

# Review of the evidence of harms caused by the use of non-therapeutic cosmetic procedures

2015

## Summary

### *Physical harms to the individual*

- It is evident that adverse events can occur following cosmetic procedures. Most of these are minor to moderate complications, such as local infections or haematomas. However, there are reports of more serious complications, and even death, following cosmetic surgery.

### *Psychological harms to the individual*

- The evidence of psychological harm caused to the individual is less clear. Numerous studies suggest good rates of satisfaction and psychosocial improvement following cosmetic procedures. However, these findings are often limited by the quality of the methodologies employed.
- Several epidemiological studies have shown an association between breast implants and an increased risk of suicide. Although the exact mechanics of this relationship are not clear, it has been suggested that this association may reflect the higher rate of pre-existing psychopathology that has been found in women seeking breast augmentation compared with the general population.
- There also appears to be certain groups of individuals that are more likely to suffer negative psychosocial outcomes following cosmetic procedures, especially those with pre-existing mental health disorders. Despite this, only a minority of practices routinely provide pre-operative assessment by a clinical psychologist.

### *Harms to society*

- This is the hardest area to find concrete evidence for, partly because it inevitably involves some type of value judgment regarding the rightful goals of society and/or medicine. However, the evidence does suggest that cosmetic procedures have increased in recent years, implying that they have become more acceptable.
- There is a significant body of evidence on the links between body satisfaction, perceived social pressure, and attitudes towards cosmetic surgery among girls and women, and the role that the media and advertising play in this interaction.

### *Quality of evidence*

- An overriding theme which emerged from this review is the general paucity of high quality evidence in this area, making the drawing of conclusions with any confidence problematic.

## Introduction

The aim of this review is to assess the extent to which harms (if any) are caused by the use of cosmetic procedures. In a scoping meeting in January 2015, it was thought that the fact that such harms exist should not simply be presumed, but that evidence of harm being caused is an important foundation upon which to ask further ethical questions as part of a wider project on cosmetic procedures that is currently being considered by the Council. The structure of this review is divided along the three broad categories of harm suggested at the meeting: physical harms to the individual; psychological harms to the individual; and wider harms to society. The evidence that is to follow is drawn from a number of sources, from individual case reports to systematic reviews to national surveys. Furthermore, it is not limited to the UK, but is rather drawn from an international perspective.

## Definitions

The term ‘cosmetic procedure’ is not easily defined. It is not a discrete area of practice, but rather an umbrella term that includes a huge variety of interventions, both surgical and non-surgical in nature, and exactly which procedures should be included within this term can vary between commentators. Cosmetic surgery, such as breast augmentation, and non-surgical interventions, such as botulinum toxin and dermal filler injections, are usually included, whereas, other ‘cosmetic’ procedures, such as body piercing, tattooing, and even make-up, are not. Similarly, reconstructive or plastic surgery following disease or trauma, such as breast reconstruction following mastectomy for breast cancer, are usually excluded. Distinctions are often drawn between ‘correction’ and ‘enhancement’ – a sense that one is returning an individual to a ‘normal’ state, whereas the other is improving a person beyond what is considered ‘normal’. However, these distinctions are not always clear, and can shift as social and cultural norms change.<sup>1</sup> For the purposes of this review, a cosmetic procedure is defined as a non-reconstructive procedure used to normalise or enhance the appearance of the body. However, it is acknowledged that this definition may not be entirely satisfactory.

## Physical harms to the individual

Physical harms to the individual were interpreted to denote any medical complications caused by cosmetic procedures. In healthcare, it is generally held that no intervention is completely without risk, and there is no reason to believe that

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<sup>1</sup> This is evidenced in the broad definition adopted by the Expert Group on the Regulation of Cosmetic Surgery: “Operations and other procedures that revise or change the appearance, colour, texture, structure, or position of bodily features, which most would consider otherwise to be within the broad range of ‘normal’ for that person.” See: Department of Health (2005) *Expert Group on the Regulation of Cosmetic Surgery: report to the Chief Medical Officer*, available at: [http://webarchive.nationalarchives.gov.uk/20081105143757/dh.gov.uk/en/publicationsandstatistics/publications/publicationspolicyandguidance/dh\\_4102046](http://webarchive.nationalarchives.gov.uk/20081105143757/dh.gov.uk/en/publicationsandstatistics/publications/publicationspolicyandguidance/dh_4102046), at page 3. This definition is later endorsed by the Review of the Regulation of Cosmetic Interventions headed by Sir Bruce Keogh, see: Department of Health (2013) *Review of the regulation of cosmetic interventions*, available at: <https://www.gov.uk/government/publications/review-of-the-regulation-of-cosmetic-interventions>. However, this definition hinges on a rather vague notion of what is considered ‘normal’ and neither report provides any clarity on this matter.

cosmetic procedures would be any different.<sup>2</sup> The Expert Group on the Regulation of Cosmetic Surgery considered evidence from a range of bodies and individuals, as well as the Healthcare Commission report, *An analysis of private cosmetic surgery provision in England for the Chief Medical Officer Sir Liam Donaldson*, and concluded that “the evidence that we reviewed suggested that avoidable harm is done to some patients,”<sup>3</sup> and that, “where that harm is avoidable, some harm is too much harm.”<sup>4</sup> The Department of Health *Review of the Regulation of Cosmetic Interventions* (Keogh Review) also conducted its own surveys of professional groups working in this area and found evidence of harm occurring.<sup>5</sup>

There is no central recording of information concerning the complications that arise from cosmetic procedures. Therefore, it is very difficult to accurately comment on the type or frequency of complications in general for the whole of the UK. The British Association of Aesthetic Plastic Surgeons (BAAPS) does conduct an annual audit of its members, including rates of complications, but estimates that its members only carry out 30-40% of cosmetic procedures in the UK.<sup>6</sup> Furthermore, different procedures can differ significantly in terms of their risk profiles, and rates of complications are often reported for individual interventions. The list of possible cosmetic procedures is too long to provide a comprehensive review of harms caused by all of them. Instead, data is provided for several of the more common interventions.

### *Breast augmentation*

Breast augmentation surgery is the most common type of cosmetic surgery performed in the UK.<sup>7</sup> The potential risks associated with breast implants were brought to the forefront of the public consciousness by the Poly Implant Prothèse (PIP) scandal, in which it was discovered that implants had been made with industrial silicone, rather than medical-grade filler, and were far more likely to rupture. This resulted in a global health scare, and the implants were subsequently

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<sup>2</sup> Mercer MN (2009) Clinical risk in aesthetic surgery *Clinical Risk* **15(6)**: 215-7: “all cosmetic treatments are medical interventions, and every medical intervention has a complication and failure rate.” For example, there are clinical risks common to any type of surgery, including infection, bleeding, and adverse reactions to general anaesthesia.

<sup>3</sup> Department of Health (2005) *Expert Group on the Regulation of Cosmetic Surgery: report to the Chief Medical Officer*, available at: [http://webarchive.nationalarchives.gov.uk/20081105143757/dh.gov.uk/en/publicationsandstatistics/publications/publicationspolicyandguidance/dh\\_4102046](http://webarchive.nationalarchives.gov.uk/20081105143757/dh.gov.uk/en/publicationsandstatistics/publications/publicationspolicyandguidance/dh_4102046), at page 1. For example, the Medical Protection Society reported receiving over twice as many claims for cosmetic surgery compared with general surgery; 70% of these were settled out of court (paragraph 47).

<sup>4</sup> Ibid, at paragraph 39.

<sup>5</sup> A survey of 86 GPs revealed over 900 reports of complications following cosmetic interventions, with botulinum toxin injections, laser, and dermal fillers being the most common cause. A survey of 57 plastic surgeons reported seeing 380 patients with complications from non-surgical treatments; two-thirds of the complications reported were deemed irreversible. See: Department of Health (2013) *Review of the regulation of cosmetic interventions*, available at: <https://www.gov.uk/government/publications/review-of-the-regulation-of-cosmetic-interventions>, at page 31).

<sup>6</sup> As the Keogh review puts it bluntly: “We do not know how many cosmetic procedures are carried out each year, by whom, or with what outcomes.” Ibid, at paragraph 3.7.

<sup>7</sup> It is estimated that over 30 000 procedures are carried out every year in the UK. See: NHS Choices (2014) *Breast implants*, available at: <http://www.nhs.uk/Conditions/Breast-implants/Pages/Introduction.aspx>.

banned in the UK in March 2010 by the Medicines and Healthcare Products Regulatory Agency (MHRA).<sup>8</sup>

Breast augmentation surgery is perhaps the most extensively researched of all cosmetic procedures. A number of complications have been reported in the literature following cosmetic breast surgery, with infection being cited as the leading cause of morbidity with an estimated incidence of 2-2.5%.<sup>9</sup> One of the largest surveys on breast augmentation procedures in the UK was conducted by BAAPS in 2008. This assessed the data from over 26,000 procedures carried out by members between 2002 and 2007, and revealed an average rate of infection and haematoma of 0.53% and 1.2%, respectively, as well as an annual re-operation rate of 2.06%.<sup>10</sup> A retrospective analysis of 3,002 women who had undergone primary aesthetic breast augmentation carried out by two surgeons in a UK hospital from 1996-2001 found an overall incidence of complications of 4.6%, with 1.6% of patients requiring re-operation.<sup>11</sup> In Denmark, there is a nationwide breast implant registry, which records data for women who have undergone breast augmentation since 1999 (Danish Registry for Plastic Surgery of the Breast). A study used this registry to identify 5,373 women who had undergone primary cosmetic breast surgery between 1999 and 2007, and found that 16.7% of the women had registered with an adverse event and 4.8% had required re-operation for a complication.<sup>12</sup> Nerve injury, abscess formation and serious complications requiring surgical intervention or hospitalisation have also been reported following fat grafting to the breast for cosmetic purposes.<sup>13</sup>

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<sup>8</sup> For more information on this, see: Department of Health (2012) *Poly Implant Prosthese (PIP) breast implants: final report of the Expert Group*, available at: <https://www.gov.uk/government/publications/poly-implant-prothese-pip-breast-implants-final-report-of-the-expert-group>; Department of Health (2012) *Poly Implant Prosthese (PIP) silicone breast implants: review of the actions of the Medicines and Healthcare products Regulatory Agency (MHRA) and Department of Health*, available at: <https://www.gov.uk/government/publications/pip-silicone-breast-implants-review-of-the-actions-of-the-mhra-and-department-of-health>.

<sup>9</sup> Other adverse effects reported after breast augmentation include: haematoma, seroma, wound dehiscence, infection, perforation of the skin, change in sensation, visible skin wrinkles, asymmetry or displacement of the implant, ptosis, swelling of the breast, hypertrophic scar, prolonged pain, implant rupture, capsular contracture, and silicone granuloma. See: Pittet B, Montandon D and Pittet D (2005) Infection in breast implants *The Lancet Infectious Diseases* **5**: 94-106.

<sup>10</sup> The British Association of Aesthetic and Plastic Surgeons (18 September 2008) *Surgeons reveal UK's largest ever breast augmentation survey*, available at: <http://baaps.org.uk/about-us/press-releases/404-surgeons-reveal-uks-largest-ever-breast-augmentation-survey>.

<sup>11</sup> Araco A, Gravante G, Araco F *et al.* (2007) A retrospective analysis of 3,000 primary aesthetic breast augmentations: postoperative complications and associated factors *Aesthetic Plastic Surgery* **31(5)**: 532-9. Complications included haematomas (1.5%), infections (1.1%), breast asymmetries (0.8%), rippling (0.7%), and capsular contractures (0.5%).

<sup>12</sup> Hvilsom GB, Hölmich LR, Henriksen TF *et al.* (2009) Local complications after cosmetic breast augmentation: results from the Danish Registry for Plastic Surgery of the breast *Plastic and Reconstructive Surgery* **124(3)**: 919-25. The most common complications in the short term (<30 days) were haematomas (1.1%) and infections (1.2%), whereas the most common adverse events longer term (within 5 years) were changes in sensation (8.7%) and asymmetry/displacement of the implant (5.2%). Within 5 years, 1.7% of women experienced a severe capsular contracture; displacement/asymmetry and capsular contracture were the most frequent indications for reoperation with removal or exchange of implant.

<sup>13</sup> Ducic I, Zakaria HM, Felder JM and Fantus S (2014) Nerve injuries in aesthetic breast surgery: systematic review and treatment options *Aesthetic Surgery Journal* **34(6)**: 841-56; Largo RD, Tchang LA, Mele V *et al.* (2014) Efficacy, safety and complications of autologous fat grafting to healthy breast tissue: a systematic review *Journal of Plastic, Reconstructive & Aesthetic Surgery* **67(4)**: 437-48; Rosing JH, Wong G, Wong MS *et al.* (2011) Autologous fat grafting for primary breast augmentation: a systematic review *Aesthetic Plastic Surgery* **35(5)**: 882-90.

Furthermore, although the epidemiological evidence does not suggest an association between breast implants and cancer,<sup>14</sup> there is evidence to suggest that breast augmentation adversely affects women who are later diagnosed with breast cancer in terms of post-diagnosis survival.<sup>15</sup> Women who have undergone breast augmentation have also been found to have a higher incidence of lactation insufficiency.<sup>16</sup>

### *Dermal fillers*

Dermal fillers are injections that are used to add volume and to reduce the appearance of wrinkles and creases in the skin. They are commonly used on areas of the face and to increase the volume and definition of the lips. Products have also been developed to enhance the volume and shape of other areas of the body, such as the breast and buttocks. One of the major concerns of the Keogh Review was the distinct lack of adequate regulation in regards to these products and their administration. As a result, it is difficult to accurately gauge their use, although it is thought to be on the increase.<sup>17</sup>

Injectable fillers can be classified as autologous, in which the patient's own tissue is used, or non-autologous, which can be further classified as permanent, semi-permanent, or temporary. The risks that are commonly associated with all forms of fillers include infection, bruising, bleeding, and under/over-correction.<sup>18</sup> Non-autologous fillers may also lead to an allergic reaction, granuloma formation, or bio-film formation, whereas autologous transplants carry little risk of these.<sup>19</sup> A serious complication that can occur with dermal filler injections is vascular occlusion (blockage of a blood vessel) from embolization or compression. Several case reports have documented the occurrence of permanent blindness as a result of retinal artery

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<sup>14</sup> McLaughlin JK, Lipworth L, Murphy DK and Walker PS (2007) The safety of silicone gel-filled breast implants: a review of the epidemiologic evidence *Annals of Plastic Surgery* **59(5)**: 569-80; Brisson J, Holowaty EJ, Villeneuve PJ *et al.* (2006) Cancer incidence in a cohort of Ontario and Quebec women having bilateral breast augmentation *International Journal of Cancer* **118(11)**: 2854-62.

<sup>15</sup> Lavigne E, Holowaty EJ, Pan SY *et al.* (2013) Breast cancer detection and survival among women with cosmetic breast implants: systematic review and meta-analysis of observational studies *BMJ* **346**: f2399.

<sup>16</sup> Michalopoulos K (2007) The effects of breast augmentation surgery on future ability to lactate *The Breast Journal* **13(1)**: 62-7.

<sup>17</sup> Department of Health (2013) *Review of the regulation of cosmetic interventions*, available at: <https://www.gov.uk/government/publications/review-of-the-regulation-of-cosmetic-interventions>, at page 5.

<sup>18</sup> *Ibid*, Appendix 2; Christensen L, Breiting V, Bjarnsholt T *et al.* (2013) Bacterial infection as a likely cause of adverse reactions to polyacrylamide hydrogel fillers in cosmetic surgery *Clinical Infectious Diseases* **56(10)**: 1438-44.

<sup>19</sup> Granuloma formation is an inflammatory response to a foreign body. Bio-film is a chronic, low-grade bacterial colonisation around the implant. See: Alijotas-Reig J and Garcia-Gimenez V (2008) Delayed immune-mediated adverse effects related to hyaluronic acid and acrylic hydrogel dermal fillers: clinical findings, long-term follow-up and review of the literature *Journal of the European Academy of Dermatology and Venereology* **22(2)**: 150-61; Christensen L, Breiting V, Janssen M, Vuust J and Hogdall E (2005) Adverse reactions to injectable soft tissue permanent fillers *Aesthetic Plastic Surgery* **29(1)**: 34-48; Carlos-Fabuel L, Marzal-Gamarra C, Martí-Álamo S and Mancheño-Franch A (2012) Foreign body granulomatous reactions to cosmetic fillers *Journal of Clinical and Experimental Dentistry* **4(4)**: e244.

occlusion following dermal filler injections to the face.<sup>20</sup> Other serious complications, such as tissue necrosis, pulmonary embolism, respiratory failure, anaphylaxis and death, have also been reported.<sup>21</sup>

In 2012, BAAPS conducted an internal poll of its members to assess the number of complications seen in the past year from dermal filler injections. This revealed that 69% of members had seen patients presenting with complications following temporary fillers, and 49% had seen complications following semi- or permanent fillers.<sup>22</sup> Furthermore, 41% of surgeons reported having seen patients who either required corrective surgery or were assessed as being untreatable due to the damage that had been caused.<sup>23</sup>

### *Liposuction*

Several studies have investigated the complications that can arise following liposuction. A survey of American cosmetic surgeons in the late 1990s revealed a mortality rate following liposuction as 1 in 5,000 procedures.<sup>24</sup> A retrospective analysis of severe or lethal complications related to cosmetic liposuction in Germany found that there were 72 cases of severe complications, including 23 deaths, from 1998 to 2002. Complications included necrotising fasciitis, gas gangrene, sepsis, haemorrhages, perforation of abdominal viscera, and pulmonary embolism.<sup>25</sup> A South Korean study reported the outcomes of liposuction performed on 2, 398

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<sup>20</sup> Lazzeri D, Agostini T, Figus M *et al.* (2012) Blindness following cosmetic injections of the face *Plastic and Reconstructive Surgery* **129(4)**: 995-1012; Carruthers JD, Fagien S, Rohrich RJ, Weinkle S and Carruthers A (2014) Blindness caused by cosmetic filler injection: a review of cause and therapy *Plastic and Reconstructive Surgery* **134(6)**: 1197-201.

<sup>21</sup> Ozturk CN, Li Y, Tung R *et al.* (2013) Complications following injection of soft-tissue fillers *Aesthetic Surgery Journal* **33(6)**: 862-77: estimated an incidence of 0.0001% for severe complications following soft-tissue filler injections. See also: Gurvits GE (2006) Silicone pneumonitis after a cosmetic augmentation procedure *New England Journal of Medicine* **354(2)**: 211-2; Clark RF, Cantrell FL, Pacal A, Chen W and Betten DP (2008) Subcutaneous silicone injection leading to multi-system organ failure *Clinical Toxicology* **46(9)**: 834-7; Restrepo CS, Artunduaga M, Carrillo JA *et al.* (2009) Silicone pulmonary embolism: report of 10 cases and review of the literature *Journal of Computer Assisted Tomography* **33**: 233-7.

<sup>22</sup> In regards to temporary fillers, 57% of members had seen 1-3 patients with complications, and 12% had seen 4-6 patients. For semi- or permanent fillers, 41% had seen 1-3 patients with complications, and 8% had seen 4-9 (one surgeon had seen more than 15 patients with complications from these type of fillers).

<sup>23</sup> The British Association of Aesthetic and Plastic Surgeons (24 November 2012) *Two out of three surgeons seeing botched filler ops*, available at: <http://baaps.org.uk/about-us/press-releases/1500-two-out-of-three-surgeons-seeing-botched-filler-ops>. 45% also reported seeing complications from the use of the filler Macrolane (sometimes referred to as the 'lunchtime boob job'), which had been removed from the market the year before.

<sup>24</sup> The most common cause was pulmonary embolism (23%). See: Grazer FM and de Jong RH (2000) Fatal outcomes from liposuction: census survey of cosmetic surgeons *Plastic and Reconstructive Surgery* **105(1)**: 436-46. Denise Hendry, wife of footballer Colin Hendry, suffered near-fatal complications, including a cardiac arrest, after her bowel was punctured during liposuction surgery, resulting in septicaemia and multiple organ failure. She later died in 2009 from meningitis, which she contracted whilst in hospital for abdominal surgery to correct the damage that had been caused. See: The Guardian (10 July 2009) *Colin Hendry's wife dies seven years after botched op*, available at: <http://www.theguardian.com/uk/2009/jul/10/scotland-football-colin-hendry-wife>.

<sup>25</sup> Lehnhardt M, Homann HH, Daigeler A *et al.* (2008) Major and lethal complications of liposuction: a review of 72 cases in Germany between 1998 and 2002 *Plastic and Reconstructive Surgery* **121(6)**: 396e-403e.

patients by the authors from March 1995 to December 2008. They found an overall complication rate of 8.6%, including four cases of skin necroses and two cases of infection. The most common complication was contour irregularity (depressions, lumps or ripples in the treated area).<sup>26</sup> A case series report of 600 liposuction procedures performed by an Indian surgical unit revealed a number of complications, including oedema, infection, over- and under-correction, asymmetry, skin necrosis, and blood loss requiring transfusion.<sup>27</sup> There have also been case reports of necrotising fasciitis, colonic injury, and small intestinal perforation following liposuction.<sup>28</sup>

### *Abdominoplasty*

An abdominoplasty, commonly referred to as a 'tummy tuck', is a procedure that alters the shape of the abdomen by removing body fat and excess skin. A study that analysed the case notes of 278 patients who underwent abdominoplasty carried out by four surgeons in a London plastic surgery unit found that 18% suffered from early complications, 25% experienced late complications, and 24% required revision surgery.<sup>29</sup> Abdominoplasty has also been associated with permanent nerve injury<sup>30</sup> and venous thromboembolism.<sup>31</sup>

### *Female genital cosmetic surgery*

Female genital cosmetic surgery describes a range of interventions that seek to alter the appearance or function of the female genitalia for aesthetic reasons. For example, a labiaplasty is a surgical procedure to reduce the size of the labia minora, which is increasingly being sought by some women.<sup>32</sup> These procedures are viewed

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<sup>26</sup> Kim YH, Cha SM, Naidu S and Hwang WJ (2011) Analysis of postoperative complications for superficial liposuction: a review of 2398 cases *Plastic and Reconstructive Surgery* **127(2)**: 863-71.

<sup>27</sup> Dixit VV and Wagh MS (2013) Unfavourable outcomes of liposuction and their management *Indian Journal of Plastic Surgery* **46(2)**: 377.

<sup>28</sup> For necrotising fasciitis, see: Park S-Y, Jeong W-K, Kim M-J *et al.* (2010) Necrotising fasciitis in both calves caused by *Aeromonas caviae* following aesthetic liposuction *Journal of Plastic, Reconstructive & Aesthetic Surgery* **63(9)**: e695-e8; Sharma D, Dalencourt G, Bitterly T and Benotti PN (2006) Small intestinal perforation and necrotizing fasciitis after abdominal liposuction *Aesthetic Plastic Surgery* **30(6)**: 712-6. For colonic injury, see: Raman SR, Pokala N, Cosgrove J and Jamil Z (2010) Colocutaneous fistula after suction lipoplasty: case report and literature review *Annals of Plastic Surgery* **64(4)**: 503-5. For intestinal perforation, see: Mallappa M, Rangaswamy M and Badiuddin MF (2007) Small intestinal perforation and peritonitis after liposuction *Aesthetic Plastic Surgery* **31(5)**: 589-92.

<sup>29</sup> Stewart K, Stewart D, Coghlan B *et al.* (2006) Complications of 278 consecutive abdominoplasties *Journal of Plastic, Reconstructive & Aesthetic Surgery* **59(11)**: 1152-5. Early complications included seroma (5%), haematoma (3%), infection (3%), skin or fat necrosis (2.5%), delayed healing (2%), pulmonary embolus (0.3%), and pancreatitis (0.3%). Late complications included 'dog ears' (12%), unsatisfactory scars (8%), and altered thigh sensation (0.3%). 3% of patients had more than one early complication and 6% had more than one late complication.

<sup>30</sup> Ducic I, Zakaria HM, Felder JM and Arnspiger S (2014) Abdominoplasty-related nerve injuries: systematic review and treatment options *Aesthetic Surgery Journal* **34(2)**: 284-97. 1.94% of patients suffered a specific nerve injury, with 1.02% sustaining a permanent injury.

<sup>31</sup> Hatfe DA, Trussler AP and Kenkel JM (2010) Procedural risk for venous thromboembolism in abdominal contouring surgery: a systematic review of the literature *Plastic and Reconstructive Surgery* **125(1)**: 352-62.

<sup>32</sup> Despite the fact that most labiaplasties are provided privately, the number performed by the NHS has increased five-fold over the past 10 years; 2,000 operations were carried out in 2010. See:

as controversial by some due to the perceived associations with female genital mutilation, a practice which is illegal in the UK under the Female Genital Mutilation Act 2003. A number of complications have been reported following labiaplasty<sup>33</sup> and 'vaginal tightening',<sup>34</sup> such as wound dehiscence, post-operative pain, infection and dyspareunia. A case of pulmonary embolism has also been reported following G-spot amplification ('G-Shot').<sup>35</sup>

### Other

Blepharoplasty (surgery to aesthetically modify the eyelids) has been associated with a number of complications including orbital haematoma, chemosis, blepharitis, and minor surgical revisions.<sup>36</sup> Complications of cervicofacial rhytidectomy ('facelift' surgery) include haematoma, skin necrosis, and wound dehiscence.<sup>37</sup> Cosmetic iris implantation can result in a number of sight-threatening complications, including corneal decompensation, intraocular pressure elevation, uveitis, hyphema, and permanent visual loss.<sup>38</sup> Negative pressure pulmonary oedema has been reported in two young patients following rhinoplasty ('nose job') and suction-assisted lipoplasty of the thighs and buttocks.<sup>39</sup>

## Psychological harms to the individual

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NHS Choices (2014) *Labiaplasty*, available at:

<http://www.nhs.uk/conditions/labiaplasty/Pages/Introduction.aspx>.

- <sup>33</sup> Likes WM, Sideri M, Haefner H, Cunningham P and Albani F (2008) Aesthetic practice of labial reduction *Journal of Lower Genital Tract Disease* **12(3)**: 210-6. The authors found wound dehiscence to be the most common complication with a rate of 5.4-13.3% of cases. Other reported complications included necrosis, infection and haematoma. See also: Iglesia CB, Yurteri-Kaplan L and Alinsod R (2013) Female genital cosmetic surgery: a review of techniques and outcomes *International Urogynecology Journal* **24(12)**: 1997-2009. The review found that complications occur in 2.65-6% of labiaplasties, including infection, haematoma, asymmetry, poor wound healing, wound dehiscence, over-resection, urinary retention, skin retraction, pain, and dyspareunia.
- <sup>34</sup> A study revealed that 16.6% of women had complications following vaginal tightening, including poor wound healing, dyspareunia, bleeding, pain, over-tightening, and bowel or bladder injury with resultant fistula formation, see: Goodman MP, Placik OJ, Benson III RH *et al.* (2010) A large multicenter outcome study of female genital plastic surgery *The Journal of Sexual Medicine* **7**: 1565-77.
- <sup>35</sup> G-spot amplification is a procedure that involves a dermal filler injection to increase the size of the G-spot in order to enhance sexual pleasure. See: Iglesia CB, Yurteri-Kaplan L and Alinsod R (2013) Female genital cosmetic surgery: a review of techniques and outcomes *International Urogynecology Journal* **24(12)**: 1997-2009.
- <sup>36</sup> Codner MA, Wolfli JN and Anzarut A (2008) Primary transcutaneous lower blepharoplasty with routine lateral canthal support: a comprehensive 10-year review *Plastic and Reconstructive Surgery* **121(1)**: 241-50.
- <sup>37</sup> Griffin JE and Jo C (2007) Complications after superficial plane cervicofacial rhytidectomy: a retrospective analysis of 178 consecutive facelifts and review of the literature *Journal of Oral and Maxillofacial Surgery* **65(11)**: 2227-34.
- <sup>38</sup> Sikder S, Davis SW, Holz H and Moshirfar M (2011) Complications of NewColorIris implantation in phakic eyes: a review *Clinical Ophthalmology* **5**: 435; Anderson JE, Grippo TM, Sbeity Z and Ritch R (2010) Serious complications of cosmetic NewColorIris implantation *Acta Ophthalmologica* **88(6)**: 700-4; George MK, Tsai JC and Loewen NA (2011) Bilateral irreversible severe vision loss from cosmetic iris implants *American Journal of Ophthalmology* **151(5)**: 872-5. e1.
- <sup>39</sup> Dieu T and Upjohn E (2003) Negative pressure pulmonary edema in healthy cosmetic surgery patients *Aesthetic Surgery Journal* **23(4)**: 270-3.

This review attempted to examine the evidence for psychological harms caused to the individual by undergoing a cosmetic procedure. This could include dissatisfaction or distress following an aesthetically unsuccessful result (or even an outcome that might otherwise be objectively thought of as successful), feelings of regret, or the impact on a range of psychological factors, such as body image or self-esteem.

### *Psychological benefit*

Much of the literature reviewed suggested that cosmetic procedures can have a positive effect on psychological wellbeing.<sup>40</sup> Breast augmentation has been shown to improve quality of life reported by patients, as well as improved sexuality, satisfaction with body image, and personal well-being.<sup>41</sup> Similarly, surgical and minimally invasive facial cosmetic procedures have also been associated with modest improvements in quality of life, self-esteem, and body image.<sup>42</sup> A large multicentre outcome study of female genital plastic surgery showed that 91.6% of patients were satisfied with the results of their surgery including significant subjective enhancement in sexual functioning for both women and their partners.<sup>43</sup> A number of studies have examined psychosocial outcomes following botulinum toxin treatment and suggest that these cosmetic procedures can have a positive impact.<sup>44</sup> Most patients appear to gain improvements in body image following cosmetic surgery, which are well

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<sup>40</sup> For example, see: McCarthy CM, Cano SJ, Klassen AF *et al.* (2012) The magnitude of effect of cosmetic breast augmentation on patient satisfaction and health-related quality of life *Plastic and Reconstructive Surgery* **130(1)**: 218-23. Also, see: Rankin M, Borah GL, Perry AW and Wey PD (1998) Quality-of-life outcomes after cosmetic surgery *Plastic and Reconstructive Surgery* **102(6)**: 2139-45.

<sup>41</sup> Papadopoulos N, Totis A, Kiriakidis D *et al.* (2014) Quality of life, personality changes, self esteem, and emotional stability after breast augmentation *European Journal of Plastic Surgery* **37(9)**: 479-88.

<sup>42</sup> Imadojemu S, Sarwer DB, Percec I *et al.* (2013) Influence of surgical and minimally invasive facial cosmetic procedures on psychosocial outcomes: a systematic review *JAMA Dermatology* **149(11)**: 1325-33. Although the authors acknowledged that the quality of the evidence available was limited.

<sup>43</sup> Goodman MP, Placik OJ, Benson III RH *et al.* (2010) A large multicenter outcome study of female genital plastic surgery *The Journal of Sexual Medicine* **7**: 1565-77. This is further supported by a review of the existing literature which found an overall patient satisfaction rate of 90-95% and sexual satisfaction of 80-85% in patients who had undergone vulvovaginal aesthetic surgery. See: Goodman MP (2011) Female genital cosmetic and plastic surgery: a review *The Journal of Sexual Medicine* **8(6)**: 1813-25.

<sup>44</sup> Dayan SH, Arkins JP, Patel AB and Gal TJ (2010) A double-blind, randomized, placebo-controlled health-outcomes survey of the effect of botulinum toxin type A injections on quality of life and self-esteem *Dermatologic Surgery* **36(s4)**: 2088-97; Sommer B, Zschocke I, Bergfeld D, Sattler G and Augustin M (2003) Satisfaction of patients after treatment with botulinum toxin for dynamic facial lines *Dermatologic Surgery* **29(5)**: 456-60; Fried RG, Werschler WP and Floirendo T (2009) The botulinum toxin experience: results of a patient self-report questionnaire *The Journal of Clinical and Aesthetic Dermatology* **2(11)**: 37; de Aquino MS, Haddad A and Ferreira LM (2013) Assessment of quality of life in patients who underwent minimally invasive cosmetic procedures *Aesthetic Plastic Surgery* **37(3)**: 497-503.

maintained over time.<sup>45</sup> Cosmetic surgery has also been shown to alleviate psychological distress.<sup>46</sup>

Despite the number of studies purporting to show the positive effect of cosmetic procedures on psychological well-being, there are a number of reasons to treat this evidence with caution. First, some of the evidence is of very limited methodological quality, including small sample sizes, poor study design, insufficient reporting of data, and failure to use standardised measures and control groups. Also, data was often collected from a single clinic, reducing the generalizability of the results and increasing the risk of bias.<sup>47</sup> For example, Alter conducted a study on patients that had undergone labial reductions, and concluded that the technique used “is a safe, effective procedure with few complications and high patient satisfaction.”<sup>48</sup> However, post-operative examinations 2 weeks after surgery were only performed on 123 of a total of 407 patients (of these, 12 underwent reoperation), and only 166 responded to the questionnaire, 30% and 41% respectively.<sup>49</sup> There appears to be no consideration that those who didn’t respond might have very contrasting experiences of the operation; in fact, whether someone had a positive or negative experience may very well have influenced their decision to respond or not.

Concerns have also been raised that these reports do not adequately take into account the influence of the researchers’ expectations on participants’ responses, and that the results could be explained by cognitive dissonance – considering the large sums of money that are often involved, patients might have a tendency to overstate their satisfaction with the results.<sup>50</sup> It has also been suggested that cosmetic patients may have unique difficulties in coping with post-operative psychological problems, and will seek further surgery rather than presenting to their

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<sup>45</sup> Sarwer DB, Gibbons LM, Magee L *et al.* (2005) A prospective, multi-site investigation of patient satisfaction and psychosocial status following cosmetic surgery *Aesthetic Surgery Journal* **25(3)**: 263-9; Sarwer DB, Infield AL, Baker JL *et al.* (2008) Two-year results of a prospective, multi-site investigation of patient satisfaction and psychosocial status following cosmetic surgery *Aesthetic Surgery Journal* **28(3)**: 245-50.

<sup>46</sup> Shridharani SM, Magarakis M, Manson PN and Rodriguez ED (2010) Psychology of plastic and reconstructive surgery: a systematic clinical review *Plastic and Reconstructive Surgery* **126(6)**: 2243-51.

<sup>47</sup> Paraskeva N (2014) Exploring the psychosocial impact of undergoing botulinum toxin treatment *Journal of Aesthetic Nursing* **3(1)**: 34-6. See also: Brunton G, Paraskeva N, Caird J *et al.* (2014) Psychosocial predictors, assessment, and outcomes of cosmetic procedures: a systematic rapid evidence assessment *Aesthetic Plastic Surgery* **38(5)**: 1030-40, at page 1035: “The confidence placed in these findings must be tempered by the quality of the underlying evidence. Authors of each of the located reviews that evaluated cosmetic procedures noted the low quality of the included primary studies, and our review team noted methodological limitations of either the included primary studies or the reviews from which they originated. These limitations included, e.g., retrospective study design; lack of a control or comparison group; and poor reporting of sample, sampling, and data collection methods, particularly data collection tools.”

<sup>48</sup> Alter GJ (2008) Aesthetic labia minora and clitoral hood reduction using extended central wedge resection *Plastic and Reconstructive Surgery* **122(6)**: 1780-9.

<sup>49</sup> Of the 166 who responded to the questionnaire, most were pleased with the results, 93% saw an improvement in self-esteem, 71% an improvement in their sex life, and 98% would undergo the surgery again.

<sup>50</sup> Liao LM, Michala L and Creighton S (2010) Labial surgery for well women: a review of the literature *BJOG: An International Journal of Obstetrics & Gynaecology* **117(1)**: 20-5, at page 22: “However carefully obtained, consumer satisfaction should not be confused with clinical effectiveness.”

GP or accessing mental health services.<sup>51</sup> There is evidence that a significant proportion of people undergoing cosmetic procedures are 'repeat patients', and accounts in the literature of addiction to cosmetic surgery.<sup>52</sup>

### *Psychological harm*

There is evidence to suggest that cosmetic procedures do cause psychological harm. A survey of reported patient outcomes by 312 plastic surgical nurses revealed that perceived patient psychological complications were higher than physical complications, with peri-operative anxiety and mild depression being most prevalent. Less frequent complications included patient disappointment and severe depression. The survey also showed that there was some relationship between physical complications and subsequent psychological complaints, and vice versa.<sup>53</sup> Social forums for people who have undergone cosmetic procedures also provide anecdotal evidence of the psychological damage and distress that can occur following these interventions.<sup>54</sup>

Perhaps the most striking observation in this area is the association between breast augmentation and an increased risk of suicide. Across seven epidemiological studies, the suicide rate of women who had undergone cosmetic breast surgery was approximately two to three times the rate of the general population.<sup>55</sup> The rate of suicide also appears to increase for women who have had implants for longer and

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<sup>51</sup> Bradbury E (2009) Clinical risk in cosmetic surgery *Clinical Risk* **15(6)**: 227-31, at page 227.

<sup>52</sup> For example, see: Suissa AJ (2008) Addiction to cosmetic surgery: representations and medicalization of the body *International Journal of Mental Health and Addiction* **6(4)**: 619-30. In 2013, 50% of people who underwent cosmetic procedures in America were repeat patients, and 44% had more than one procedure at the same time. See: American Society of Plastic Surgeons (2013) *2013 Plastic Surgery Statistics Report*, available at: <http://www.plasticsurgery.org/news/plastic-surgery-statistics/2013.html>.

<sup>53</sup> Rankin M and Borah G (2006) National plastic surgical nursing survey *Plastic Surgical Nursing* **26(4)**: 178-83.

<sup>54</sup> For example, see: SteadyHealth.com (2015) *Forum discussion: labiaplasty nightmare*, available at: [http://www.steadyhealth.com/Labiaplasty\\_Nightmare\\_t112049.html](http://www.steadyhealth.com/Labiaplasty_Nightmare_t112049.html).

<sup>55</sup> This relationship has been demonstrated in a number of different populations: American women (see: Brinton LA, Lubin JH, Burich MC, Colton T and Hoover RN (2001) Mortality among augmentation mammoplasty patients *Epidemiology* **12(3)**: 321-6; Brinton LA, Lubin JH, Murray MC, Colton T and Hoover RN (2006) Mortality rates among augmentation mammoplasty patients: an update *Epidemiology* **17(2)**: 162-9); Swedish women (see: Koot V, Peeters P, Granath F, Grobbee D and Nyrén O (2003) Total and cause specific mortality among Swedish women with cosmetic breast implants: prospective study *BMJ* **326(7388)**: 527-8; Lipworth L, Nyren O, Ye W *et al.* (2007) Excess mortality from suicide and other external causes of death among women with cosmetic breast implants *Annals of Plastic Surgery* **59(2)**: 119-23); Finnish women (see: Pukkala E, Kulmala I, Hovi S-L *et al.* (2003) Causes of death among Finnish women with cosmetic breast implants, 1971–2001 *Annals of Plastic Surgery* **51(4)**: 339-42); Danish women (Jacobsen PH, Hölmich LR, McLaughlin JK *et al.* (2004) Mortality and suicide among Danish women with cosmetic breast implants *Archives of Internal Medicine* **164(22)**: 2450-5); and Canadian women (Villeneuve PJ, Holowaty EJ, Brisson J *et al.* (2006) Mortality among Canadian women with cosmetic breast implants *American Journal of Epidemiology* **164(4)**: 334-41). For a discussion of these results, see: Sarwer D, Brown G and Evans D (2007) Cosmetic breast augmentation and suicide *The American Journal of Psychiatry* **164(7)**: 1006-13; Sarwer DB (2007) The psychological aspects of cosmetic breast augmentation *Plastic and Reconstructive Surgery* **120(7)**: 110S-7S; Crerand CE, Infield AL and Sarwer DB (2007) Psychological considerations in cosmetic breast augmentation *Plastic Surgical Nursing* **27(3)**: 146-54.

for those who were aged 40 or older when they underwent surgery.<sup>56</sup> It is difficult to clearly elucidate the mechanics of this relationship. Several explanations have been proposed, including distress caused by unmet or unrealistic pre-operative expectations, or post-operative complications. However, it has been suggested that the best explanation may be that women who undergo breast augmentation have a higher rate of pre-existing psychopathology.<sup>57</sup> There have been several studies that have examined the characteristics of women seeking breast augmentation. These have found that they are more likely to have had more sexual partners; younger age at first pregnancy; more terminations; higher rates of alcohol and tobacco use; more likely to have been admitted to a psychiatric hospital; higher rates of divorce; and below average body weights.<sup>58</sup> These findings suggest that there may be a “predisposition to suicidal behaviour in some women seeking augmentation which is activated by disturbed mood state and body identity crisis following augmentation. Within this context, surgery that changes the shape of secondary sexual characteristics can have a significant psychological impact on a vulnerable woman.”<sup>59</sup>

Overall, the evidence regarding psychological harms caused by cosmetic procedures is far from clear. Some studies have reported long-term positive effects on appearance satisfaction following cosmetic surgery.<sup>60</sup> However, a review of the literature by Cook et al found little evidence for enduring improvements in mental health, self-esteem, or body image, although the authors acknowledged that the negative conclusions reflect the methodological limitations of the published research, rather than negative evidence.<sup>61</sup> In general, although measures of self-esteem, satisfaction, and quality of life appear to improve following cosmetic procedures, the picture portrayed by measures of anxiety and depression, body image, psychological disturbance, emotional disorder, and mental health state is less clear.<sup>62</sup>

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<sup>56</sup> Sarwer DB (2007) The psychological aspects of cosmetic breast augmentation *Plastic and Reconstructive Surgery* **120(7)**: 110S-7S.

<sup>57</sup> Crerand CE, Infield AL and Sarwer DB (2007) Psychological considerations in cosmetic breast augmentation *Plastic Surgical Nursing* **27(3)**: 146-54.

<sup>58</sup> Bradbury E (2009) Clinical risk in cosmetic surgery *Clinical Risk* **15(6)**: 227-31, at page 227; Cook LS, Daling JR, Voigt LF *et al.* (1997) Characteristics of women with and without breast augmentation *JAMA* **277(20)**: 1612-7; Jacobsen PH, Hölmich LR, McLaughlin JK *et al.* (2004) Mortality and suicide among Danish women with cosmetic breast implants *Archives of Internal Medicine* **164(22)**: 2450-5.

<sup>59</sup> Bradbury E (2009) Clinical risk in cosmetic surgery *Clinical Risk* **15(6)**: 227-31, at page 227.

<sup>60</sup> For example, see: von Soest T, Kvaalem IL, Skolleborg KC and Roald HE (2011) Psychosocial changes after cosmetic surgery: a 5-year follow-up study *Plastic and Reconstructive Surgery* **128(3)**: 765-72. However, pre-operative psychological problems and low self-esteem were associated with more negative outcomes in some of the psychosocial measures. See also: Von Soest T, Kvaalem I, Roald H and Skolleborg K (2009) The effects of cosmetic surgery on body image, self-esteem, and psychological problems *Journal of Plastic, Reconstructive & Aesthetic Surgery* **62(10)**: 1238-44.

<sup>61</sup> Cook SA, Rosser R and Salmon P (2006) Is cosmetic surgery an effective psychotherapeutic intervention? A systematic review of the evidence *Journal of Plastic, Reconstructive & Aesthetic Surgery* **59(11)**: 1133-51.

<sup>62</sup> Brunton G, Paraskeva N, Caird J *et al.* (2014) Psychosocial predictors, assessment, and outcomes of cosmetic procedures: a systematic rapid evidence assessment *Aesthetic Plastic Surgery* **38(5)**: 1030-40. For example, a population-based survey of Norwegian women found that symptoms of depression and anxiety, deliberate self-harm, parasuicide, and illicit drug use predicted prospective cosmetic surgery. Furthermore, those who underwent surgery experienced a greater increase in symptoms of depression, anxiety, and eating problems, and increased alcohol use compared with non-patients. See: von Soest T, Kvaalem IL and Wichstrøm L (2012) Predictors of cosmetic surgery

What does emerge consistently from the evidence however, is that some groups of patients may be more at risk of suffering psychological harm than others. Most patients that undergo cosmetic procedures are female.<sup>63</sup> Furthermore, having a violent partner and dieting have been strongly associated with undergoing cosmetic surgery, and being verbally abused, taking medication for sleep or anxiety, higher levels of stress and other forms of poor mental health have been moderately associated.<sup>64</sup> In addition, a number of factors have been associated with poor psychological outcomes, including having a procedure to address relationship issues, unrealistic expectations, and dissatisfaction with previous cosmetic surgery, as well as having a history of depression, low self-esteem, or anxiety.<sup>65</sup>

An area that has received particular attention is body dysmorphic disorder (BDD) in the context of cosmetic procedures. BDD is characterised by a preoccupation with an imagined or minor defect, which causes significant emotional distress and impairment in functioning. Studies have suggested that 5-15% of patients seeking aesthetic medical treatments suffer from BDD.<sup>66</sup> However, cosmetic surgery is generally reported to be ineffective for these patients, with some suggesting that BDD should be considered a contraindication to such treatments.<sup>67</sup> Despite this evidence, the National Confidential Enquiry into Patient Outcome and Death (NCEPOD) report on cosmetic procedures found that only a third of the sites who responded carried out routine psychological evaluation of patients prior to surgery, and in only 4% of those sites were the assessments performed by a clinical psychologist.<sup>68</sup>

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and its effects on psychological factors and mental health: a population-based follow-up study among Norwegian females *Psychological Medicine* **42(3)**: 617-26.

<sup>63</sup> According to BAAPS figures, 91% of cosmetic procedures carried out by members in 2014 were on women. See: The British Association of Aesthetic and Plastic Surgeons (26 January 2015) *Tweak not tuck*, available at: <http://baaps.org.uk/about-us/audit/2040-auto-generate-from-title>.

<sup>64</sup> Schofield M, Hussain R, Loxton D and Miller Z (2002) Psychosocial and health behavioural covariates of cosmetic surgery: Women's Health Australia study *Journal of Health Psychology* **7(4)**: 445-57.

<sup>65</sup> Honigman RJ, Phillips KA and Castle DJ (2004) A review of psychosocial outcomes for patients seeking cosmetic surgery *Plastic and Reconstructive Surgery* **113(4)**: 1229-37; Department of Health (2013) *Review of the regulation of cosmetic interventions*, available at: <https://www.gov.uk/government/publications/review-of-the-regulation-of-cosmetic-interventions>, at paragraph 5.11; Brunton G, Paraskeva N, Caird J *et al.* (2014) Psychosocial predictors, assessment, and outcomes of cosmetic procedures: a systematic rapid evidence assessment *Aesthetic Plastic Surgery* **38(5)**: 1030-40.

<sup>66</sup> Sarwer DB and Spitzer JC (2012) Body image dysmorphic disorder in persons who undergo aesthetic medical treatments *Aesthetic Surgery Journal* **32(8)**: 999-1009.

<sup>67</sup> One study revealed that only 3.6% of cosmetic treatments resulted in an improvement in BDD symptoms, see: Crerand CE, Phillips KA, Menard W and Fay C (2005) Nonpsychiatric medical treatment of body dysmorphic disorder *Psychosomatics* **46(6)**: 549-55. Another study found that 81% of BDD patients were dissatisfied following surgery, see: Veale D, Boocock A, Gournay K *et al.* (1996) Body dysmorphic disorder. A survey of fifty cases *The British Journal of Psychiatry* **169(2)**: 196-201. See also: Tignol J, Biraben-Gotzamanis L, Martin-Guehl C, Grabot D and Auouizerate B (2007) Body dysmorphic disorder and cosmetic surgery: evolution of 24 subjects with a minimal defect in appearance 5 years after their request for cosmetic surgery *European Psychiatry* **22(8)**: 520-4.

<sup>68</sup> Department of Health (2013) *Review of the regulation of cosmetic interventions*, available at: <https://www.gov.uk/government/publications/review-of-the-regulation-of-cosmetic-interventions>, at paragraph 5.13.

## Harms to society

Potential harms to society might include the ‘normalisation’ of cosmetic procedures (e.g. evidence for changing attitudes to the use of cosmetic procedures); evidence for shifting attitudes regarding notions of ‘beauty’ or ‘normalness’; diversion of state resources, such as the cost to the NHS of treating patients who have suffered complications from cosmetic surgery; and the impact on the public’s perception of the medical profession. This is the hardest area to find empirical evidence for because the outcomes are more difficult to measure objectively.<sup>69</sup> Furthermore, in order to be considered harmful to society, these outcomes invariably require some form of moral judgement regarding society’s values or the ‘rightful goals’ of medicine. They are not necessarily harms in isolation. The discussion of these value judgements is beyond the scope of this review. Instead, evidence is presented that highlights shifting attitudes within society regarding cosmetic surgery, and estimations of costs incurred by the NHS, and then leaves it open to debate as to whether these trends should be regarded as detrimental to society.

In 2013, the Keogh Review concluded that cosmetic procedures have been normalised, and that, although once undertaken discretely, “now people will admit to having had procedures and even celebrate them.”<sup>70</sup> This conclusion was partly based on research commissioned by the review on the attitudes of practitioners and the general public, which suggested that “a wide range of influences, including media coverage of celebrities and their cosmetic interventions, reality TV programmes and the wider broadcasting of cosmetic procedures, alongside the increasing availability of and access to cosmetic interventions, are coming together to create a climate in which having a cosmetic procedure is increasingly regarded as normal and the associated risks are often underestimated. These factors also result in changing aspirations and ideals regarding body image, with some evidence that this results in greater salience for cosmetic intervention among the young.”<sup>71</sup> Indeed, reported statistics suggest that the use of these procedures has markedly increased over the past decade.<sup>72</sup> In 2004, BAAPS’s annual audit of its members revealed that 16,367

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<sup>69</sup> Although there are various accounts, particularly in the feminist literature, alluding to the potential harms of the growing normalisation of cosmetic surgery. For example, see: Brooks A (2004) “Under the knife and proud of it:” an analysis of the normalization of cosmetic surgery *Critical Sociology* **30(2)**: 207-39; Banet-Weiser S and Portwood-Stacer L (2006) ‘I just want to be me again!’ Beauty pageants, reality television and post-feminism *Feminist Theory* **7(2)**: 255-72.

<sup>70</sup> Department of Health (2013) *Review of the regulation of cosmetic interventions*, available at: <https://www.gov.uk/government/publications/review-of-the-regulation-of-cosmetic-interventions>, at paragraph 1.4.

<sup>71</sup> Department of Health (2013) *Regulation of cosmetic interventions: Research among the general public and practitioners*, available at: <https://www.gov.uk/government/publications/review-of-the-regulation-of-cosmetic-interventions>, at page 2. This was further evidenced in research that focused on the views of teenage girls: “For the girls, as with the full sample in the main research, there is recognition that cosmetic interventions, particularly of the less serious, non-surgical type, have become so normalised that girls are often surprised to find that procedures like teeth whitening are classed as cosmetic interventions at all.” See: Department of Health (2013) *Regulation of cosmetic interventions: Research among teenage girls*, available at: <https://www.gov.uk/government/publications/review-of-the-regulation-of-cosmetic-interventions>, at page 2.

<sup>72</sup> The industry was worth £2.3 billion in 2010, and this is estimated to increase to £3.6 billion in 2015. See: Department of Health (2013) *Review of the regulation of cosmetic interventions*, available at: <https://www.gov.uk/government/publications/review-of-the-regulation-of-cosmetic-interventions>, at page 5.

cosmetic procedures had been performed. In 2013, this number had increased to 50,122.<sup>73</sup> In America, there were more than 10 million surgical and non-surgical cosmetic procedures performed in 2014, a 274% increase since 1997, including a 508% increase in non-surgical interventions.<sup>74</sup> The fact that cosmetic procedures have been on the rise suggests that there is an increasing acceptance of their use amongst society.

There have been several surveys that have attempted to gauge prevailing attitudes towards cosmetic procedures.<sup>75</sup> A 2013 survey of girls' attitudes by Girlguiding found that 33% of 11-21 year-olds are unhappy with the way they looked and 27% would consider cosmetic surgery.<sup>76</sup> A study that examined the views of adolescent girls in the UK towards cosmetic surgery found that appearance dissatisfaction was common to many of the girls, but that acceptability of cosmetic surgery varied according to the reasons for having it. Despite the mixed responses amongst the girls as to whether they would have surgery themselves, many felt that their peers would consider it, and that the biggest perceived barrier was financial cost, rather than the potential complications. The media was perceived to exert a significant influence on their peers, leading to its normalisation and setting a 'benchmark' for what is considered an acceptable appearance. In particular, the media was felt to glamorise cosmetic surgery, with a strong emphasis on the psychological benefits, and little regard for the risks involved.<sup>77</sup> There is also evidence that attitudes among

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<sup>73</sup> The British Association of Aesthetic and Plastic Surgeons (24 January 2005) *British Association of Aesthetic Plastic Surgeons announce annual audit results*, available at: <http://baaps.org.uk/about-us/audit/779-british-association-of-aesthetic-plastic-surgeons-announce-annual-audit-results>; The British Association of Aesthetic and Plastic Surgeons (3 February 2014) *Britain sucks*, available at: <http://baaps.org.uk/about-us/audit/1856-britain-sucks>. The latest figures from BAAPS for 2014 show a drop in the number of procedures compared with 2013. However, these statistics only take into account surgical procedures carried out by members, and does not include non-surgical interventions, such as dermal fillers and botulinum toxin injections, which are estimated to account for 90% of procedures performed and 75% of the market value. See: Department of Health (2013) *Review of the regulation of cosmetic interventions*, available at: <https://www.gov.uk/government/publications/review-of-the-regulation-of-cosmetic-interventions>, at page p5. The Keogh review of cosmetic procedures was concerned about the state of the regulatory system in place for many of these procedures, particularly dermal fillers, which are almost entirely unregulated and therefore very difficult to obtain accurate statistics for.

<sup>74</sup> The American Society for Aesthetic Plastic Surgery (2014), available at: <http://www.surgery.org/sites/default/files/2014-Stats.pdf>.

<sup>75</sup> A poll of 197 members of the general public in the UK found that 47% had considered some form of cosmetic surgery, and 97% of those would consider going abroad for it, mainly for cost reasons. See: Nassab R, Hamnett N, Nelson K *et al.* (2010) Cosmetic tourism: public opinion and analysis of information and content available on the Internet *Aesthetic Surgery Journal* **30(3)**: 465-9. A survey of 559 female college students in America revealed that 5% had undergone cosmetic surgery, two-thirds knew someone else that had undergone a procedure, and one-third had a family member who had. See: Sarwer DB, Cash TF, Magee L *et al.* (2005) Female college students and cosmetic surgery: an investigation of experiences, attitudes, and body image *Plastic and Reconstructive Surgery* **115(3)**: 931-8. See also: Koning M, Zeijlmans IA, Bouman TK and van der Lei B (2009) Female attitudes regarding labia minora appearance and reduction with consideration of media influence *Aesthetic Surgery Journal* **29(1)**: 65-71.

<sup>76</sup> Girlguiding (2013) *Girls' attitudes survey: what girls say about equality for girls*, available at: [http://girlsattitudes.girlguiding.org.uk/video/girls\\_attitudes\\_video.aspx](http://girlsattitudes.girlguiding.org.uk/video/girls_attitudes_video.aspx). The number of girls who are unhappy with the way they look has increased steadily from 2011 (26%) and 2012 (29%).

<sup>77</sup> Ashikali E-M, Dittmar H and Ayers S (2014) Adolescent girls' views on cosmetic surgery: a focus group study *Journal of Health Psychology*: Published online first (03 March). Published online

physicians reflect those of the wider society, and can influence their clinical decision-making.<sup>78</sup>

With this increasing demand for cosmetic procedures, concerns have also been raised that the potential risks of the surgery have been trivialised. For example, a national survey by BAPRAS found that 24% of people do not check their surgeon's credentials, 21% are not aware of the risks, 22% are not clear of the potential outcomes before going ahead, and 27% are not aware if any care is available should anything go wrong.<sup>79</sup> Furthermore, cosmetic surgery is often perceived to be more temporary and less technically difficult than plastic or reconstructive surgery, with fewer risks, shorter recovery times, and less pain.<sup>80</sup>

A significant amount of work has suggested that there are strong links between body satisfaction, perceived social pressure, internalisation of media messages and 'thin-ideals', and an interest in cosmetic surgery.<sup>81</sup> Media exposure, vicarious experience, and importance of appearance to self-worth has been positively associated with approval and future likelihood of cosmetic surgery in women.<sup>82</sup> Similarly, more frequent experiences of sexual objectification, greater self-surveillance, and higher body shame have also been associated with greater consideration of undergoing a cosmetic procedure.<sup>83</sup> Questionnaire data from a sample of 907 Norwegian women aged 22-55 revealed that body image, a history of teasing, acceptance of cosmetic surgery in the individual's environment, and self-monitoring were all associated with

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<sup>78</sup> In one Dutch study, 90% of the physicians surveyed felt that a vulva with very small labia minora represents society's ideal. Plastic surgeons were more likely to regard the picture with the largest labia minora as distasteful and unnatural, compared with GPs and gynaecologists, and regard such a woman as a candidate for labiaplasty. Furthermore, plastic surgeons were more open to performing reductions regardless of size or physical complaints, and male physicians were more likely to opt for surgical reductions compared with female physicians. See: Reitsma W, Mourits MJ, Koning M, Pascal A and van der Lei B (2011) No (wo) man is an island - the influence of physicians' personal predisposition to labia minora appearance on their clinical decision making: a cross-sectional survey *The Journal of Sexual Medicine* **8(8)**: 2377-85.

<sup>79</sup> British Association of Plastic Reconstructive and Aesthetic Surgeons (2015) *Our research: worrying findings about cosmetic surgery choices in the UK*, available at: <http://www.bapras.org.uk/public/think-over-before-you-make-over/our-research-worrying-findings>.

<sup>80</sup> Hamilton GS, Carrithers JS and Karnell LH (2004) Public perception of the terms cosmetic, plastic, and reconstructive surgery *Archives of Facial Plastic Surgery* **6(5)**: 315-20.

<sup>81</sup> For example, see: Nerini A, Matera C and Stefanile C (2014) Psychosocial predictors in consideration of cosmetic surgery among women *Aesthetic Plastic Surgery* **38(2)**: 461-6; Markey CN and Markey PM (2009) Correlates of young women's interest in obtaining cosmetic surgery *Sex Roles* **61(3-4)**: 158-66; Harper B and Tiggemann M (2008) The effect of thin ideal media images on women's self-objectification, mood, and body image *Sex Roles* **58(9-10)**: 649-57.

<sup>82</sup> For example, see: Delinsky SS (2005) Cosmetic surgery: a common and accepted form of self-improvement? *Journal of Applied Social Psychology* **35(10)**: 2012-28; Slevic J and Tiggemann M (2010) Attitudes towards cosmetic surgery in middle-aged women: body image, aging anxiety, and the media *Psychology of Women Quarterly* **34(1)**: 65-74; Mazzeo SE, Trace SE, Mitchell KS and Gow RW (2007) Effects of a reality TV cosmetic surgery makeover program on eating disordered attitudes and behaviors *Eating Behaviors* **8(3)**: 390-7; Crockett RJ, Pruzinsky T and Persing JA (2007) The influence of plastic surgery "reality TV" on cosmetic surgery patient expectations and decision making *Plastic and Reconstructive Surgery* **120(1)**: 316-24.

<sup>83</sup> Calogero RM, Pina A, Park LE and Rahemtulla Z (2010) Objectification theory predicts college women's attitudes toward cosmetic surgery *Sex Roles* **63(1-2)**: 32-41.

the motivation to undergo surgery.<sup>84</sup> Research has also suggested that adolescents who ‘worship’ celebrities are more likely to undergo cosmetic surgery.<sup>85</sup>

There is also a concern that the use of cosmetic procedures leads to the medicalisation of the ‘normal’ body, and that involvement of the medical profession legitimises an individual’s perceived ‘problem’.<sup>86</sup> Rather than responding to the needs of the public, some commentators argue that a new body anxiety is being created by the cosmetic surgery industry, promoting the idea that “what is a natural biological variation is a defect, a problem requiring the knife.”<sup>87</sup> This perception can then result in a ‘vicious cycle’ in which the provision of cosmetic procedures further narrows the range of acceptability and increases the demand for surgery even more.<sup>88</sup>

Some attempts have been made to quantify the cost to the NHS of treating patients following cosmetic procedures. An A+E unit treated 12 patients who presented with infected facial fillers over a 15 month period, which cost the health service a total of £38,454.<sup>89</sup> According to a report in 2012, 2,860 women who received PIP breast implants privately had been seen within the NHS following the highly publicised health scare. 1,100 had undergone scans, with 67 deciding to have their implants removed. It has been estimated to cost approximately £300 per person to be seen and investigated, and a further £1,200 to remove the implants.<sup>90</sup> An observational study assessed the cost to the health service to treat 19 patients that presented to a plastic surgery practice with complications following cosmetic surgery abroad from 2007-2009. Eleven of these patients received NHS treatment costing a total of £120 841.<sup>91</sup>

## Quality of evidence

An overriding theme that emerged from this literature review is the general paucity of good quality of evidence in the field of cosmetic procedures, particularly in regards to

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<sup>84</sup> von Soest T, Kvalem IL, Skolleborg KC and Roald HE (2006) Psychosocial factors predicting the motivation to undergo cosmetic surgery *Plastic and Reconstructive Surgery* **117(1)**: 51-62.

<sup>85</sup> Maltby J and Day L (2011) Celebrity worship and incidence of elective cosmetic surgery: evidence of a link among young adults *Journal of Adolescent Health* **49(5)**: 483-9.

<sup>86</sup> Gimlin D (2007) Accounting for cosmetic surgery in the USA and Great Britain: a cross-cultural analysis of women’s narratives *Body & Society* **13(1)**: 41-60.

<sup>87</sup> Conroy RM (2006) Female genital mutilation: whose problem, whose solution? Tackle “cosmetic” genital surgery in rich countries before criticising traditional practices elsewhere *BMJ* **333(7559)**: 106-7.

<sup>88</sup> Liao LM and Creighton SM (2007) Requests for cosmetic genitoplasty: how should healthcare providers respond? *BMJ: British Medical Journal* **334(7603)**: 1090-2.

<sup>89</sup> Hachach-Haram N, Gregori M, Kirkpatrick N, Young R and Collier J (2013) Complications of facial fillers: resource implications for NHS hospitals *BMJ Case Reports*: Published online first (28 January).

<sup>90</sup> The number of women treated has almost certainly increased since then, considering that 40 000 women in the UK are known to have had PIP implants. See: Torjesen I (2012) Hundreds of thousands of pounds of NHS funds have been spent on care of private patients with PIP implants *BMJ* **344**: e1259.

<sup>91</sup> Miyagi K, Auberson D, Patel A and Malata C (2012) The unwritten price of cosmetic tourism: an observational study and cost analysis *Journal of Plastic, Reconstructive & Aesthetic Surgery* **65(1)**: 22-8. Most operations were performed in Europe or Asia, and most were breast augmentations. The most common complications were wound dehiscence or infection, as well as poor cosmetic results.

the psychological outcomes of these interventions. Many of the authors of the systematic reviews commented on the lack of available information, and that what data could be found was often very limited in terms of methodology.<sup>92</sup> Research presented to the Annual Scientific Meeting of the British Association of Aesthetic Plastic Surgeons on 25<sup>th</sup> September 2014 suggested that many cosmetic products that are advertised directly to the public have very little published scientific evidence to support their use. Between 1991 and 2013 there has been an almost 8,000% rise in the number of national newspaper articles addressing cosmetic surgery.<sup>93</sup> However, the amount of mainstream coverage surrounding the four most popular aesthetic devices was 24 times the number of clinical papers evaluating their use. Even if there were clinical studies published, the number of patients assessed varied massively, from just two to a few hundred.<sup>94</sup> Furthermore, 36% of authors disclosed financial conflicts of interests.<sup>95</sup>

This situation is in large part due to the fragmented nature of the industry itself. It encompasses an enormous range of procedures, mostly provided for privately by a disparate range of practitioners, and governed by a number of regulatory frameworks which have developed in a “piecemeal fashion, addressing certain aspects of the sector but not taking a systematic approach.”<sup>96</sup> There are no formal reporting mechanisms in place for many of these products, particularly non-surgical interventions, and people may report adverse events to a number of entities, including the original provider, an alternative provider, their GP, Trading Standards, Citizens Advice, the Medicines and Healthcare products Regulatory Agency (MHRA), or legal representatives, or choose to not report at all.<sup>97</sup> The Medicines and Healthcare products Regulatory Agency (MHRA) has a system for reporting adverse events involving medical devices. However, there are concerns that it is not being used effectively.<sup>98</sup> As a result, and as the Keogh Review highlighted, “there is a concerning lack of data in this sector.”<sup>99</sup>

Some procedures are less well represented in the literature than others, such as those that are less tightly regulated, or those interventions that are performed

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<sup>92</sup> For example, Liao et al found that the literature on cosmetic labial surgery was insufficient to perform a robust systematic review. The authors found no prospective studies, most did not conduct follow-up (or the follow-up period was too short), and there was generally no attempt to compare preoperative measurements with published criteria to assess need for intervention. See: Liao LM, Michala L and Creighton S (2010) Labial surgery for well women: a review of the literature *BJOG: An International Journal of Obstetrics & Gynaecology* **117(1)**: 20-5.

<sup>93</sup> From 45 in 1991 to 3 568 in 2013.

<sup>94</sup> Only 16% of studies involved more than 100 patients, and more than half involved fewer than 50. All but one study were based on less than six months follow-up, and only one trial followed patients for five years (however this study only reviewed two patients).

<sup>95</sup> The British Association of Aesthetic and Plastic Surgeons (25 September 2014) *Don't let cosmetic surgery stitch you up*, available at: <http://baaps.org.uk/about-us/press-releases/1968-don-t-let-cosmetic-surgery-stitch-you-up>.

<sup>96</sup> Department of Health (2013) *Review of the regulation of cosmetic interventions*, available at: <https://www.gov.uk/government/publications/review-of-the-regulation-of-cosmetic-interventions>, at paragraph 1.15.

<sup>97</sup> *Ibid*, at paragraph 3.29.

<sup>98</sup> It has been estimated that only 10% of adverse reactions to medical devices are reported to the MHRA; the MHRA estimated that only 15-18% of the expected incidents related to PIP breast implants were reported. There is no formal national reporting system in place for products not classified as medical devices. *Ibid*, at paragraph 4.10.

<sup>99</sup> *Ibid*, at paragraph 1.12.

outside of the traditional medical setting or abroad. However, these are also the very procedures that are often perceived to expose individuals to the most risk. Much of the evidence regarding outcomes following cosmetic procedures is obtained from individual providers or clinics self-reporting on their own practice, reducing the generalisability of the published data. It has also been suggested that these practitioners are more likely to be the more assiduous elements of the industry, and that the published literature might not provide a representative picture of the entire practice.<sup>100</sup> Therefore, the reality of the harms caused by cosmetic procedures may be considerably higher than this review suggests.

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<sup>100</sup> For example, only 32% of sites responded to the NCEPOD enquiry into cosmetic procedures, suggesting that 68% were unaware of their obligation to take part in the confidential enquiry or take a “nonchalant attitude to such obligations.” See: NCEPOD (2010) *On the face of it: a review of the organisational structures surrounding the practice of cosmetic surgery*, available at: <http://www.ncepod.org.uk/2010cs.htm>.