear longitudinal studies of mastectomy reconstruction patients and cosmetic augmentation patients are needed, starting before their implant surgery, using validated depression, anxiety, and self-esteem measures, with interviews for those showing suicidal ideation. Such studies, conducted by independent researchers, would provide important information about the impact of implant surgery on women's mental health and suicides, by comparing them with women without breast implants, matched by health and demographic factors.

In conclusion, scientific evidence suggests that breast implants may have risks to mental health. Although suicide among women with implants is below 1% in every study, the rates ranging from 0.24% to 0.68% are significantly higher statistically and clinically than rates for comparable women without implants. Rigorous research is needed to better understand the consistent association between implants and suicide, and to determine how to decrease those risks for the 300,000 U.S. women who undergo implant surgery annually.

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Women's Health and Cancer Rights, 9 U.S.C. § 713 (a).

Author Descriptions

Diana M. Zuckerman, PhD, is the president of the National Center for Health Research. She is trained in clinical psychology as well as psychiatric and psychosocial epidemiology, with a focus on depression.

Caitlin E. Kennedy, PhD, is a user experience research assistant at Adecco at Google. She received a PhD in Applied Social Psychology from the George Washington University.

Mishka Terplan, MD, MPH, is a practicing physician and adjunct faculty member at the University of Maryland School of Medicine. He is board certified in Obstetrics and Gynecology and in Addiction Medicine.