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Psychosocial predictors, assessment and outcomes of cosmetic interventions

A systematic rapid evidence review

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REPORT

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Abbreviations

abst	Abstract
BDD	Body dysmorphic disorder
CI	Confidence interval
DH	Department of Health (UK)
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, 4th ed.
HRQL	Health-related quality of life
IPV	Intimate partner violence
LASIK	Laser-assisted in-situ keratomileusis
OCD	Obsessive-compulsive disorder
OR	Odds ratio
QPS	Quality of primary study
QR	Quality of review
RCT	Randomised controlled trial
RQ	Research question

Abstract

Interventions to enhance people's cosmetic appearance are commonplace and increasing across the UK. Cosmetic interventions range from non-surgical treatments such as tooth whitening and hair removal, to more complex surgical interventions such as botulinum injections, facelifts and breast implants. Following the events surrounding Poly Implant Prothèse (PIP) complications, the Department of Health called for evidence to support the clinical safety and regulation of cosmetic interventions. The aim of this systematic rapid evidence review was to locate, assess, describe and organise findings from the existing research literature to inform questions about:

- who requests or undergoes cosmetic procedures;
- whether any of their psychosocial characteristics are associated with poor post-procedure psychological outcomes;
- the effectiveness of cosmetic procedures on psychosocial outcomes;
- alternative treatments in patients with psychological distress who undergo cosmetic procedures;
- the sensitivity/accuracy of screening tools to detect psychological symptoms in patients; and
- issues of informed consent in vulnerable patients undergoing cosmetic procedures.

Comprehensive searching and screening of several sources using predefined inclusion criteria resulted in the assessment of 13 systematic reviews and 179 primary studies. Overall, the evidence was of low methodological quality, but suggested that several psychosocial risk factors for poor health (such as intimate partner violence, alcohol/tobacco use or dieting) may also be associated with requesting or undergoing cosmetic surgery. Other factors may predict poor psychological outcomes: being male, or having relationship issues or a high level of expectation. The findings from one review suggested a specific link between breast augmentation surgery and later suicide.

Currently evaluated screening tools for psychological disorders in cosmetic patients assess only body dysmorphic disorder. No studies were found which directly compared cosmetic interventions and alternative treatments of body dysmorphic disorder (BDD). However, the research suggests that psychological or pharmacological interventions, such as cognitive behavioural therapy or serotonin reuptake inhibitors, are useful treatments; these are also effective at reducing co-morbid disorders, such as depression and compulsive disorder symptomatology.

Finally, issues of informed consent in patients undergoing cosmetic procedures differed in how informed consent was defined. This is a shared decision-making process to which patients and doctors bring different needs. Efforts to develop and facilitate a trusting relationship in which information is shared, and clear documentation of those efforts, may help to ensure that informed consent is truly achieved.

In summary, these characteristics, outcomes and issues merit further investigation, and several recommendations emerged for future research. These include: better quality primary research; developing tools to assess a wider range of psychological disorders using brief, easily administered self-report methods; and establishing a core set of psychological outcomes for researchers to routinely measure across cosmetic research.

Executive summary

Background

Interventions to enhance people's cosmetic appearance are common across the UK, and the number of cosmetic interventions undertaken in the UK has increased substantially over the past decade. Cosmetic interventions range from non-surgical treatments such as tooth whitening and hair removal, to more complex surgical interventions such as botulinum injections, facelifts and breast implants. Following the events surrounding Poly Implant Prothèse (PIP) complications, the Department of Health called for evidence to support the clinical safety and regulation of cosmetic interventions.

Aims

The aim of this systematic rapid evidence review was to locate, assess, describe and organise findings from the existing research literature to inform the following questions:

- What factors (e.g. socio-economic status (SES), age, gender, psychological factors, relationship status, exposure to advertising, previous cosmetic surgery) are associated with requesting and/or undergoing cosmetic interventions?
- What factors (e.g. SES, age, gender, psychological factors,) are associated with poor post-procedure psychological outcomes in people undergoing cosmetic interventions?
- What are the effects of cosmetic interventions on post-procedure psychological outcomes?
- What is the accuracy/sensitivity of pre-intervention assessment for identifying those who would not benefit from surgery (i.e. those who have factors associated with poor post-procedure psychological outcomes)?
- For patients requesting cosmetic procedures who have body dysmorphic disorder or other disorders with a body image component, does psychological therapy result in better psychological outcomes than cosmetic interventions (or no intervention)?
- What issues have been identified in the literature related to achieving informed consent for cosmetic procedures from vulnerable patients?

Results

The following results are based on information extracted from 192 studies (13 systematic reviews and 179 primary studies), reported in English and conducted within the last ten years. Systematic reviews were prioritised as the highest level of evidence for answering each research question. Where less than three systematic reviews were located, relevant primary studies were used.

What factors are associated with requesting and/or undergoing cosmetic interventions?

Only two systematic reviews were identified as evidence to address this question. One review considered the psychological profile of those seeking facelifts (Shridharani et al. 2010). The second review considered which factors motivate orthognathic surgery patients to seek treatment (Alanko et al. 2010). In terms of patient characteristics, Shridharani and colleagues (2010) found that most UK patients were female, with male patients an almost unchanged minority (approximately 10 percent between 1998 and 2003). The mean ages of patients ranged between approximately 35 and 50 years; no evidence was located to suggest that UK patients' ages were decreasing between 1998 and 2003. In relation to social predictors of uptake of cosmetic surgery, demand for some procedures appeared to change in frequency according to macroeconomic factors such as interest

rates. Psychosocial and behavioural predictors appeared more influential in predicting cosmetic surgery use than demographic characteristics. Both intimate partner violence and dieting were strongly associated with undergoing cosmetic surgery. Women who had been verbally abused, smokers, those taking medication for sleep or nervous conditions, and those with private medical insurance were also more likely to undergo cosmetic surgery. Alcohol use, higher stress and poorer mental health were moderately associated with cosmetic surgery. Obese and overweight women were significantly less likely to have had cosmetic surgery. No research literature was located that examined the impact of advertising on requests for cosmetic surgery.

In examining factors related to orthognathic surgery, Alanko and colleagues (2010) concluded that the results of the studies included in the review were conflicting with regard to pre-operative levels of psychological distress. However, they found that while patients cited aesthetic concerns as a major motivation for seeking surgery, they did not appear to have differences in body image compared to population means or controls. Improving self-esteem (38 percent of patients) and confidence (68-85 percent of patients) were cited as a motivation for seeking surgery, but there was evidence to suggest that self-esteem did not differ from that of the general population. Overall, the results of the included studies suggest that patients were not depressed pre-operatively; nor did their pre-operative anxiety levels differ from normal scores for the population or controls.

Given the lack of systematic review evidence, a descriptive analysis of the identified 104 primary research studies was undertaken. This suggested that approximately 75 percent of studies investigated a broad range of psychological and psychiatric characteristics as predictors of cosmetic intervention. Satisfaction with body image, self-esteem or self-confidence and the existence of body dysmorphic disorder (BDD) were the most commonly assessed predictive variables.

What factors are associated with poor post-procedure psychological outcomes in people undergoing cosmetic interventions?

Three systematic reviews were identified which examined predictors of poor psychological outcome in people undergoing cosmetic interventions. This review concludes that the evidence base is small and of low quality, and that given the variety of psychological outcomes measured, direct comparisons between studies is difficult. Indicative findings suggest that male gender, relationship issues and unrealistic expectations may be associated with poor outcomes. Overall, the reviews' authors conclude that the nature of the evidence base makes it difficult to confidently identify both which factors lead to a poor psychological outcome, and whether the psychological status of patients is a predictor of poor outcomes.

What are the effects of cosmetic interventions on post-procedure psychological outcomes?

Evidence from six medium- to high-quality systematic reviews considering a range of cosmetic interventions found that patients had high satisfaction levels when undergoing LASIK (laser-assisted in-situ keratomileusis) eye surgery, breast augmentation surgery and breast reduction surgery. However, in relation to breast augmentation, it should be noted that the positive psychological and social outcomes reported may have been biased by questionable study methods. Regardless of these methodological limitations, it is important to note that three of the breast augmentation studies suggested an association with suicide.

With regard to breast reduction, the reliability of both the high satisfaction scores noted earlier, and trends toward improved psychological and social outcomes, may be rendered suspect due to the methodological limitations of the included primary studies. Similarly, findings were unclear about the extent to which patients were satisfied with cosmetic botulinum toxin type A.

Abdominoplasty patients reported limited effectiveness with regard to post-operative psychological or social outcomes. Likewise, there was limited evidence to suggest improved self-esteem and decreased anxiety following orthognathic surgery. Mixed results were found when examining post-operative rhinoplasty outcomes. These suggested high levels of satisfaction but mixed results for psychological disturbance, with some limited evidence to suggest improved self-esteem and decreased anxiety.

What is the accuracy/sensitivity of pre-intervention assessment for identifying those who would not benefit from surgery (i.e. those who have factors associated with poor post-procedure psychological outcomes)?

Evidence from one systematic review and four relevant primary studies on the accuracy of pre-intervention screening tools revealed a small evidence base which varied in quality and was heterogeneous enough to make firm conclusions difficult. A lack of follow-up assessments made it difficult to assess the screening tools' predictive value. The majority of review authors recommended the use of a brief self-report measure that could be easily and efficiently administered to patients.

For patients requesting cosmetic procedures who have body dysmorphic disorder or other disorders with a body image component, does psychological therapy result in better psychological outcomes than cosmetic interventions (or no intervention)?

No studies were found that directly compared patients with body image disorders undergoing cosmetic surgery versus alternative therapies. However, we identified two systematic reviews and one primary study which evaluated alternative therapies to cosmetic surgery for people with BDD. These studies revealed that both psychological (i.e. cognitive behavioural therapy) and pharmacological (i.e. serotonin reuptake inhibitors) interventions were useful in treating BDD. They also concluded that psychological and pharmacological interventions were effective at reducing co-morbid disorders such as depression and obsessive-compulsive disorder symptoms.

What issues have been identified in the literature related to achieving informed consent for cosmetic procedures from vulnerable patients?

One systematic review and six primary studies examined the issue of informed consent in vulnerable patients who request or undergo cosmetic procedures. Almost none of the research related to non-surgical procedures, and the type of cosmetic procedure was often poorly reported. Overall, these studies revealed poor reporting on the characteristics of study participants, and none of the studies reported outcomes for vulnerable patients. Women, doctors or documents were most often studied, and patients were most often women in their mid-forties. Pre-procedure consultations were the setting most often described for informed consent to take place. These consultations revealed issues related to both the content of the discussion and the ways patients and practitioners approach one another. Consultations appeared to be influenced by doctors' perception of which risks merited discussion, and their need to manage professional ethics, reduce litigation risk and (in the private sector) facilitate profit.

As well as discussion of all medical risks, women undergoing cosmetic breast surgery indicated an additional need for information about how having surgery (or not having it) would affect their future social and childbearing lives. The decision-making process in cosmetic surgery consultations appears to be shared: patients want doctors to understand what information they need in order to make a decision; and doctors want patients to understand why they provide the information that

they do (i.e. so that patients can understand how to interpret the information). The decision-making processes described in the research literature may differ from what doctors are currently obliged or deem necessary to provide, in ensuring that informed consent has taken place.

Discussion

This work identified over 13,000 references, of which 78 percent were screened within the rapid evidence schedule. To ensure that the most likely included citations were assessed within the timelines imposed by this rapid evidence assessment, we used contiguous text mining, targeted free-text searching of the remaining unscreened references and prioritising the retrieval of systematic reviews.

Several primary studies were retrieved but not fully assessed where an adequate number of systematic reviews were available to inform our research questions; these potentially await further synthesis in a future systematic review.

The systematic reviews were most often heterogeneous in nature, and limited by the mixed quality of their included primary studies. These flaws included no control/comparison groups, small sample sizes, limited follow-up of outcomes and susceptibility to response bias. The heterogeneity of outcomes made synthesis difficult. A considerable number of additional primary studies were identified which could not be fully synthesised in the rapid timelines necessitated here, but they may shed additional light on these research questions.

In summary, the poor overall quality of the primary studies included within existing systematic reviews suggests a potential lack of good-quality research into psychosocial predictors of poor psychological outcome in cosmetic interventions. While this limits the extent to which conclusions can be drawn about predictors and outcome in cosmetic interventions, it also highlights promising areas for future primary research. This includes further research synthesis: the rapid nature of this review identified several hundred primary studies that could not be assessed in time, but which may inform these questions in future.

Conclusions and recommendations

This rapid evidence systematic review identified a wide variation in the quality of primary studies included in reviews. This suggests a need for considerable co-ordination and academic collaboration in order to establish better regulation within the cosmetic procedures industry, particularly with respect to the obligatory collection of standard measures, using agreed methods.

Future primary research designs across these research questions should ensure that appropriate control/comparison groups are used, with adequate power calculations for adequate sample sizes. Further, prospective and longitudinal studies are needed to apply both short and longer follow-up periods.

A research gap exists in addressing these issues in relation to less-often performed cosmetic surgeries and other non-surgical procedures (such as dermabrasion, hyaluronic acid or botox injections).

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Evidence from systematic reviews and selected primary studies provide some potential characteristics of vulnerable patients which merit further examination. A systematic review of this literature could identify other characteristics of vulnerability.

Future research exploring and confirming associations between male gender, relationship issues, level of expectations and poor post-cosmetic procedures outcomes is urgently needed to confirm whether these are characteristics of vulnerable populations. Similarly, more rigorously conducted research on the relationship between breast augmentation surgery and post-operative suicide is needed in order to inform future assessment and treatment of such patients.

At present, a wide variety of psychological outcomes are measured, using multiple constructs. This impedes knowledge accumulation, as the resulting findings are too heterogeneous to combine. A priority task should be to gain consensus on the core psychological outcomes to be measured in patients undergoing cosmetic procedures.

Studies measuring satisfaction in patients undergoing cosmetic procedures vary in definition and measurement. These need to clearly define what aspect of satisfaction is being measured (e.g. satisfaction with procedure; with results; with body image) and use validated tools. Satisfaction should be measured pre- and post-procedure, with an appropriate separate control or comparison group.

A small number of heterogeneous studies of varied quality show that most screening tools assess BDD only; most authors recommended brief, self-report measures that could be easily and efficiently administered. The development and sensitivity testing of brief self-report measures of other aspects of psychological health, such as depression or obsessive-compulsive disorder, is recommended.

For patients with BDD or co-morbid disorders, specific psychological and pharmacological treatments were effective; their use in these patients requesting cosmetic procedures should be evaluated. Further evaluation is warranted, comparing the use of alternative psychological and pharmacological treatments in patients with psychological disorders requesting cosmetic procedures. However, in order to determine a diagnosis this, merits careful pre-procedure assessment of psychological status using validated tools.

Efforts to develop and facilitate a trusting, communicative relationship between patients and doctors, and whether this is clearly documented, appear to indicate the extent to which informed consent occurs (or does not). Recognition of the shared responsibility between patients and doctors during informed consent could change their exchange of information in the pre-cosmetic procedure consultation, as well as the ways in which informed consent is documented.

Future practice could examine the utility of documenting the ways in which doctors and patients approach each other in shared decision making and relationship building, as a way of indicating that conditions for informed consent were met.

Evidence statements

	Evidence statements	Evidence quality/study design	Evidence
RQ1. What factors are associated with requesting and/or undergoing cosmetic interventions?			
1	Intimate partner violence and dieting were strongly associated with use of cosmetic surgery. (1 study, 14,100 participants)	Survey (N=14,100) Score 5/7 (Medium)	(Schofield et al. 2002)
2	A higher likelihood of cosmetic surgery was found in women who had been verbally abused, smokers, those taking medication for sleep or nerves and those with private medical insurance. (1 study, 14,100 participants)	Survey (N=14,100) Score 5/7 (Medium)	(Schofield et al. 2002)
3	Obese and overweight women were significantly less likely to have had cosmetic surgery. (1 study, 14,100 participants)	Survey (N=14,100) Score 5/7 (Medium)	(Schofield et al. 2002)
4	There were moderate associations between cosmetic surgery and alcohol use, higher stress and poorer mental health. (1 study, 14,100 participants)	Survey (N=14,100) Score 5/7 (Medium)	(Schofield et al. 2002)
5	Psychosocial and behavioural factors appeared to be more influential in predicting cosmetic surgery use than demographic variables. (1 study, 14,100 participants)	Survey (N=14,100) Score 5/7 (Medium)	(Schofield et al. 2002)
6	There was no evidence of decreasing age in cosmetic surgery patients between 1998 and 2003 in the UK. The mean ages of patients ranged between approximately 35 and 50 years. (1 study, 13,006 participants)	Survey (N=13,006) Score 6/7 (High)	(Duncan et al. 2004)
7	Most aesthetic surgery patients in the UK were female. Male aesthetic surgery patients remained in an almost unchanged minority (approximately 10% between 1998 and 2003). (1 study, 13,006 participants)	Survey (N=13,006) Score 6/7 (High)	(Duncan et al. 2004)
8	Demand for some procedures appeared to change in frequency according to macroeconomic factors such as interest rates. (1 study, 13,006 participants)	Survey (N=13,006) Score 6/7 (High)	(Duncan et al. 2004)

Evidence statements

RQ1. What factors are associated with requesting and/or undergoing cosmetic interventions?			
9	Patients (30-96%) cited aesthetic concerns as a major motivation for seeking orthognathic surgery but did not appear to have differences in body image compared to population means or controls. (8 studies, 793 participants)	Systematic review (N=35 studies) QR: Score 7/11 (Medium) 8/35 studies (N=793) QPS: not assessed (studies with no controls)	(Alanko et al. 2010)
10	Improving self-esteem (38% patients) and confidence (68-85% patients) were cited as a motivation for seeking orthognathic surgery, but there was evidence to suggest that that surgical-orthodontic patients' self-esteem did not differ from that of the general population. (3 studies, 481 participants)	Systematic review (N=35 studies) QR: Score 7/11 (Medium) 3/35 studies (N=481) QPS: not assessed (studies with no controls)	(Alanko et al. 2010)
11	Results were mixed and conflicting with regard to the levels of psychological distress of pre-operative orthognathic surgery patients. (6 studies, 647 participants)	Systematic review (N=35 studies) QR: Score 7/11 (Medium) 6/35 studies (N=647) QPS: not assessed (studies with no controls)	Alanko et al. (2010)
12	Overall, the results of included studies suggest that pre-operative orthognathic patients were not depressed. (4 studies, 227 participants)	Systematic review (N=35 studies) QR: Score 7/11 (Medium) 4/35 studies (N=227) QPS: not assessed (studies with/without controls)	Alanko et al. (2010)
13	Overall, the anxiety levels of pre-operative orthognathic patients did not appear to differ from normal scores for the population or controls. (4 studies, 269 participants)	Systematic review (N=35 studies) QR: Score 7/11 (Medium) 4/35 studies (N=269) QPS: not assessed (studies with/without controls)	Alanko et al. (2010)

RQ2. What factors are associated with poor post-procedure psychological outcomes in people undergoing cosmetic interventions?			
14	Indicative findings suggest that gender, relationship issues and unrealistic expectations may be associated with poor outcomes. (10 studies, 1,089 participants)	Systematic review (N=35 studies) QR: Score 7/11 (Medium) 2/35 studies (N=202) QPS: not assessed (studies with no controls)	Alanko et al. (2010)
		Systematic review (N=37 studies) QR: Score 5/11 (Low) 7/37 studies (N=851) QPS: not assessed (studies with/without controls)	Honigman et al. (2004)
		Systematic review (N= 22 studies) QR: Score 9/11 (High) 1/22 studies (N=36) QPS: not assessed (studies with no controls)	Cook et al. (2006)
15	There is conflicting evidence about whether the psychological status of patients is a predictor of a poor outcome. (15 studies, 1,234 participants)	Systematic review (N=35 studies) QR: Score 7/11 (Medium) 2/35 studies (N=214) QPS: not assessed (studies with no controls)	Alanko et al. (2010)
		Systematic review (N=37 studies) QR: Score 5/11 (Low) 8/37 studies (N=516) QPS: not assessed (studies with/without controls)	Honigman et al. (2004)
		Systematic review (N= 22 studies) QR: Score 9/11 (High) 5/22 studies (N=504) QPS: not assessed (studies with no controls)	Cook et al. (2006)

Evidence statements

RQ3. What are the effects of cosmetic interventions on post-procedure psychological and social outcomes?			
16	Findings suggested limited effectiveness for psychological or social outcomes following abdominoplasty. (2 studies, 228 participants)	Systematic review (N=22 studies) QR: Score 9/11 (High) 2/22 studies (N=228) QPS: not assessed (studies with no controls)	Cook et al. (2006)
17	Inadequate reporting limits understanding of the extent to which patients were satisfied with botulinum toxin type A as a cosmetic intervention. (2 studies, 192 participants)	Systematic review (N=23 studies) QR: Score 5/11 (Low) 2/23 studies (N=192) QPS: not assessed (1 RCT; 1 non-RCT)	Fagien and Carruthers (2006)
18	Findings suggest high satisfaction with breast augmentation surgery, but questionably biased positive effects with regard to psychological and social outcomes. (9 studies, 1,339 participants)	Systematic review (N=37 studies) QR: Score 5/11 (Low) 6/37 studies (N=730) QPS: not assessed (studies with/without controls)	Honigman et al. (2004)
		Systematic review (N=21 studies) QR: Score 5/11 (Low) 3/21 studies (N=609) QPS: not assessed (studies with no controls)	Shridharani et al. (2010)
19	Findings suggest an association between breast augmentation surgery and suicide. (3 studies, 23,111 participants)	Systematic review (N=21 studies) QR: Score 5/11 (Low) 3/21 studies (N=609) QPS: not assessed (studies with no controls)	Honigman et al. (2004)

RQ3. What are the effects of cosmetic interventions on post-procedure psychological and social outcomes?			
20	Findings from three reviews assessing methodologically limited primary studies of breast reduction surgery describe high levels of satisfaction, and trends toward improved psychological and social outcomes. (16 studies, 1,290 participants)	Systematic review (N=22 studies) QR: Score 9/11 (High) 10/22 studies (N=675) QPS: not assessed (studies with no controls)	Cook et al. (2006)
		Systematic review (N=37 studies) QR: Score 5/11 (Low) 4/37 studies (N=443) QPS: not assessed (studies with/without controls)	Honigman et al. (2004)
		Systematic review (N=21 studies) QR: Score 5/11 (Low) 2/21 studies (N=172) QPS: not assessed (studies with no controls)	Shridharani et al. (2010)
21	High levels of satisfaction were reported in three primary studies examining patients undergoing LASIK eye surgery. (3 studies, 270 participants)	Systematic review (N=19 studies) QR: Score 8/11 (Medium) 3/19 studies (N=270) QPS: not assessed (RCTs and cohorts)	Solomon et al. (2009)
22	Limited evidence suggested improved self-esteem and decreased anxiety following orthognathic surgery. Findings from weak studies suggested improvements to social functioning. (15 studies, 1,707 participants)	Systematic review (N=35 studies) QR: Score 7/11 (Medium) 14/35 studies (N=1646) QPS: not assessed (studies with/without controls)	Alanko et al. (2010)
		Systematic review (N=22 studies) QR: Score 9/11 (High) 1/22 studies (N=61) QPS: not assessed (studies with no controls)	Cook et al. (2006)

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RQ3. What are the effects of cosmetic interventions on post-procedure psychological and social outcomes?			
23	Reviews examining rhinoplasty outcomes suggested high levels of satisfaction but mixed results for psychological disturbance and limited evidence suggesting improved self-esteem and decreased anxiety post-operatively; findings from weak studies suggested improvement to social functioning. (16 studies, 1,214 participants)	Systematic review (N=22 studies) QR: Score 9/11 (High) 4/22 studies (N=352) QPS: not assessed (studies with/without controls)	Cook et al. (2006)
		Systematic review (N=37 studies) QR: Score 5/11 (Low) 12/37 studies (N=862) QPS: not assessed (studies with/without controls)	Honigman et al. (2004)
RQ4. What is the accuracy of pre-intervention assessment for identifying those who would not benefit from surgery?			
24	The majority of authors recommend the use of a brief, self-report measure that can be easily and efficiently administered to patients. (23 studies, 3,064 participants)	Systematic review (N=21 studies) QR: Score 7/11 (Medium) 21/21 studies (N=2,775) QPS: not assessed	Picavet et al. (2011)
		Primary study (N=205) QPS: 2/4 (Low, case-control)	Veale et al. (2012)
		Primary study (N=84) QPS: 2/4 (Low, before-and-after)	Honigman et al. (2011)
RQ5. For patients requesting cosmetic procedures who have body dysmorphic disorder (or other disorders with a body image component), does psychological therapy result in better psychological outcomes than cosmetic interventions (or no intervention)?			
25	Both psychological (i.e. cognitive behavioural therapy) and pharmacological (i.e. serotonin reuptake inhibitors) interventions are useful in treating BDD. (20 studies, 503 participants)	Systematic review (N=5 studies) QR: Score 11/11 (High) 4/5 studies (N=169) QPS: RCTs (Medium)	Ipser et al. (2009)
		Systematic review (N=15 studies) QR: Score 7/11 (High) 15/15 studies (N=314) QPS: not assessed (3 RCTs and 12 case series)	Williams et al. (2006)
		Primary study (N=20) QPS: RCT (High)	Rabiei et al. (2012)

RQ5. For patients requesting cosmetic procedures who have body dysmorphic disorder (or other disorders with a body image component), does psychological therapy result in better psychological outcomes than cosmetic interventions (or no intervention)?			
26	Psychological and pharmacological interventions are effective at reducing co-morbid disorders such as depression and obsessive-compulsive disorder symptomatology. (17 studies, 430 participants)	Systematic review (N=5 studies) QR: Score 11/11 (High) 3/5 studies (N=126) QPS: RCTs (Medium)	Ipser et al. (2009)
		Systematic review (N=15 studies) QR: Score 7/11 (Medium) 14/15 studies (N=304) QPS: not assessed (3 RCTs and 11 case series)	Williams et al. (2006)
RQ6. What are the issues in informed consent among vulnerable patients undergoing cosmetic interventions?			
27	Pre-procedure consultations were the most often described setting for informed consent to take place: this encounter, leading to informed consent, is comprised of issues related to both content and approach. (4 studies, 239 participants)	Systematic review (N=110 studies) QR: Score 10/11 (High) 1/110 studies (see below: Makdessian 2004)	Chung et al. (2010)
		Primary study (N=24) QPS: Qualitative study (High)	Boulton and Malacrida (2012)
		Primary study (N=17) QPS: Qualitative study (High)	Mirivel (2010)
		Primary study (N=78) QPS: Survey (High)	Elliott and Cawrse (2003)
		Primary study (N=120) QPS: RCT (Low)	Makdessian et al. (2004)
28	Consultation appears to be influenced by doctors' perception of which risks merit discussion, and their need to manage professional ethics, reduce litigation risk, and (in the private sector) facilitate profit. (3 studies, 215 participants)	Primary study (N=17) QPS: Qualitative study (High)	Mirivel (2010)
		Primary study (N=78) QPS: Survey (High)	Elliott and Cawrse (2003)
		Primary study (N=120) QPS: RCT (Low)	Makdessian et al. (2004)
29	As well as discussion of all medical risks, women undergoing cosmetic breast surgery indicated an additional need for information about how having surgery (or not having it) would affect their future social and childbearing lives. (2 studies, 101 participants)	Primary study (N=24) QPS: Qualitative study (High)	Boulton and Malacrida (2012)
		Primary study (N=77) QPS: Survey (high)	Bismark et al. (2012)

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RQ6. What are the issues in informed consent among vulnerable patients undergoing cosmetic interventions?			
30	The decision-making process in cosmetic surgery consultations appears to be shared: patients want doctors to understand what information they need in order to make a decision; and doctors want patients to understand why they provide the information that they do (i.e. so that patients can understand how to interpret the information). (4 studies, 178 participants)	Primary study (N=24) QPS: Qualitative study (High)	Boulton and Malacrida (2012)
		Primary study (N=17) QPS: Qualitative study (High)	Mirivel (2010)
		Primary study (N=77) QPS: Survey (High)	Bismark et al. (2012)
		Primary study (N=60) QPS: Survey (High)	Pleat et al. (2004)
31	The information wanted by patients or provided by doctors may differ from what doctors are currently obliged or deem necessary to provide, in ensuring informed consent has taken place. (4 studies, 232 participants)	Primary study (N=17) QPS: Qualitative study (High)	Mirivel (2010)
		Primary study (N=77) QPS: Survey (High)	Bismark et al. (2012)
		Primary study (N=78) QPS: Survey (High)	Elliott and Cawrse (2003)
		Primary study (N=60) QPS: Survey (High)	Pleat et al. (2004)

QR: Quality of review; QPS: Quality of primary studies included in the review

1. Background

1.1 Cosmetic interventions in the UK

Interventions to enhance people's cosmetic appearance are common across UK society. These can theoretically range from simple tooth whitening and facial treatments to more complex surgical interventions such as botulinum injections, facelifts and breast implants. Following the events surrounding Poly Implant Prothèse (PIP) complications, the Department of Health has called for evidence to support the process of ensuring the clinical safety and regulation of cosmetic interventions (Department of Health 2012). These are defined in the Call for Evidence (and in this review) as:

> operations or other procedures that revise or change the appearance, colour, texture, structure, or position of bodily features, which most would consider otherwise within the broad range of 'normal' for that person. (p6)

and could potentially include:

> a) the surgical insertion of a medical device or prosthesis, or other surgery intended to change the appearance of the body,
> b) injection with any product, whether medicinal or otherwise,
> where the intervention is not clinically indicated to safeguard or improve the physical and mental health of the recipient. The review does not cover surgery that is clinically indicated, such as reconstructive surgery for a breast cancer patient following a mastectomy (p6) (Department of Health 2012).

The number of cosmetic interventions undertaken in the UK has increased substantially over the past decade (British Association of Aesthetic Plastic Surgeons 2012, Mintel 2010), indicating that their popularity is increasing within the general population. However, several issues remain to be addressed. These include issues of public understanding of risks, ensuring that informed consent is achieved, and the need to identify and provide protection for vulnerable patients (Department of Health 2012). Further, the impact of advertising cosmetic procedures on both the general population and in vulnerable groups remains unexamined (Graham 2010).

1.2 Current research on cosmetic interventions

Academics and practitioners have researched the impact of cosmetic interventions since the 1950s (Sarwer 1998a); however, the conclusions drawn about the effectiveness of interventions remain mixed. While some suggest that cosmetic surgery interventions improve self-esteem, provide satisfaction and alleviate psychological distress (Shridharani 2010, von Soest et al. 2007), others claim that, for most cosmetic surgical procedures, there appear to be few long-term effects on psychological outcomes (Cook et al. 2006). A recent review of epidemiologic evidence has suggested an increased risk of suicide in women undergoing breast implant surgery (Sarwer 2007). The variation in these findings may be due to differences in the inclusion criteria of the reviews, or in the quality assessment of primary studies in each review (Gough et al. 2012). To date, no systematic reviews on the effectiveness of non-surgical cosmetic interventions have been located, suggesting a lack of evidence and/or the need for more detailed searching.

The incidence of cosmetic interventions is rising and is most likely fuelled by an interaction of factors, including increased demand from the general population (Sarwer et al. 1998a). The influence of advertising and widespread marketing of cosmetic procedures, particularly to

vulnerable groups, has also been questioned (Graham 2010). As the demand for cosmetic surgery continues to grow, it appears critical to understand who is at risk of poor outcomes from them.

However, this evidence is conflicting. Some have suggested that poor psychological adjustment prior to cosmetic interventions may predict poor psychological outcomes, specifically with respect to histrionic, narcissistic or depressive personality traits, anxiety, or body dysmorphic disorders (Honigman et al. 2004, Shridharani et al. 2010). In contrast, a recent primary study by von Soest et al. (2007) found no impact on pre-existing psychological disorders. Other reviewers have noted a lack of evidence relating to the validity of the selection criteria applied to patients included in primary studies (Cook et al. 2006).

A range of psychosocial factors appear to both predict who undergoes cosmetic interventions, and who may suffer from poor psychological outcomes. 'Psychological factors' is a broad term which incorporates clinically diagnosed mood, anxiety or somatoform psychiatric disorders reported in DSM-IV (American Psychological Association 2000) (e.g. clinical depression, body dysmorphic disorder, eating disorders), as well as factors which have not been subject to a clinical diagnosis but may contribute negatively to emotional health status (e.g. low self-esteem, anxiety, depressed mood). One systematic review noted that poor psychological outcomes following cosmetic intervention were associated with: being young or male, having unrealistic expectations, previous unsatisfactory cosmetic surgery, minimal deformity, or motivation based on relationship issues (Honigman et al. 2004). Conversely, others have suggested that satisfaction with cosmetic surgery was related to having a partner/being married, older age, and length of time spent considering surgery (von Soest et al. 2007). This indicates that the influence of psychosocial factors on post-cosmetic intervention outcomes should also be examined. Clearly, there is a need for better understanding of which groups are at risk of poor outcomes following cosmetic interventions in order to identify which factors may be modifiable and which may suggest that alternative treatment is the appropriate course of action.

In order to identify vulnerable patients prior to the procedure, some clinicians may undertake psychological screening on prospective candidates for cosmetic interventions. However, opinions differ on whether all candidates or only those at high risk of poor psychological outcomes should be assessed (Honigman et al. 2004, Sarwer 2007, von Soest et al. 2007); and whether assessments should focus on broad psychological functioning or on particular psychopathology (Sarwer et al. 1998b). A need thus exists to identify whether screening is indicated for all, or which populations would benefit from screening.

Further, the diagnostic accuracy of existing psychological screening tools for cosmetic interventions is unclear. The poor validity of criteria for defining patient populations has been noted. Several psychological factors and processes have been flagged as potential contributors to good or poor outcomes; thus several psychological constructs along a continuum of wellness could be assessed, from body dissatisfaction to body dysmorphic disorder and eating disorders (Sarwer and Crerand 2004). The range of screening tools is diverse and the extent to which validity for use in the cosmetic field has been established is patchy (Cook et al. 2006, Picavet et al. 2011).

Our preliminary assessment of this research indicates that there are:

1. some systematic reviews addressing cosmetic surgery predictors, its effectiveness in improving psychological outcomes and the validity of psychological screening tools, some of which need updating (Higgins and Green 2011);
2. some primary research studies which could address these issues but require further assessment; and
3. a currently unidentified literature on non-surgical interventions which needs to be located and assessed.

Further, the primary research literature on these topics is diverse in terms of its quality and of the populations, predictive factors, interventions and outcomes under study. This indicates a need to bring this research evidence together and assess it in a timely, rigorous and transparent manner.

1.3 A systematic rapid evidence review to address the research gap

A systematic rapid evidence review is well-suited to address these gaps in understanding:

> Systematic reviews pull together all of the available research on a given topic. Through rigorous, structured approaches to identifying, selecting, and analysing the evidence, systematic reviews reduce the biases inherent in more traditional reviews of the literature. They are valuable because they enable us to 'take stock'; when based on the entirety of evidence in a given field, they are able to tell us what we do, and do not, know. They are efficient, because they valorise previous investments in research and, by virtue of the consistent way they treat included studies, they are able to 'recast' our view of research in a field, challenging existing assumptions and suggesting new areas for investigation. They also facilitate generalisability by looking for knowledge and findings across individual (and possibly atypical) primary studies. (O'Mara-Eves et al. at peer review, p27)

A rapid evidence assessment differs from more traditional systematic reviews in that it is conducted within a shorter timeframe, often on focused issues (Gough et al. 2012). However, these differences in methodology used to adapt to the tight timelines must be carefully described and their impact on the findings considered, in order for the research to remain transparent and accountable (Ganann et al. 2010).

1.4 Aims of review

This systematic rapid evidence review aims to locate, assess and organise the findings from the current research literature in order to help inform policy decisions. To that end, several research questions will be addressed.

1.5 Research questions (RQs)

- What factors (e.g. socio-economic status (SES), age, gender, psychological factors, relationship status, exposure to advertising, previous cosmetic surgery) are associated with requesting and/or undergoing cosmetic interventions?
- What factors (e.g. SES, age, gender, psychological factors) are associated with poor post-procedure psychological outcomes in people undergoing cosmetic interventions?
- What are the effects of cosmetic interventions on post-procedure psychological outcomes?
- What is the accuracy/sensitivity of pre-intervention assessment for identifying those who would not benefit from surgery (i.e. those who have factors associated with poor post-procedure psychological outcomes)?
- For patients requesting cosmetic procedures who have body dysmorphic disorder or other disorders with a body image component, does psychological therapy result in better psychological outcomes than cosmetic interventions (or no intervention)?
- What issues have been identified in the literature related to achieving informed consent for cosmetic procedures from vulnerable patients

2. Methods

2.1 Partnership between UWE and EPPI-Centre

In order to ensure topic and methodology expertise, the research was undertaken in partnership by researchers at the Centre for Appearance Research at the University of the West of England in Bristol and the Evidence for Policy and Practice Information and Coordinating (EPPI-) Centre at the Social Science Research Unit, Institute of Education in London. Both teams were involved at all stages of the review. In addition, the research team liaised with Professor Ray Fitzpatrick at the University of Oxford to identify overlap between this research and simultaneous work being undertaken on the diagnostic accuracy of psychological screening; studies identified by each team relevant to the others' review were shared.

2.2 Searching for research evidence

In order to search in a targeted yet comprehensive way in the time available, selected sources were searched. These included:

1. Websites
   a) NHS Evidence
   b) Aesthetic Surgery Education and Research Foundation (http://www.aserf.org/)
   c) British Association of Plastic, Reconstructive and Aesthetic Surgeons (http://www.bapras.org.uk/)
   d) British Association of Aesthetic Plastic Surgeons (http://baaps.org.uk/)
   e) American Society of Plastic Surgeons (http://www.plasticsurgery.org/)
2. Databases
   a) CINAHL
   b) PsycInfo
   c) Medline
   d) Social Sciences Citation Index
   e) ASSIA
   f) Cochrane Library Databases (Cochrane Systematic Reviews, Database of Abstracts of Reviews of Effects, CENTRAL trials, Health Technology Assessment, NHS Economic Evaluations Database)
3. Volumes of three key journals from the past three years were hand searched (*journal of Plastic, Reconstructive and Aesthetic Surgery; Aesthetic Plastic Surgery;* and *Plastic and Reconstructive Surgery).*Original plans to search *Psychiatric Annals* were changed, as the last journal above was producing a higher number of relevant references.
4. Reference lists of included systematic reviews, prioritising cited systematic reviews. This strategy was adapted from the originally intended approach of scanning reference lists of included primary studies, owing to the high number of both primary studies and systematic reviews located.
5. Citation searches of included systematic reviews using Google Scholar (e.g. locating references which have cited included studies), in order to locate other systematic reviews.

Medline, Cinahl, Psycinfo and the Cochrane Library were searched in order to capture a range of literature from the medicine and health fields, as they cover slightly different literature. EMBASE was not searched for two reasons: a close overlap with Pubmed and The Cochrane Library's controlled trials database; and because the demands of a rapid review methodology necessitated limiting the databases searched, in order to manage the time spent searching and screening the literature.

EPPI-Centre information scientists, using background literature cited in the protocol, identified free-text search terms (e.g. body dysmorphic disorder, mental health, cosmetic surgery). These were developed and combined with thesaurus-specific terms held within MEDLINE, and translated into each subsequent electronic source (Gough et al. 2012). A second researcher checked the search terms to ensure accuracy.

To manage the potentially large resultant set of references in the nine week timeline allowed, we utilised a text-mining technique known as automatic term recognition (Gough et al. 2012, Thomas et al. 2011) to identify the studies most likely to be relevant to this review. Text mining 'reads' all text appearing within a reference citation and clusters together references which appear to have the most similar terms. Our specialist software allows automatic term recognition of this type, which we used on a set of studies for which we had full text. The automated codes generated from this set of included studies were then used to search the entire set of located references, in order to identify the set of studies most likely to be relevant. This process was repeated twice more during the screening process until an inclusion rate of 15 percent was reached. At this point, screening stopped as we were confident that most relevant citations had been screened. Through this process we were able to prioritise those studies most likely to be included, reducing the risk that key literature would be unscreened (Thomas et al. 2011).

Finally, additional searching within items to be screened was undertaken as a back-up to the text mining prioritisation process. This was carried out towards the end of the screening process, in order to ensure that we were identifying the pertinent studies. To ensure that all potentially relevant systematic reviews were identified and screened, text-based searches of the resultant set of references were undertaken using 'systematic review', 'meta-analysis' and 'overview'. Finally, where few or no systematic reviews were located to answer a research question, a text search of the entire set of retrieved references was undertaken by research question topic, to ensure that all primary studies were located for assessment.

2.3 Inclusion and exclusion screening

To ensure consistent screening, an electronic inclusion/exclusion tool was used. In order to be included in the review, studies had to be:

- An empirical piece of research (i.e. systematic reviews describing stated aims, search strategy and inclusion criteria; or primary studies describing sample of participants, data collection and quantitative and/or qualitative analysis); AND
- About study participants who were requesting or undergoing cosmetic interventions (as defined in Section 1.1; examples are provided in Appendix 1); AND
- Contain data (text or numeric) suitable for synthesis; AND
- Reported in English; AND
- Published between 2002 and 2012 (although searches were conducted back to 1992);

AND EITHER:

- reporting psychological outcomes (e.g. body dysmorphic disorder, depression, anxiety, dissatisfaction); OR
- reporting on psychological or psychosocial factors related to requests for and/or uptake of cosmetic interventions (e.g. age, sex, socio-economic status, previous history of psychological disorder, exposure to media advertising, relationship status).

Studies were excluded if they were:

- non-empirical articles such as opinion pieces (i.e. discussion or essay pieces, editorials, letters);
- studies containing no data or findings;
- studies reporting reconstructive procedures only;
- studies evaluating specific surgical or medical techniques of cosmetic procedures; OR
- measuring post-intervention satisfaction only, with non-validated instruments.

References which were not in English, or relevant non-empirical pieces which could inform the report discussion, such as ethical pages related to informed consent, were marked for potential later retrieval. Owing to the broad scope of this rapid review, only those references available online were included for data extraction and synthesis. Systematic reviews were prioritised for data extraction, quality assessment and synthesis. Where few or no systematic reviews were found to address a research question, primary studies were data extracted and synthesised. Text searches specific to each research question were undertaken in the entire set of located references, to ensure that any potentially unscreened relevant references were located and assessed for inclusion screening.

2.4 Data extraction/coding of studies

All included studies were coded according to study characteristics, such as country of origin, PROGRESS-Plus participant characteristics (e.g. age, gender, socio-economic status, marital status) (Evans and Brown 2003, Kavanagh et al. 2006) and review-specific codes, such as prior psychological status, psychosocial status, type of advertising and psychological outcome. Studies were also coded according to each of the research questions they addressed (see Section 1.5).

Reviews included in syntheses for all the research questions were assessed for quality using the AMSTAR assessment tool for systematic reviews (Shea et al. 2007). Where few or no systematic reviews could be located, relevant included primary studies were quality assessed using one of the following tools:

- The EPPI-Centre's previously developed tool for surveys and observational studies (Sutcliffe et al. 2011);
- The EPPI-Centre's previously developed tool for research on participants' perspectives, views or experiences (Thomas et al. 2004);
- The EPPI-Centre's previously developed modified Cochrane tool for intervention evaluation studies (O'Mara-Eves et al. at peer review); and
- The Cochrane Collaboration's tool for studies of diagnostic accuracy (Reitsma et al. 2009).

2.5 Synthesis

Across each research question, systematic reviews were prioritised for synthesis. If few systematic reviews were found addressing a research question (e.g. two or less), primary studies were included in the analysis. However, owing to the large number of primary studies identified and the tight timelines necessitated by this rapid evidence assessment, primary studies were either only partially extracted and synthesised (i.e. RQs 1, 3) or held for future synthesis (RQ2).

Some research questions identified more than one systematic review. Where the same primary studies were reported in more than one of these, their findings were extracted and counted only once. No minimum quality threshold was used to limit those studies included in the synthesis; quality ratings of all included systematic reviews and primary studies is provided in the included studies table within each chapter. The codes on study characteristics (e.g. country, study design), participant characteristics (i.e. PROGRESS-Plus and psychological/psychosocial factors), intervention types, predictors and type of psychological outcomes were described across included

studies. The findings were presented in narrative and tabular format according to AMSTAR guidelines (Shea et al. 2007). The research questions acted as a framework within which findings from each included study were added and summarised: as new findings were located and extracted, they were compared and contrasted with previously extracted findings. This type of 'rolling synthesis' has been used in previous systematic reviews (Caird et al. 2010, Gough et al. 2012, Sutcliffe et al. 2011).

2.6 Reporting

Brief summaries of included studies were reported, and were ordered by quality rating, then by cosmetic procedure, and finally by specific psychological and/or social outcomes. Evidence tables reporting characteristics of included studies were also created.

2.7 Data management and quality assurance

All searches, screening results, codes and syntheses were housed in and conducted with specialist research software, EPPI-Reviewer©. Using an electronic inclusion/exclusion tool containing definitions, two researchers independently screened a subset of references, and then met to compare and agree ratings. A third member of the research team resolved disagreements on inclusion. When sufficient inter-rater reliability was reached (e.g. 80 percent or higher), two researchers screened the remaining studies independently.

At least two researchers coded and synthesised an initial set of included studies independently using code sets developed for the review, and met to agree and resolve disagreements on coding and quality assessment. Studies were subsequently coded by one researcher and checked by a second, with a third member of the research team brought in to resolve disagreements on coding.

3. Results

3.1 Overall findings

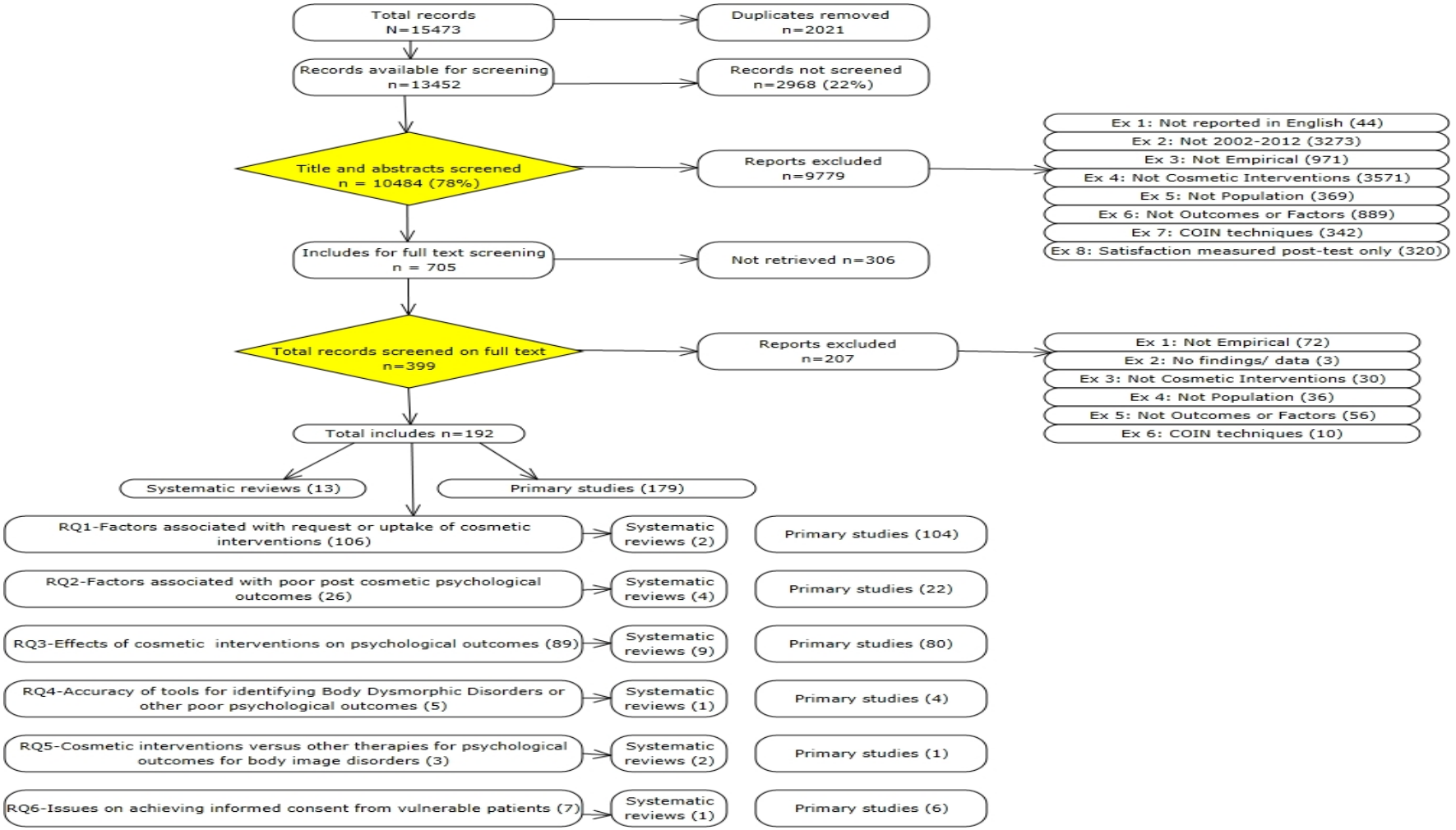
The searches yielded a total of 15,473 records. After the removal of 2,021 duplicates, 13,452 records of titles and abstracts were available for screening for initial topic relevance. After initial screening of a subset of research records, the remaining records were prioritised using the automated term clustering function in EPPI-Reviewer 4 described in Section 2.2. Once an inclusion rate of less than 15 percent was reached, screening was stopped, as the 2,968 remaining unscreened references were highly unlikely to meet the inclusion criteria. In total, 10,484 titles and abstracts (78 percent) were screened according to the inclusion criteria described in Section 2.3. A total of 9,779 records were excluded at this stage. The reasons for exclusion are captured in Figure 3.1.

This process included additional searches within the set of located references, in order to address two limitations. First, where the tight timelines of the rapid review limited complete screening of all located references, a search within the located citations was conducted to ensure that all systematic reviews were identified. Secondly, where few systematic reviews were located to address specific research questions (i.e. RQs 4, 5 and 6), a search was again undertaken within the located studies to identify primary studies for inclusion screening. This quality check identified one additional systematic review and 17 additional primary studies.

Records for the remaining 705 citations were put forward for full-text retrieval and further screening. It was not possible to retrieve full-text copies of all of these within the timescale of this rapid review: a total of 306 items were not retrieved in time. The 399 full-text studies which were obtained were screened against our inclusion/exclusion criteria, and a further 207 studies were excluded.

The remaining 192 studies (13 systematic reviews and 179 primary studies) were included for data extraction, quality assessment and synthesis. The flow of studies through the review process is summarised in Figure 3.1.

Figure 3.1: Flow of studies through the review process



Note: The figures in the bottom six rows add up to more than 13 and 179 because some reviews and primary studies were relevant to more than one RQ.

In extracting data to address research questions 1 to 4, a considerable amount of overlap was noted between the systematic reviews and the primary studies within them. For example, five of the thirteen included systematic reviews addressed two or more research questions, as shown in Table 3.1.

Table 3.1: Included systematic reviews across research questions

Systematic review	**RQ1**	**RQ2**	**RQ3**	**RQ4**	**RQ5**	**RQ6**
Alanko et al. (2010)	✓	✓	✓			
Castle et al. (2002)		✓	✓			
Chung et al. (2009)						✓
Cook et al. (2006)		✓	✓			
Fagien and Carruthers (2008)			✓			
Goodman (2011)			✓			
Honigman et al. (2004)		✓	✓			
Ipser et al. (2009)				✓		
Picavet et al. (2011)					✓	
Shridharani et al. (2010)	✓		✓			
Singh and Losken (2012)			✓			
Solomon et al. (2009)			✓			
Williams and Hadjistavropoulous (2006)					✓	

In addition, seven of the above thirteen systematic reviews included some of the same primary studies. Many of the primary studies within these seven systematic reviews addressed more than one of our research questions, although it should be noted that different findings were extracted for each research question. No overlap was found for systematic reviews or primary studies addressing research questions 5 and 6.These overlaps are illustrated in Table 3.2.

Separate results for each research question are presented in subsequent individual chapters.

Table 3.2: Overlap of primary studies across systematic reviews and research questions[1]

Primary Study	Systematic Reviews							Research Questions					
	Alanko	Castle	Cook	Fagien	Honigman	Picavet	Shridharani	RQ1	RQ2	RQ3	RQ4	RQ5	RQ6
Beale 1985		✓			✓		✓		✓	✓			
Behmand 2000	✓								✓	✓			
Blomqvist 2000	✓								✓	✓			
Chen 2002	✓							✓	✓				
Edgerton 1960		✓			✓				✓	✓			
Edgerton 1961		✓			✓				✓	✓			
Ercolani 1996b			✓		✓					✓			
Ercolani 1999a			✓						✓	✓			
Ercolani 1999b		✓			✓				✓	✓			
Espeland 2008	✓		✓						✓				
Faria 1999			✓						✓	✓			
Goin 1977					✓				✓	✓			
Goin 1980					✓		✓	✓	✓				
Goin 1991					✓		✓			✓			
Guyuron 1996					✓				✓	✓			
Kilman 1987					✓		✓			✓			
Klassen 1996b			✓		✓		✓		✓	✓			
Lazaridou 2003	✓							✓		✓			
Modig 2006	✓							✓		✓			
Nardi 2003	✓							✓		✓			
Napoleon 1993					✓				✓				
Nicodemo 2008	✓							✓		✓			
Palumbo 2006	✓							✓		✓			
Phillips 2001	✓							✓		✓			
Phillips 2004	✓							✓	✓				
Rispoli 2004	✓					✓		✓	✓	✓	✓		
Robin 1988					✓				✓	✓			
Sarwer 1998a					✓	✓			✓		✓		
Schlebush and Mart 1993			✓						✓	✓			
Shakespeare 1997			✓		✓					✓			
Slator 1992					✓				✓	✓			
Stirling 2007	✓							✓		✓			
Webb 1965							✓	✓					
Williams 2005	✓							✓	✓	✓			
Wright 1975					✓				✓	✓			
Young 1994					✓		✓			✓			
Zhou 2001a	✓							✓		✓			

[1] Full references of studies included in the systematic reviews are not provided unless the studies were also analysed or referred to elsewhere in this review. Details are available in the systematic reviews referenced, or from the authors of this review.

4. RQ1: What factors are associated with requesting and/or undergoing cosmetic interventions?

4.1 Overall summary of findings

- Intimate partner violence and dieting were strongly associated with undergoing cosmetic surgery.
- A higher likelihood of undergoing cosmetic surgery was found in women who had been verbally abused, smokers, those taking medication for sleep or nervous conditions and those with private medical insurance.
- Obese and overweight women were significantly less likely to have had cosmetic surgery.
- There were moderate associations between undergoing cosmetic surgery and alcohol use, higher stress and poorer mental health.
- Psychosocial and behavioural factors appeared to be more influential in predicting cosmetic surgery use than demographic variables.
- There was no evidence of decreasing age in cosmetic surgery patients between 1998 and 2003 in the UK. The mean ages of patients ranged between approximately 35 and 50 years.
- Most patients in the UK were female. Male aesthetic surgery patients remained in an almost unchanged minority (approximately 10 percent between 1998 and 2003).
- Demand for some procedures appeared to change in frequency according to macroeconomic factors such as interest rates.
- No research literature was located that examined the impact of advertising on requests for cosmetic surgery.
- Patients (30-96 percent) cited aesthetic concerns as a major motivation for seeking orthognathic surgery but did not appear to have differences in body image compared to population means or controls.
- Improving self-esteem (38 percent) and confidence (68-85 percent) were cited as a motivation for seeking orthognathic surgery but there was evidence to suggest that surgical-orthodontic patients' self-esteem did not differ from that of the general population.
- Results were mixed and conflicting with regard to the levels of psychological distress of pre-operative orthognathic surgery patients.
- Overall, the results of included studies suggest that pre-operative orthognathic patients were not depressed.
- Overall the anxiety levels of pre-operative orthognathic patients did not appear to differ from normal scores for the population or controls.

4.2 Included studies

This chapter reports results from evidence about factors associated with requesting and/or undergoing cosmetic procedures. Findings from two systematic reviews were synthesised; however, because their findings were limited to orthognathic surgery and facelifts only, two additional methodologically sound primary studies with large sample sizes were examined, in order to supplement the evidence from the systematic reviews. Finally, a descriptive map of the characteristics of 104 included primary studies was made.

4.3 Systematic reviews

We found two systematic reviews relating to factors associated with requesting and/or undergoing cosmetic interventions (Alanko et al. 2010, Shridharani et al. 2010). **Alanko et al. (2010)**

conducted a systematic review which provided information regarding the factors that motivate orthognathic surgery patients to seek treatment. This review included 35 studies with a range of study designs including prospective controlled trials and uncontrolled observational studies, all of which were published in English between 2001 and 2009. **Shridharani et al. (2010)** conducted a systematic review about the psychology of cosmetic and reconstructive surgery. They identified 21 studies which related to cosmetic interventions; however, only two of these presented findings on factors associated with uptake and/or undergoing cosmetic surgery. These two studies, conducted 48 and 32 years ago respectively, provided very limited information, regarding the psychological profile of those seeking facelifts. Further findings from the Shridharani review (2012) are reported in Chapter 6 on post-procedure psychological and social outcomes. The characteristics of the included reviews are presented in Table 4.1 at the end of this chapter.

4.3.1 Orthognathic (jaw) surgery

People with dento-facial abnormality suffer from both functional and aesthetic impairments. Thus, surgical-orthodontic (orthognathic) treatment can be used to improve appearance and/or to correct the relationship between the upper and lower jaws to improve chewing. It is rarely essential to carry out this type of surgery from a functional perspective (Queen Victoria Hospital Maxillofacial and Orthodontics Unit 2010).

Alanko et al. (2010) conducted a systematic review which aimed to determine which factors motivate orthognathic surgery patients to seek treatment, whether dento-facial disharmony affected patients' psychological status, whether patients' psychological status was affected by orthognathic treatment, whether patients were satisfied with treatment outcome and whether dento-facial disharmony and its correction had an effect on patients' quality of life.

The review team gave this review an AMSTAR quality rating of 7 out of 12. Overall appraisal suggested that these findings should be interpreted with caution. In particular, Alanko et al. (2010) have taken the quality of the primary studies into account while formulating the conclusions of their review, but have not undertaken any systematic quality appraisal of the included studies.

Findings

Body image

Eight studies identified body image (aesthetic concerns) as the main motive for patients seeking treatment (Baig et al. 2004, Chen et al. 2002, Lee et al. 2007, Modig et al. 2006, Palumbo et al. 2006, Stirling et al. 2007, Williams et al. 2005, Zhou et al. 2001a). The proportion of patients with aesthetic concern as their main motive ranged between 30 and 96 percent in the eight studies. Nevertheless, one study suggested that there were no differences in overall body image between future patients, adults not seeking treatment and those having had surgery (Lazaridou-Terzoudi et al. 2003) and another reported that patients' scores on body dissatisfaction were close to population means (Stirling et al. 2007). One study reported that 10 percent of 160 pre-operative patients had BDD (Vulink et al. 2008) while Rispoli et al. (2004) found that although the total score of body dysmorphic symptoms decreased after surgery, neither intervention nor control group BDD symptom scores fulfilled the criteria for BDD pre- or post-operatively. Alanko et al. (2010) noted that only Vulink et al. (2008) measured the occurrence of BDD at the individual level, (i.e. whether or not individual patients were screened as having or not having BDD), while others focused on the occurrence of BDD symptoms at group level.

Self-esteem/self-confidence

Participants in one study identified self-esteem (38 percent) as a motive for seeking treatment (Stirling et al. 2007) and those in two other studies reported self-confidence (68-85 percent) as a

motive for seeking treatment (Zhou et al. 2001a, Williams et al. 2005). It should be noted however, that a wish for improvement in self-confidence or self-esteem does not necessarily correlate with low pre-operative self-esteem or low self-confidence as measured by a questionnaire or diagnostic interview. Indeed, Alanko et al. (2010) report that two of their included studies found that surgical-orthodontic patients' self-esteem did not differ from that of the general population (Stirling et al. 2007, Williams et al. 2005).

Psychological distress

Patients reported psychological disturbance and difficulties with social interactions or career-related issues as motives for seeking treatment (5-69 percent) in three studies (Stirling et al. 2007, Zhou et al. 2001a, Lee et al. 2007). However, while one study found that the pre-operative psychological profiles of 108 patients were generally normal (Chen et al. 2002), two further studies reported that 20 percent of pre-operative patients were psychologically distressed (Phillips et al. 2001, Phillips et al. 2004).

Depression

Three included studies within the Alanko et al. (2010) review found that pre-operative orthognathic surgery patients did not suffer from depression (Rispoli et al. 2004, Nicodemo et al. 2008, Williams et al. 2009), whereas one study (Chen et al. 2002) reported conflicting results. A cross-sectional study of patients who were undergoing or had recently undergone orthognathic treatment, suggested that the patients' (n=30) depressive scores did not differ from those of the controls (n=30) (Williams et al. 2009). Finally, Chen et al. (2002) found in their pre-operative study that patients' (n=108) depressive scores were within the normal range when analysed with the Minnesota Multiphasic Personality Inventory (MMPI), whereas, according to the Symptom Checklist 90 (SCL-90), patients had elevated scores for depression.

Anxiety

Anxiety levels did not differ from normal scores for the population (Stirling et al. 2007, Chen et al. 2002) or controls (Nardi et al. 2003, Williams et al. 2009). However, in a study of female Turkish patients, researcher developed questionnaires suggested that 40 percent had anxiety pre-operatively. It should be noted however, that it was difficult to determine from the review how far in advance of surgery the questionnaires measuring anxiety had been applied, or the extent to which impending surgery may have impacted upon the anxiety states of patients.

Strengths and limitations

Alanko et al. (2010) noted that many of the included articles reported patients' mean scores and compare them to controls' scores or population norms. Their concern was that it was possible that individual patients might have experienced problems which were not detectable when analysing mean scores only. They suggested that this might explain some of the discrepancies between the results obtained from standardised questionnaires and patients' self-reports. However, they did not suggest any other way for scores to be compared.

In addition, the authors noted that in retrospective studies, it was possible that patients felt a need to emphasise the negative effects of dento-facial disharmony in order to justify the burden and costs of the treatment. If true, this would result in an overestimation of the psychological burden of pre-treatment appearance.

Finally, the authors noted that comparisons of the reported results were hampered by wide variation in assessment times and methods. Alanko et al. (2010) also stated that a number of the

primary studies were conducted with small groups, and in some cases, necessary statistical information was not reported.

4.3.2 Facelifts

Shridharani et al. (2010) conducted a systematic review investigating the psychological outcomes, background and personality types of patients seeking a variety of plastic surgery procedures.

The review team gave this review an AMSTAR quality rating of 5 out of 11. Overall appraisal suggested that these findings should be interpreted with caution. In particular, Shridharani et al. (2010) failed to provide any information regarding the quality or methodological limitations of the primary studies. Data from individual primary studies were frequently unreported, and thus the reader is reliant upon the reviewers' interpretation of the results.

Findings: psychological disturbance

Shridharani et al. (2010) included two primary studies which examined the psychological profile of those seeking facelifts. A study of 72 patients seeking a facelift in 1964 showed that 48 patients (67 percent) were diagnosed with a psychosomatic disorder: depression n=15; schizoid personality disorder n=7; generalised anxiety disorder n=1 (Webb et al. 1965). A study conducted in 1980 demonstrated that of 50 women undergoing a facelift procedure, 12 (24 percent) had an abnormal psychological profile (Goin et al. 1980).

Strengths and limitations

It must be noted that the two included studies from the Shridharani (2010) review relevant to this RQ were both conducted some considerable time ago (1964 and 1980 respectively). It is likely that attitudes towards cosmetic surgery, and the psychological profiles of those requesting cosmetic surgery, have changed substantially in the intervening period. Even were the studies relatively current, their small sample sizes (n=72 and n=50 respectively), and retrospective study design do not inspire confidence with regard to the reliability of their results.

4.4 Primary studies

Systematic reviews, whilst often associated with questions of effectiveness, can address a range of research questions and synthesise the results of many different study designs. We found very little review-level evidence which assessed the factors associated with requesting and/or undergoing cosmetic procedures. In the absence of systematic review evidence, large population-based studies examining the association between predictor variables and the uptake of cosmetic surgery may be best placed to provide information pertinent to our research question. The rapid review's timelines did not permit examination and synthesis of all the 104 primary studies we identified. However, we did identify two large population-based cohort studies which help address the gap in the review. We have included a more detailed assessment and analysis of these two primary studies because they had large sample sizes from national or regional populations likely to be most representative of the UK, and examined multiple procedures (rather than one specific procedure with limited generalisability). The characteristics of the two included primary studies are presented in Table 4.1 at the end of this chapter.

Schofield et al. (2002) conducted a secondary analysis of psychosocial and health behavioural covariates of past cosmetic surgery in a population-based sample (n=14,100) aged 45-50 years, from the 1996 survey of the Women's Health Australia study.

Duncan et al. (2004) examined the computer records of 13,006 aesthetic surgery patients presenting between January 1998 and June 2003 at a significant aesthetic surgery centre in the UK.

The macroeconomic indicator selected for comparison with levels of uptake of cosmetic surgery was the London Interbank Offered Rate (LIBOR).[2]

4.4.1 Women's Health Australia Study

Schofield et al. (2002) computed univariate associations between cosmetic surgery and a number of weight-related, psychosocial, health behavioural and demographic variables compared as unadjusted odds ratios before employing a multiple logistic regression model which examined independent associations between cosmetic surgery and variables significant at the univariate level, using backward stepwise selection of explanatory variables.

Data were derived from a nationally representative sample of 14,100 women aged 45-50 years old participating in the 1996 baseline postal survey of the Australian Longitudinal Study on Women's Health (Women's Health Australia). The survey comprised a 285-item self-report questionnaire. Experience of cosmetic surgery was gauged by asking the following question: 'Have you ever had any cosmetic surgery (e.g. for face, breasts, fat removal,)?' Seven percent of respondents (n=982) reported ever having had cosmetic surgery and formed the sample for analysis.

Quality assessment of this study resulted in a rating of five out of seven. Overall, the study was judged to be sound.

Findings

Demographic factors associated with past cosmetic surgery

Univariate analyses revealed that demographic factors such as urban/rural residence, occupation, educational attainment, language spoken at home, hours in paid employment and current living arrangements showed little relationship with cosmetic surgery. However, respondents who had cosmetic surgery were 1.2 times more likely to have private hospital insurance compared to those who did not have cosmetic surgery (unadjusted OR 1.23, 95%CI 1.08 to 1.40). Having private hospital insurance also increased the odds of having had cosmetic surgery in the multivariate model (adjusted OR 1.34, 95%CI 1.16 to 1.58). Place of birth was also found to be associated with past cosmetic surgery, with women born in Australia or another English-speaking country more likely to report cosmetic surgery (unadjusted OR: Australia 1.29, 95%CI 1.06 to 1.58; Other English-speaking 1.43, 95%CI 1.12 to 1.82). Area of residence, country of birth and marital status were significantly associated with cosmetic surgery at the univariate level, but found to be unrelated in multivariate analyses.

Weight, psychosocial and behavioural factors associated with past surgery

Weight status

Overweight or obese women were less likely to report cosmetic surgery compared with women of normal weight (unadjusted OR: Overweight 0.54, 95%CI 0.42 to 0.69; Obese 0.64 95%CI 0.49 to 0.84). Women who perceived themselves as slightly overweight compared with the average were also less likely to have cosmetic surgery (unadjusted OR 0.75, 95%CI 0.61 to 0.91). The multivariate model suggested that body mass index was strongly associated with having had cosmetic surgery. Being overweight and obese in midlife was inversely associated with likelihood of plastic surgery (Weight status adjusted OR: Overweight 0.54, 95%CI 0.42 to 0.69; Obese 0.64, 95%CI 0.49 to 0.84).

[2] Despite recent evidence of manipulation of LIBOR, it still remains an adequate indicator of macroeconomic fluctuations.

Perception of weight status

Women who perceived themselves as slightly overweight compared with average were less likely to have cosmetic surgery (unadjusted OR 0.76, 95%CI 0.66 to 0.93). The variable measuring self-perception about body weight was retained in the multivariate model. Again, only the slightly overweight category was statistically significant, with women perceiving themselves as slightly overweight less likely to have cosmetic surgery compared to women who perceived their weight as average (Perception Slightly Overweight adjusted OR 0.75, 95%CI 0.65 to 0.91).

Dieting

Self-reported dieting was strongly associated with past cosmetic surgery (unadjusted OR 1.69, 95%CI 1.35 to 2.11). Multiple logistic regression revealed that the most significant variable associated with cosmetic surgery was self-reported frequency of dieting in the past year. The odds ratio of cosmetic surgery among dieters was twice as high as for non-dieters (adjusted OR Always on a diet 2.06, 95%CI 1.58 to 2.69).

Intimate partner violence

Women who had ever been in a violent relationship with a partner/spouse were 1.7 times more likely to have undergone cosmetic surgery (unadjusted OR 1.66, 95%CI 1.42 to 1.94). Self-report of domestic violence was retained in the multivariate model (adjusted OR 1.51, 95%CI 1.24 to 1.84). Ten per cent of women who had been in a violent relationship with an intimate partner reported having had cosmetic surgery. Notably, over one in five individuals (22 percent) who had undergone cosmetic surgery reported having been in a violent relationship.

Bullying

Women who reported that someone close to them had called them names, put them down or made them feel bad were 1.3 times more likely to have had cosmetic surgery (unadjusted OR 1.33, 95%CI 1.14 to 1.54). Self-report of being ridiculed by being called names or put down was also significantly associated with cosmetic surgery in the multivariate model (adjusted OR 1.20, 95%CI 1.02 to 1.44).

Smoking

Both ex-smokers and current smokers were more likely to have undergone cosmetic surgery compared with non-smokers (unadjusted OR: Ex-Smokers 1.35 95%CI 1.42 to 2.29; Current Smokers 1.62 95%CI 1.37 to 1.92). Smoking status was also significantly associated with past cosmetic surgery in the multivariate model (adjusted OR: Ex-Smokers 1.19 95%CI 1.00 to 1.42; Current Smokers 1.42 95%CI 1.16 to 1.74).

Alcohol use

Women who consumed alcohol were more likely to report cosmetic surgery (unadjusted OR: Low Risk Status 1.80 95%CI 1.42 to 2.29; Moderate/High Risk Status 1.75 95%CI 1.06 to 2.09). Use of alcohol was also significantly associated with past cosmetic surgery in the multivariate model (adjusted OR low risk status 1.47 95% CI 1.11 to 1.96).

Social support

A 'medium' self-reported level of social support compared with a 'high' level of social support was associated with higher odds for cosmetic surgery (unadjusted OR 1.15 95%CI 1.01 to 1.32). Social

support was not significant in the multivariate analysis and was dropped in the backward logistic regression model.

Psychological factors associated with past cosmetic surgery

Medication for nervous disorders or sleep problems

Women reporting cosmetic surgery had elevated odds for current use of medication for nervous conditions and/or sleep disturbance (unadjusted OR: Medication for Nervous Conditions 1.69 95%CI 1.37 to 2.10; Medication for Sleep 1.86 95%CI 1.52 to 2.28). Use of medication for sleep and/or nervous conditions was found to be significantly associated with cosmetic surgery use in the multivariate model (adjusted OR: Medication for Sleep 1.51 95%CI 1.19 to 1.93; Medication for Nerves 1.42 95%CI 1.30 to 1.85).

Mean stress scores

Mean stress scores were significantly higher among women reporting cosmetic surgery (unadjusted OR per unit increase 1.34 95%CI 1.25 to 1.51). Mean stress was also significantly associated with past cosmetic surgery in the multivariate model (adjusted OR 1.16 95%CI 1.02 to 1.32).

Mental health

Women having had cosmetic surgery tended to have lower scores for the mental health component (MCS) of the SF-36 health survey questionnaire. Mean MCS was significantly lower in those having had cosmetic surgery (unadjusted OR per unit increase 0.98 95%CI 0.98 to 1.00). Results were consistent for the multivariate model where the MCS score was significantly associated with cosmetic surgery (adjusted OR per unit increase 0.99 95%CI 0.98 to 1.00).

Strengths and limitations

It must be emphasised that this study examined associations between psychosocial characteristics and uptake of cosmetic surgery, but cannot be used to infer causal relationships. It is necessary to resort to theory to identify the mediating variables between predictive factors and uptake of cosmetic surgery. Whilst the data were retrieved from a nationally representative sample of middle-aged Australian women, other age groups and men were not represented. The authors noted the constraints inherent in conducting secondary analyses (i.e. the authors made use of existing variables, rather than collecting their own tailored data such as measures of body image or self-esteem). The authors also acknowledged that the large number of variables used in the analysis increased the likelihood of finding significant associations by chance.

4.4.2 Aesthetic surgery in the UK

Duncan et al. (2004) requested the computerised hospital records of patients operated on in a large UK plastic surgery department between January 1998 and June 2003; data included operation date, operation type, patient age and patient gender. The FTSE 100 index and LIBOR showed significant variability throughout the period studied and these changes approximately matched each other. LIBOR was selected for examination and comparison with operative trends. In order to protect the commercial interests of the hospital where the work was performed, data were expressed as percentage changes compared with figures at the beginning of the data collection timepoint in 1998 and economic variables were expressed similarly to allow trendline comparisons on charts. Ten procedures were identified for analysis: abdominoplasty, blepharoplasty, breast augmentation, breast reduction, endobrow lift, facelift, fat transfer, 'laser' (not otherwise specified), liposuction and rhinoplasty.

Quality assessment of this study resulted in a rating of six out of seven. Overall, the study was judged to be sound.

Findings

Throughout the period studied (January 1998 to June 2003), the majority of patients treated were females, and this accounted for most of the rise in the overall figures. Male aesthetic surgery patients remained in an almost unchanged minority throughout (approximately 10 percent).

Throughout the period studied, the mean age of males was generally lower than that of females, but the difference was not statistically significant ($P > 0.05$, Students *t* test). The mean age of patients did not vary significantly throughout the period studied on aggregate or in any operation; it ranged between approximately 35 and 50 years.

Demand increased year on year in spite of unstable economic conditions. Facelift, blepharoplasty and breast augmentation tended to decline when interest rates were higher and increase when interest rates became lower. This trend was most obvious in breast augmentation.

Strengths and limitations

Cases coded under plastic surgery represented the activity of a total of 51 surgeons and comprised a broad range of aesthetic practice. The authors suggested that the case mix studied represented a realistic snapshot of UK aesthetic practice in the period 1998–2003. However, all operations were counted individually, so if a patient underwent a combination of procedures, each was counted individually. Data were represented in graphical format only.

4.5 Descriptive map of primary studies

To supplement the limited information available from included systematic reviews, we summarise here 104 primary studies relating to factors associated with requesting/and or undergoing cosmetic interventions. The studies are described on the basis of information reported in their abstracts only, and we do not examine their findings. Of the 104 studies, 94 related to surgical cosmetic interventions and 10 considered non-surgical approaches. Four of these studies examined factors associated with both.

No information about the country in which the research was conducted was reported in 57 abstracts. Reflecting international interest in this area, the remaining studies were conducted across 15 different countries. Nine studies were conducted in the UK; 13 in the USA; five in Australia; three in Brazil; two each in Canada, Denmark, Finland, Iran, Norway and Taiwan; and one each in China, Turkey, India, Korea and the Netherlands.

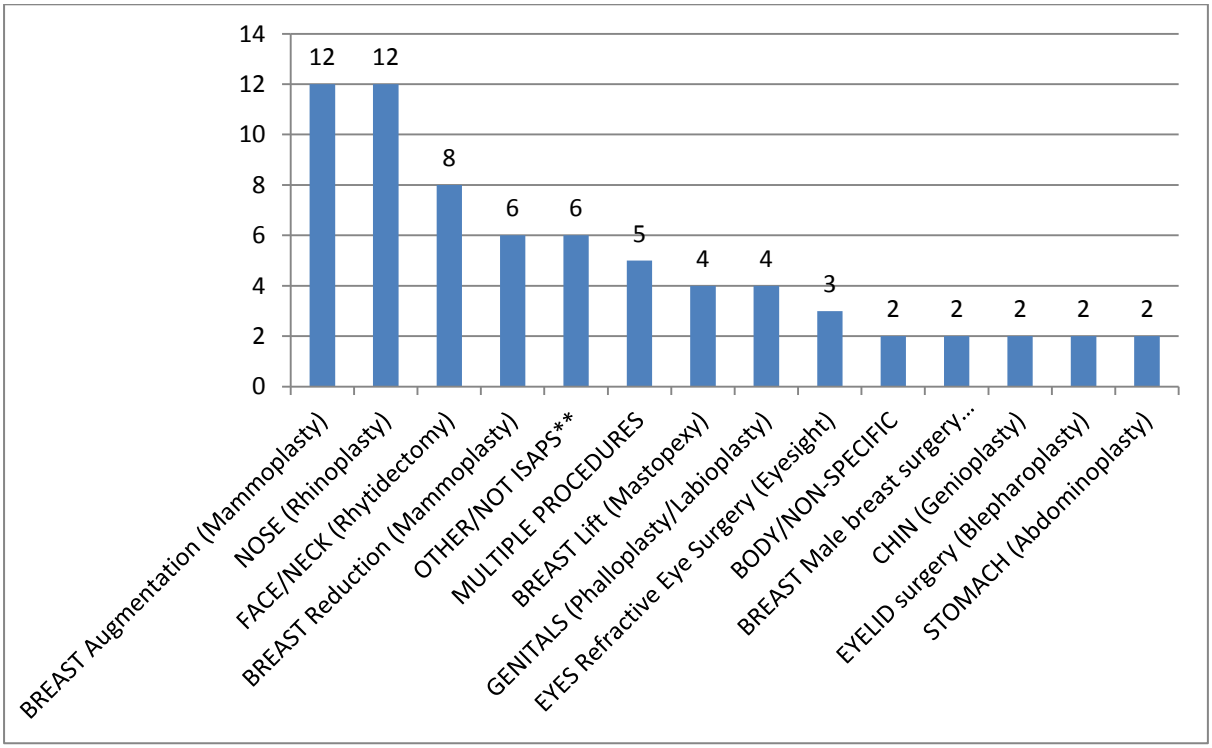
The majority of the studies were observational in study design, with only nine studies providing any pre- and post-intervention analysis. One secondary analysis has already been described in this section of the report (Schofield et al. 2002). Thirty-six studies were cross-sectional, 32 were cohort studies and 20 were qualitative studies.

4.5.1 Surgical cosmetic interventions

Of the 94 research abstracts described in this section, 41 were focused on the factors associated with requesting/and or undergoing cosmetic surgery generally, and did not consider specific intervention types. Of the remaining 53, the most commonly described types of cosmetic intervention were: breast augmentation (n=12, 23 percent); rhinoplasty (n=12, 23 percent); rhytidectomy (n=8, 15 percent); breast reduction (n=6, 11 percent); breast lift (n=4, 8 percent);

and genital surgery (both phalloplasty and labiaplasty) (n=4, 8 percent). Further details of cosmetic surgery type are available in Figure 4.1.

Figure 4.1: Types of cosmetic surgery*



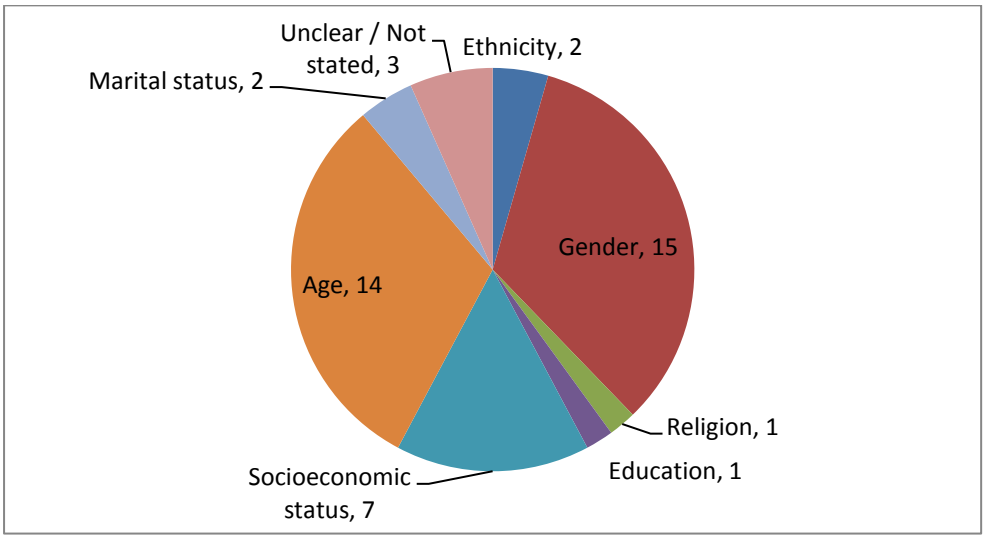
*Note: numbers add up to more than 53 as more than one procedure could be reported in each study.
**ISAPS= those procedures not the most frequently performed cosmetic surgery procedures as surveyed by the International Society of Aesthetic Plastic Surgery in 2010 (ISAPS 2010).

4.5.2 Predictors of requesting/undergoing surgery

Demographic characteristics

Sixty-six of the research abstracts provided details of one or more demographic characteristics to describe the study population. Of these, 24 went on to consider a range of different demographic factors as potential predictors of cosmetic surgery. Gender (n=15) was the most commonly assessed factor, followed by age (n=14) and socio-economic status (n=7). Figure 4.2 illustrates this comparison.

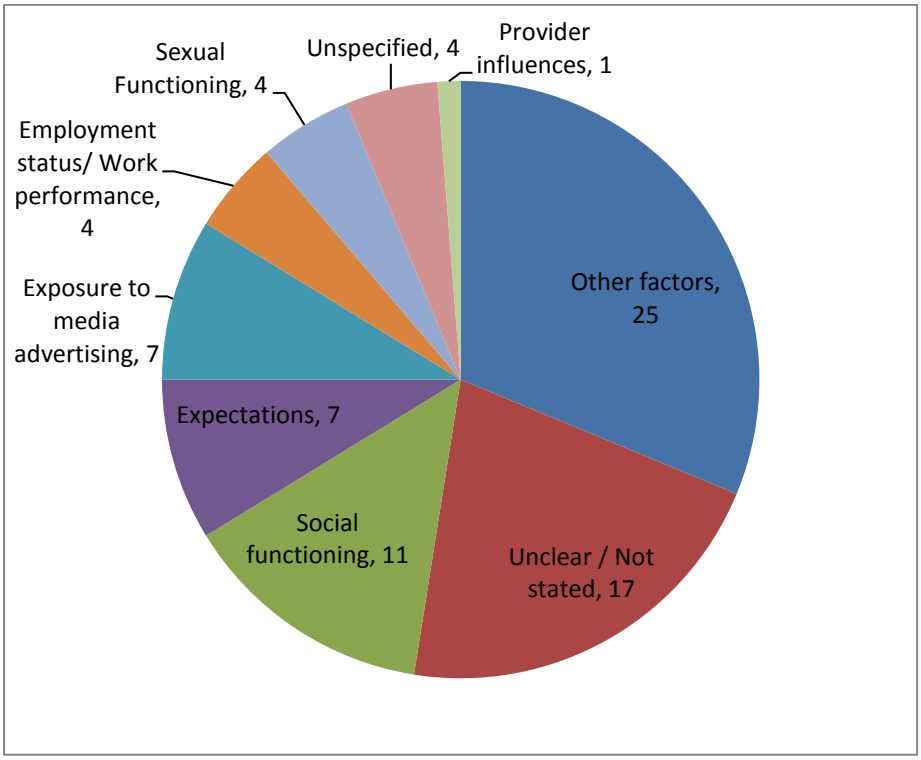
Figure 4.2: Demographic characteristics as predictors



Social characteristics

Sixty-four studies considered social factors as predictors of uptake or request for cosmetic surgery. Seventeen studies reported that they explored social predictors, but did not specify which ones. The remaining 47 studies reported a range of factors, the most frequent being social functioning (n=11), exposure to media advertising (n=7), and expectations of the outcome of cosmetic surgery (n=7). Twenty-five studies reported 'other' social factors, including the influence of friends and family, tobacco use, the acceptability of cosmetic surgery within their peer group, teasing, exposure to reality television shows, consumerist values, levels of physical activity and approaches to weight management. See Figure 4.3 for further details.

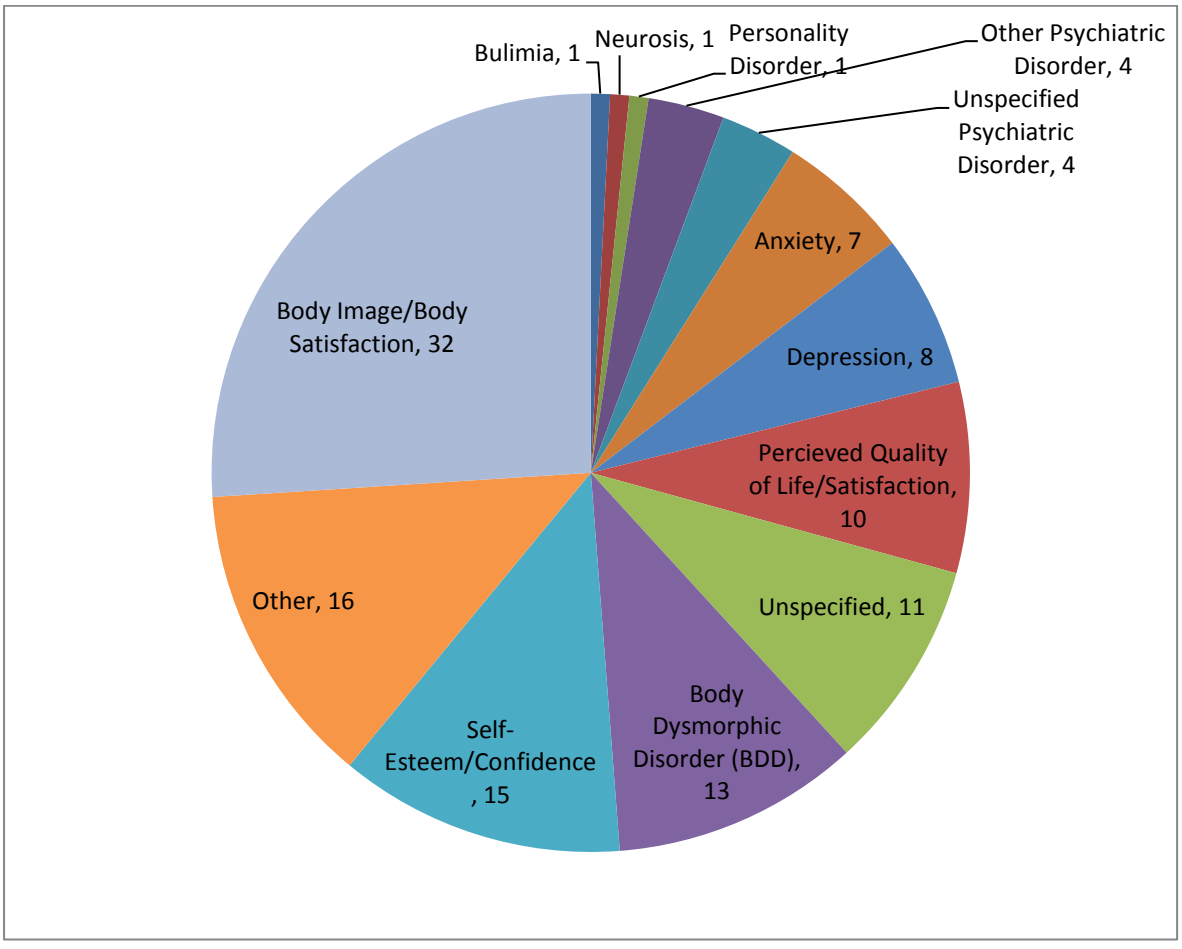
Figure 4.3: Social characteristics as predictors



Psychological characteristics

Seventy-one studies considered psychological or psychiatric characteristics as potential factors in the request of or uptake of cosmetic surgery. Eleven studies reported that they explored psychological predictors but did not specify which. The remaining 60 studies reported a range of factors, the most frequent being satisfaction with body image (n=32), followed by self-esteem/self-confidence (n=15), and perceived quality of life (n=10). A number of studies explored the relationship between the existence of distinct psychiatric conditions and uptake of cosmetic surgery, the most frequent of these being body dysmorphic disorder (BDD) (n=13), depression (n=8), and anxiety (n=7). Sixteen studies investigated 'other' psychological factors as predictors of cosmetic surgery. Four of these considered personality type, with a further four considering specific psychological constructs, such as self-efficacy, optimism/pessimism, adaptability, self-identity and self-determination. Other factors included the use of psychotherapy, psychosocial dysfunction, the use of medication to improve sleep or treat neurosis, and eating attitudes. Full details of the range of psychological factors investigated as predictors of uptake of cosmetic surgery are presented in Figure 4.4.

Figure 4.4: Psychological characteristics as predictors

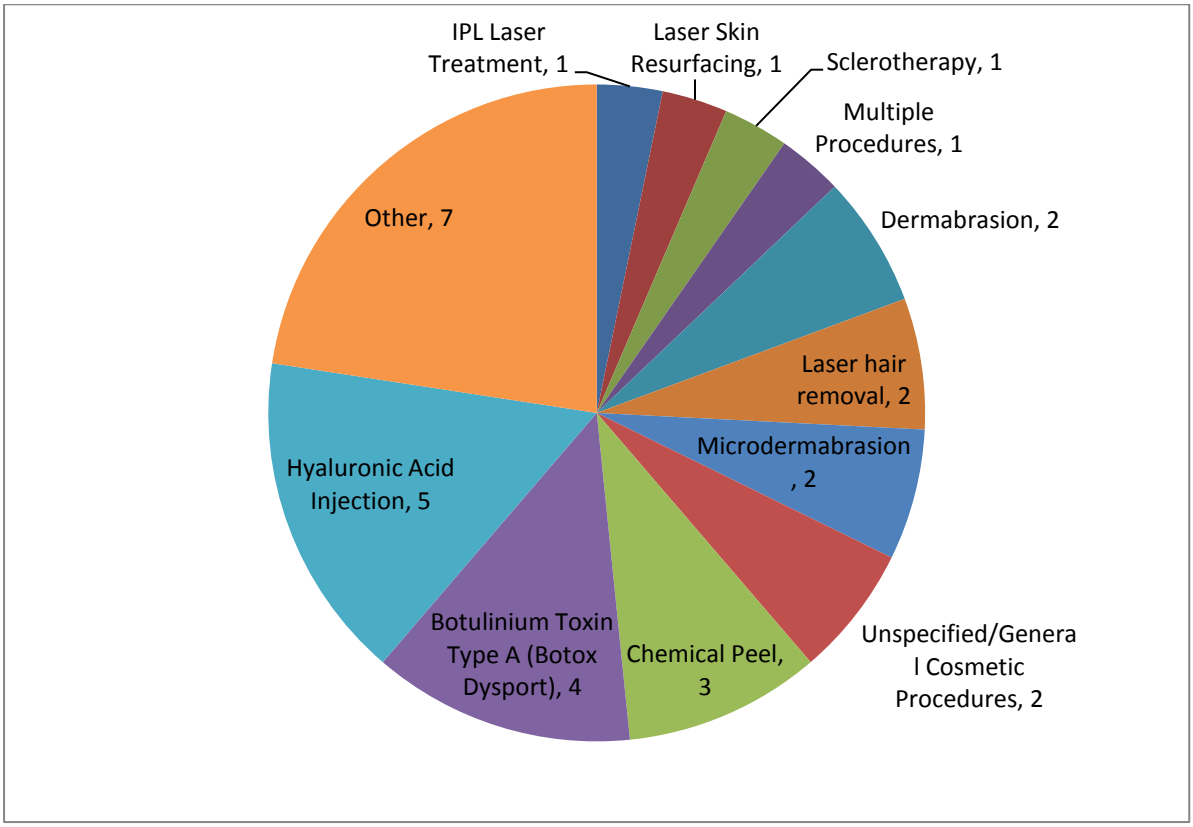


4.5.3 Non-surgical cosmetic interventions

Fourteen studies considered psychosocial factors associated with the uptake of non-surgical cosmetic interventions. The most commonly investigated intervention was the use of hyaluronic acid injections (n=5), followed by botox injections (n=4) and chemical peels (n=3). Seven studies

investigate 'other' interventions, the majority of which were cosmetic dental treatments. Others included tanning and the use of facial creams. See Figure 4.5 for further details.

Figure 4.5 Types of non-surgical cosmetic interventions



Predictors of uptake

Whilst eight studies provided demographic data to describe study populations, only three studies considered **demographic characteristics** as predictors of uptake of non-surgical cosmetic interventions. One study considered gender, another examined age, and one other study did not specify which demographic characteristics it investigated. **Social characteristics** as predictors of uptake of interventions were considered in nine studies. Three studies considered patients' expectations. Other studies investigated the roles of cost, exposure to advertising, employment status, provider influences, previous use of non-surgical interventions, and dependence on repeat administration of interventions. Ten studies explored **psychological or psychiatric characteristics** as predictors of uptake of interventions. Seven of these studies investigated the role of body image satisfaction; BDD, self-esteem and quality of life were each considered by two studies. Other predictors included depression, tension, embarrassment, irritability and either anticipative or experiential distress about the forthcoming procedure.

4.6 Discussion

The two systematic reviews differed with respect to their findings regarding the psychology of those seeking cosmetic surgery. However, the motivations and psychology of those seeking orthognathic surgery to correct dento-facial abnormality may be entirely different from those seeking a facelift. Overall, the findings of Alanko et al. (2010) suggest that the psychological make-up of those seeking orthognathic surgery (in terms of overall body image, psychological distress, self-esteem, depression and anxiety) lies within normal limits. It must be borne in mind that the findings from two small studies included within the review by Shridharani and colleagues, and

conducted in 1964 and 1980, are unlikely to be replicated in the current climate where cosmetic surgery is widely available and more socially acceptable.

Alanko et al. (2010) made the point that discrepancies were observed between results obtained from standardised questionnaires and patients' self-reports. They suggested that this might have arisen from individual patients experiencing problems which were not detectable when analysing mean scores. Alternatively, it may be that in retrospective studies, patients felt bound to emphasise the negative effects of dento-facial disharmony and the positive effects of cosmetic intervention in order to justify the time and costs assigned to the treatment. Eight of the 35 primary studies in their review were of a retrospective design.

The strongest association from the analysis of the relationship between psychological, social and health behaviour characteristics and having undergone cosmetic surgery among 982 Australian women, was having experienced intimate partner violence (IPV) and having undergone plastic surgery (Schofield et al. 2002). It may be that women seek reconstructive surgery subsequent to injury inflicted by a partner. Alternatively, women experiencing IPV may have undertaken cosmetic surgery as a response to criticism about their appearance or to enhance their self-esteem. If domestic violence is predictive of the uptake of cosmetic surgery, then it may be advisable to develop screening items to identify this vulnerable group at the point of requesting cosmetic intervention. Based on the 2009/10 British Crime Survey, seven per cent of women aged 16 to 59 were victims of domestic abuse in the previous year (Home Office 2010).

The lack of association between demographic characteristics (with the exception of private hospital insurance) and cosmetic surgery use may mean that psycho-behavioural characteristics may be more predictive of cosmetic surgery use than proxies of socio-economic status. The vast majority (90 percent) of those undergoing cosmetic surgery in the UK are female (British Association of Aesthetic Plastic Surgeons 2012), but since the sample was homogeneous with respect to gender and age, we are unable to draw any conclusions from this study about these factors in relation to uptake of cosmetic surgery. Although Schofield et al. (2002) have examined Australian women, it is unlikely that their nationality mitigates against the generalisability of these results to the UK, as both populations are subject to similar socio-economic and cultural influences.

The finding that women having previously undergone cosmetic surgery tend to have lower mental health scores and higher mean stress scores, and are more likely to be taking medication for sleep and/or nervous conditions, suggests that an investment in appearance resulting in plastic surgery may reflect psychological vulnerability. Alternatively, the association between cosmetic surgery use and health behaviours such as alcohol use and smoking may indicate that this population is less risk-averse than the general population. A further explanation could be that poorer mental health and stress are outcomes of cosmetic surgery itself. It must be acknowledged that we are unable to draw conclusions about cause and effect or direction of effect from this study.

With regard to aesthetic surgery in the UK, Duncan et al. (2004) noted that the absence of evidence of a decrease in the age of patients seeking any of the procedures studied over a five-year period (1998 to 2003) suggested that media reports of increasingly youthful patients were not representative of the activity in a large UK unit staffed by accredited surgeons. However, it must be acknowledged that operative trends could have altered in the eight years following the publication of their study.

The trend for facelift, blepharoplasty and breast augmentation to decline when interest rates were higher, and increase when interest rates became lower, suggests that levels of uptake of these procedures may have some parallels with those relating to the consumption of luxury goods.

The descriptive map of 104 primary studies which considered psychosocial predictors of cosmetic intervention does not include information about study findings, as our analysis is based on

information reported in the title and abstract only. However, the nature and scope of the primary research reflects some issues similar to those described in our discussion of the two systematic reviews. As with the systematic reviews, few studies investigated socio-economic status as a demographic characteristic predictive of cosmetic intervention. This does not mean that socio-economic status should be excluded as a predictor of uptake, only that it is not the focus of much of the relevant research. Data on socio-economic status or its proxies are more difficult to collect than other demographic characteristics such as age and gender.

Approximately 75 percent of primary studies investigated a broad range of psychological and psychiatric characteristics as predictors of cosmetic intervention. Satisfaction with body image, self-esteem or self-confidence and the existence of BDD were the most commonly assessed predictive variables. Given the existence of a large number of primary studies and the paucity of reviews focusing specifically on predictors of uptake of cosmetic surgery, a full systematic review of the psychological predictors of cosmetic intervention may be timely.

4. Research question 1

Table 4.1: RQ1 included studies

Author/ year Study design	Aims	Population details	Social/ psychological predictors	Findings	Overall appraisal Study quality Study usefulness
Alanko et al. (2010) Systematic review	To conduct a systematic review of studies concerning the psychosocial well-being of surgical-orthodontic patients.	**No of studies:** 35 **Setting:** Unspecified **Age:** Unspecified **Gender:** Unspecified **Ethnicity:** Unspecified **Other:** None **Country:** Not stated **Types of cosmetic surgeries:** Orthognathic surgery	Body image Self-esteem Self-confidence Depression Anxiety Body dysmorphic disorder (BDD)	Body image (aesthetic concerns) were the main motive for 30-96% of patients seeking treatment (8 studies) No differences in overall body image between future patients, adults not seeking treatment and those having had surgery (2 studies) 10% of 160 pre-operative patients had BDD (1 study) 0 of 20 patients had BDD (1 study) Self-esteem (38%) (1 study) and self-confidence (2 studies) were reported motives for seeking treatment Surgical-orthodontic patients' self-esteem did not differ from that of the general population (2 studies) 5-69% patients reported psychological disturbance and difficulties with social interactions or career related issues as motives for seeking treatment (3 studies) Pre-operative psychological profiles of patients were generally normal (1 study) 20% of pre-operative patients were psychologically distressed (1 study) Pre-operative patients did not have depressive disorders (4 studies) Patients had elevated depression scores (1 study) Anxiety levels did not differ from normal	**Authors' description:** Some primary studies only report patients' mean scores and compare them to controls' scores or population norms; thus discrepancies between results obtained from standardised questionnaires and patients' self-reports are possible **Reviewer's assessment:** Interpretation of review results limited by insufficient reporting. Quality of primary studies not assessed **Methodological quality:** Medium (7/11) **Usefulness:** Interpret with caution

Author/ year Study design	Aims	Population details	Social/ psychological predictors	Findings	Overall appraisal Study quality Study usefulness
				scores for the population (2 studies) or controls (2 studies) Researcher-developed questionnaires suggested 40% of pre-operative patients had anxiety	
Shridharani et al. (2010) Systematic review	Investigated the psychological outcomes, background, and personality types of patients seeking specific plastic surgery procedures	**No of studies:** 21 **Setting:** Unspecified **Age:** Unspecified **Gender:** Unspecified **Ethnicity:** Unspecified **Other:** Patients with psychological abnormalities **Country:** Not stated **Types of cosmetic surgeries:** Breast augmentation, facelifts, rhinoplasty Patients undergoing revision operations not included	Psychological abnormality	8 of 72 facelift patients in a study conducted in 1964 had psychosomatic disorders (depression n=15; schizoid n=7; anxiety disorder n=1) (1 study) 12 of 50 women undergoing facelifts in a study conducted in 1980 had psychological abnormality (1 study)	**Authors' description:** Author did not address issues of methodological limitations. **Reviewer's assessment:** Interpretation of review results limited by insufficient reporting and quality of primary studies not assessed **Methodological quality:** Low (5/11) **Usefulness:** Interpret with caution

4. Research question 1

Author/ year Study design	Aims	Population details	Social/ psychological predictors	Findings	Overall appraisal Study quality Study usefulness
Duncan et al. (2004) Survey	To identify demographic trends in aesthetic surgery patients in a significant provider in the United Kingdom, including age, gender and operation type as well as overall changes in surgical volume. At the same time, an attempt was made to correlate activity within the unit with macroeconomic indicators to assess whether any procedures were particularly responsive to changes in the economic climate	**Sample size**: 13,006 patient records **Setting**: Hospital database (1998-2003) **Age**: Mean age ranged 35-50 years **Gender**: Males and females **Ethnicity**: Unspecified **Other**: Unspecified Country: UK **Types of cosmetic surgeries**: Breast augmentation, blepharoplasty, facelifts, liposuction, rhinoplasty and others	**Macroeconomic indictor**: London interbank offered rate (LIBOR)	There was no evidence of decreasing age in the patient cohort studied. Most patients were female. Male aesthetic surgery patients remained in an almost unchanged minority throughout (approximately 10%) Demand increased year on year in spite of unstable economic conditions Demand for breast augmentation, facelift and blepharoplasty appeared to change in frequency according to indicators such as interest rate	**Authors' description**: Cases identified represented the activity of 51 surgeons and comprised a broad range of aesthetic practice. The authors suggested that the case mix studied represented a realistic snapshot of UK aesthetic practice in the period 1998–2003. However, all operations were counted individually, so where patients underwent a combination of procedures, each procedure was counted individually **Reviewer's assessment**: Data are represented in graphical format only **Methodological quality**: Sound (6/7) **Usefulness**: High relevance

Author/ year Study design	Aims	Population details	Social/ psychological predictors	Findings	Overall appraisal Study quality Study usefulness
Schofield et al. (2002) Survey	To assess psychosocial and health behavioural covariates of past cosmetic surgery	**Sample size:** 14,100 **Setting:** Unspecified **Age:** Aged 45-50 **Gender:** Female **Ethnicity:** Unspecified **Country:** Australia **Types of cosmetic surgeries:** Unspecified	Dieting behaviour Weight status Perception of weight status Domestic violence Bullying Medication for sleep Medication for nerves Mental health Stress Smoking Alcohol use Birthplace Rural/urban residence Occupation Educational attainment Language spoken at home Hours in paid employment	Intimate partner violence and dieting were strongly associated with use of cosmetic surgery Cosmetic surgery was more likely in women who had been verbally abused, smokers, those taking medication for sleep/ nerves and those with private medical insurance Obese and overweight women were significantly less likely to have had cosmetic surgery There were moderate associations between cosmetic surgery and alcohol use, higher stress and poorer mental health Psychosocial factors were more strongly associated with cosmetic surgery than demographic variables	**Authors' description:** Study made use of existing variables rather than collecting data such as measures of body image or self-esteem. Large number of variables used in analysis increased likelihood of finding significant associations by chance **Reviewer's assessment:** Large representative sample of Australian middle-aged women **Methodological quality:** Sound (5/7) **Usefulness:** High relevance

5. RQ2: What factors are associated with poor post-procedure psychological outcomes in people undergoing cosmetic interventions?

5.1 Overall summary of findings

- The evidence base is small and of low methodological quality.
- A variety of psychological outcomes were measured, hindering direct comparisons between studies.
- The nature of the evidence base means that it is difficult to confidently identify which factors lead to a poor psychological outcome for people undergoing cosmetic interventions.
- Indicative findings suggest that gender, relationship issues and unrealistic expectations may be associated with poor outcomes.
- There is conflicting evidence about whether the psychological status of patients is a predictor of a poor outcome.

5.2 Included studies

We found four systematic reviews that examined factors that predicted a poor psychological outcome in people undergoing cosmetic interventions (Alanko et al. 2010, Castle et al. 2002, Cook et al. 2006, Honigman et al. 2004). All of the studies included in the review by Castle et al. (2002) were also included in Honigman et al. (2004). Therefore, only Honigman et al. (2004) will be discussed in this chapter because it was published later and scored higher on the quality assessment. There was minimal overlap between included studies in the reviews: only one study was included in more than one review (Ercolani 1999b was included in both Cook et al. 2006 and Honigman et al. 2004). The two reviews, however, focused on different psychological outcomes.

A further 22 empirical primary studies identified factors associated with a poor psychological outcome. Owing to the short timelines of this rapid evidence assessment, they were not assessed but are available from the authors upon request. The following section describes and outlines the findings of the three included reviews (Alanko et al. 2010, Cook et al. 2006, Honigman et al. 2004). The characteristics of the included reviews are presented in Table 5.1 at the end of this chapter.

5.3 Systematic reviews

Cook et al. (2006) conducted a systematic review which aimed to examine the evidence on 1) the impact of elective cosmetic surgery on psychosocial outcomes, and 2) the validity of currently used selection criteria to identify those for whom surgery is most effective. The findings that addressed the second aim are considered here. Cook et al. focused on members of the general population that had elected to undergo a variety of cosmetic interventions: breast augmentation, breast reduction, orthognathic surgery, rhinoplasty, abdominoplasty or 'heterogeneous cosmetic procedures'. The review examined whether particular factors determine the likelihood of a poor psychological outcome from these interventions. Psychological outcomes included health-related quality of life, neuroticism, psychological disorder or distress, and abnormal anxiety. The review narratively summarised the study findings. Outcomes were measured with a range of different questionnaires.

Cook et al. (2006) concluded that, based on eight prospective observational studies, there was insufficient evidence that demographic or psychological factors were associated with a poor outcome. The findings for demographic characteristics and psychological status are reported below:

- Demographic characteristics – age or gender (3 studies): Two studies found that age did not influence post-operative outcomes in relation to health-related quality of life (Behmand et al. 2000, Blomqvist et al. 2000). One study found a significant interaction between gender and post-operative improvement for neuroticism, with men showing a smaller improvement than women (Ercolani et al. 1999a).
- Psychological status (5 studies): The authors concluded that 'whereas there remains no convincing evidence that surgery can relieve pre-existing psychological disorder, there is no evidence that it worsens such disorder' (p1148). The evidence from the five studies was conflicting. Two studies reported non-significant reductions in post-operative psychological disorder (Faria et al. 1999, Klassen et al. 1996b). One study found a reduction in psychological disorder following breast augmentation, but the review authors noted that this finding could not be attributed to the surgery due to the lack of controls in the study (Schlebusch et al. 1993). Another study found that abnormal scores for anxiety and neuroticism remained post-operatively (Ercolani et al. 1999b). The final included study with significant findings reported that scores for psychological disorders did reduce post-operatively but that this study suffered substantial loss to follow-up (Klassen et al. 1996a).

The review authors highlighted the lack of research investigating factors associated with poor outcomes. They noted that while clinical and non-clinical criteria were widely used to select patients for cosmetic surgery, 'research has neglected testing whether these criteria do predict outcome' (p1149). The authors recognised that it was difficult to identify predictors of poor outcomes because populations under study were likely to have been subject to prior screening. Thus, the poorest candidates for surgery were likely to have already been screened out of study samples. The review authors also noted that the 'poor methodological quality of the published research' (p1148) hindered their ability to draw conclusions about factors associated with a poor outcome. The authors outlined concerns about poor reporting, inadequate control groups and inadequate follow-up.

The findings of this systematic review are sound, based on a quality assessment using the AMSTAR rating, which scored the review as 9 out of 11.

Alanko et al. (2010) conducted a systematic review that examined the well-being of patients before, during and after orthognathic treatment. The authors addressed a number of research questions, including whether patients were satisfied with the treatment outcome. In considering this question, Alanko et al. (2010) identified factors that were associated with poor outcome/dissatisfaction; these findings are reported here.

The review examined the outcomes of patients from the general population. The included studies measured a variety of psychological outcomes using a range of different questionnaires and scales. Alanko et al. (2010) provided a narrative summary of the findings from the included studies, ordered by outcome. The only outcome relevant to this chapter was satisfaction with treatment/body satisfaction. Seven included studies examined which factors were associated with a poor outcome. Findings for each factor are reported below:

- Expectations (2 studies): One retrospective study (without controls) found that patients were disappointed because facial changes were not as great as expected (20 percent of patients) (Zhou et al. 2001b). A prospective study (without controls) reported that dissatisfied patients had unrealistic expectations (Chen et al. 2002). Alanko et al. (2010: 258) noted that 'it seems plausible that patients who believe that treatment can cure all their problems are easily dissatisfied'.
- Physical abnormalities or disorders (2 studies): One cross-sectional study without controls and one in which the design was not reported found that patients who had temporomandibular disorders were less satisfied that patients without these disorders

(Bock et al. 2007, Espeland et al. 2008). One study reported that patients with impaired nerve function and relapse were less satisfied than patients without these issues (Espeland et al. 2008).

- Psychological status (2 studies): This review reported conflicting evidence about the association of psychological status with poor outcomes. One prospective study (without controls) found that psychological distress was not associated with dissatisfaction with treatment outcome (Phillips et al. 2004). Another prospective study (without controls) found an association between levels of BDD symptoms and pre-operative depression, and patient satisfaction with treatment (Rispoli et al. 2004).
- Relationship issues (1 study): Disagreement between partners over the necessity for a procedure was associated with dissatisfaction with treatment by one prospective study without controls (Chen et al. 2002).
- Interpersonal issues (1 study): Patients who were very sensitive regarding 'interpersonal issues' were associated with a poor outcome by one prospective study without controls (Chen et al. 2002).
- Passive acceptance of surgery (1 study) was associated with a poor outcome by one prospective study without controls (Chen et al. 2002).
- Motivation (1 study): Patients who undertook surgery to improve their social life were not as satisfied as patients with other motivations by one retrospective study without controls (Williams et al. 2005).

Alanko et al. (2010) did not assess the quality of the included studies but they did comment on 1) the difficulty in comparing studies which had used different measurement tools, 2) small samples and 3) poor or incongruent reporting. The findings of this systematic review should be interpreted with caution, due to the methodological limitations of the included primary studies. The review was rated 7 out of 11 on the AMSTAR scoring system.

Honigman et al. (2004) conducted a systematic review to examine whether 1) elective cosmetic procedures improved psychological well-being and psychosocial functioning, and 2) whether there were identifiable predictors of a poor psychological outcome. The findings that addressed the second aim are considered here. The studies included in the review examined a range of different cosmetic procedures: breast augmentation, breast reduction, rhytidectomy, rhinoplasty and a combination of procedures. The review focused on psychological and psychosocial outcomes for patients undergoing these cosmetic interventions. The authors did not specify the details of the psychological outcomes beyond describing 'psychological' as 'the emotional state of the person' and 'psychosocial' as 'functioning in social and work/study domains' (p1231). A range of methods were used to measure outcomes, which included questionnaires, diagnostic interviews and self-reports. To draw conclusions about predictors of poor outcome, the review authors provided a narrative summary of the studies, grouped according to different factors. The authors explicitly stated that the findings of the review were based on the results of the individual studies, as no attempt was made to pool the results.

Fourteen included studies identified factors associated with poor outcomes. The authors concluded that 'several predictors of poor outcome do emerge from the literature', which included the following:

- Demographic characteristics: male patients – 3 studies: Edgerton et al. 1960 (pre and post design without controls), Guyuron et al. 1996, Slator et al. 1992 (both retrospective design without controls); younger patients – 3 studies: Edgerton et al. 1964 (pre and post design with controls), Meyer et al. 1960 (pre and post design without controls), Guyuron et al. 1996 (retrospective design, without controls).
- Psychological status: history of depression or anxiety – 5 studies: Beale et al. 1985 (longitudinal design with controls), Edgerton et al. 1961 (pre and post design without

controls), Goin et al. 1980 (longitudinal prospective design without controls), Meyer et al. 1987 (pre and post design with controls), Sarwer et al. 1998b (pre and post design without controls); dysmorphophobia – 1 study: Ercolani, 1999b (pre and post design, without controls); personality disorder –3 studies: Goin et al. 1980 (longitudinal prospective design without controls), Napoleon 1993 (longitudinal without controls), Wright et al. 1975 (pre and post design with controls).

- Relationship issues: motivated to undergo surgery to save a relationship or disagreement between partners over necessity for procedure – 3 studies: Beale et al. 1985 (longitudinal with controls), Edgerton et al. 1961 (pre and post design without controls), Wright et al. 1975 (pre and post design with controls).
- Expectations: unrealistic expectations – 3 studies: Beale et al. 1985, (longitudinal design with controls), Edgerton et al. 1961, (pre and post design without controls), Napoleon 1993 (longitudinal without controls).
- Dissatisfaction with previous surgical procedure – 3 studies: Goin et al. 1977, Goin et al. 1980 (both pre and post design without controls), Knorr 1972 (case study design).
- Minimal deformity – 1 study: Edgerton et al. 1960 (pre and post design, without controls).

Honigman et al. (2004) reported that 'methodological limitations of the studies preclude drawing firm conclusions and limit the confidence that can be placed in the findings' (p1232). The authors also noted that there was a particular lack of research examining the role of BDD as a predictor of a poor outcome. The review found one study (Ercolani et al. 1999b) that examined the association between 'dysmorphophobia' (an historic term for BDD) and a poor outcome 'but these authors do not present explicit supporting data' (p1234). Honigman et al. (2004) reported that they were unable to find a study that assessed change in psychological status in cosmetic surgery patients with BDD. They suggested that another limitation was that such studies tended to be retrospective, examining patients that had sought psychiatric support following intervention (and thus likely to have had a poor outcome following surgery). Due to these methodological limitations, the findings of this review need to be interpreted with caution. The quality assessment score for this review was 5 out of 11 on the AMSTAR rating system.

5.3.1 Comparing review findings

Review scope

The review by Honigman et al. (2004) examined many of the same cosmetic interventions addressed by Cook et al. (2006). However, it did not examine orthognathic treatment, which was the sole procedure considered by Alanko et al. (2010). All reviews included patients from the general population that had elected to undertake cosmetic procedures. The broad outcomes reported by Honigman et al. (2004) appear similar to those examined by Cook et al. (2006), who included a range of different psychological measures. However, Alanko et al. (2010) only focused on satisfaction with treatment/body satisfaction.

Review findings

Two reviews concluded that the limitations of the primary studies preclude drawing firm conclusions about factors that were associated with a poor psychological outcome (Cook et al. 2006, Honigman et al. 2004). The following list therefore identifies indicative findings of potential predictors. These are factors that have been: 1) reported in two or more reviews or 2) identified by multiple included studies in those reviews:

- Gender: male patients were more likely to report poor outcomes from cosmetic surgery (4 studies in total from Cook et al. 2006 and Honigman et al. 2004: Edgerton et al. 1960, Ercolani et al. 1999a, Guyuron et al. 1996, Slator et al. 1992).

- Relationship issues: poor outcomes were identified for patients who had disagreements with their partners about the necessity for the cosmetic procedure (4 studies in total from Alanko et al. 2010 and Honigman et al. 2004: Beale et al. 1985, Chen et al. 2002, Edgerton et al. 1961, Wright et al. 1975).
- Expectations: unrealistic expectations of the procedure were associated with a poor psychological outcome (5 studies in total from Alanko et al. 2010 and Honigman et al. 2004: Beale et al. 1985, Chen et al. 2002, Edgerton et al. 1961, Napoleon 1993, Zhou et al. 2001b).

There is conflicting evidence about whether the following factors are associated with a poor psychological outcome:

- Psychological status: Cook et al. (2006) found that there was no evidence that surgery worsened psychological outcomes of those with pre-existing disorders (5 studies: Ercolani et al. 1996b, Faria et al. 1999, Klassen et al. 1996a, Klassen et al. 1996b, Schlebusch et al. 1993). Honigman et al. (2004) reported multiple studies that found that psychological status was a predictor of poor outcome (8 studies: Beale et al. 1985, Edgerton et al. 1961, Ercolani 1999b, Goin et al. 1980, Meyer et al. 1987, Napoleon 1993, Sarwer et al. 1998b, Wright et al. 1975). One of these studies (Ercolani et al. 1996b) was also reviewed in Cook et al. (2006). The two reviews, however, focused on different psychological outcomes. Honigman et al. (2004) reported findings for 'moderate dysmorphophobia', whereas Cook et al. (2006) focused on 'abnormal anxiety and neuroticism scores'. Alanko et al. (2010) reported conflicting findings (2 studies: Phillips et al. 2004, Rispoli et al. 2004).

All three reviews reported concerns about the methodological quality of the included studies.

5.4 Discussion

The insufficient and low-quality evidence means that it is difficult to identify factors that are associated with poor post-procedure psychological outcomes in people undergoing cosmetic interventions. Indicative findings from the current evidence base suggest that gender, relationship issues and unrealistic expectations may be associated with poor outcomes, although more rigorous research is needed to confirm these findings. These factors were identified by multiple studies in two or more of the systematic reviews. There is conflicting evidence about whether the psychological status of patients is associated with a poor psychological outcome.

Many gaps remain in our understanding of factors that predict a poor outcome. Despite the widespread use of clinical and non-clinical criteria for identifying patients suitable for cosmetic procedures, there is a dearth of research testing these criteria (Cook et al. 2006). The research that has been reviewed in this chapter has focused on a range of cosmetic interventions and outcomes. Whilst the included reviews examined a range of surgical procedures, little is known about non-surgical interventions. Further, the use of a variety of psychological outcomes means that direct comparison across studies is challenging.

The primary studies seeking to identify predictors of a poor outcome that were included in these reviews are lacking in methodological rigour. They suffer from a variety of limitations including poor reporting, small sample sizes, and inadequate control groups and follow-up periods (Alanko et al. 2010, Cook et al. 2006, Honigman et al. 2004). These limitations hinder our ability to identify and better understand what factors may lead to a negative outcome for patients of cosmetic interventions. Moreover, the review-level evidence is also methodologically problematic. Only one of the included reviews was considered 'sound' (Cook et al. 2006). The findings from the remaining two reviews should be interpreted with caution (Alanko et al. 2010, Honigman et al. 2004).

Table 5.1: Included studies (n=4)

Review Quality Rating	**Aims**	**Included studies**	**Intervention**	**Predictors**	**Psychological outcomes Follow-up**	**Findings**	**Quality assessment**
Alanko et al. (2010) Interpret with caution 7/11*	To conduct a systematic review of studies concerning the psychosocial well-being of surgical-orthodontic patients	**Number of included primary studies relevant to this RQ**: 7 **Target population?** No: non-specific/ general population **Demographic characteristics**: Unclear/not stated **Countries**: Unclear/not stated	Orthognathic cosmetic surgery	Social functioning Expectations Physical disorders Psychological distress Body dysmorphic disorder (BDD) Depression	Body image/ body satisfaction **Length of follow-up**: Immediately post-surgery to 3 years post-surgery	**Predictors of a poor outcome**: Expectations, physical disorders, psychological status, relationship issues, interpersonal issues, motivation, passive acceptance of surgery	**Reviewer assessment**: Relatively well conducted review. Quality of primary studies not assessed. The limitations of the primary studies mean that the results must be interpreted with caution. **Author identified** limitations: Authors comment on the difficulty in comparing studies which have used different measuring tools, small samples and poor reporting

5. Research question 2

Review Quality Rating	Aims	Included studies	Intervention	Predictors	Psychological outcomes Follow-up	Findings	Quality assessment
Cook et al. (2006) Sound 9/11*	'To review evidence on whether ... currently used selection criteria correctly identify those for whom elective cosmetic surgery is most effective'	**Number of included primary studies relevant to this RQ**: 8 **Target population?** No: non-specific/ general population **Demographic characteristics**: Gender: 100% female (14 studies); 50-90% female (8 studies) Age: 22-41 **Countries**: UK, Canada, United States Mixed: 'other European', 'other worldwide'	Multiple cosmetic surgery procedures Abdominoplasty Breast augmentation Breast reduction Orthognathic surgery Rhinoplasty	**Demographic characteristics**: Age, Gender Psychological status	Health-related quality of life Mental health (anxiety, depression, neuroticism, psychological distress) **Length of follow-up**: Unclear/not stated	'There was insufficient evidence for the validity of criteria for patient selection'	**Reviewer assessment**: Well-conducted review but significant limitations in the reporting **Author identified limitations:** Lack of clear descriptions of included studies' populations and exposure; lack of adequate controls across included studies and inadequate follow-up

Review Quality Rating	**Aims**	**Included studies**	**Intervention**	**Predictors**	**Psychological outcomes Follow-up**	**Findings**	**Quality assessment**
Honigman et al. (2004) Interpret with caution 5/11*	To address whether elective cosmetic procedures improve psychological well-being and psychosocial functioning and whether there are identifiable predictors of an unsatisfactory psychological outcome.	**Number of included primary studies relevant to this RQ**: 14 **Target population**: No: non-specific/ general population **Demographic characteristics**: Gender: 100% female (18 studies) Mean age: 21-56 years **Countries**: Unclear/Not Stated	Multiple cosmetic surgery procedures Breast augmentation Breast reduction Facelift Rhinoplasty	**Demographic characteristics**: Age, Gender History of multiple unsatisfactory cosmetic procedures Social functioning Anxiety Depression Body Dysmorphic Disorder (BDD) Expectations Personality Disorder	Psychological Psychosocial Length of follow-up: 1 week to 9.5 years	'Factors associated with poor psychosocial outcome included being young, being male, having unrealistic expectations of the procedure, previous unsatisfactory cosmetic surgery, minimal deformity, motivation based on relationship issues, and a history of depression, anxiety, or personality disorder. Body dysmorphic disorder was also recognized by some studies as a predictor of poor outcome, a finding reinforced by reference to the psychiatric literature'	**Reviewer assessment**: Although no formal tool was used to assess quality, consideration was given to quality of primary studies Comprehensive evidence tables were provided **Author identified limitations:** 'methodological limitations of the studies preclude drawing firm conclusions and limit the confidence that can be placed in the findings' (p1232)

*Satisfied questions 3, 6 and 8 of the AMSTAR quality assessment tool, having carried out a comprehensive search, provided detailed characteristics of the included studies and taken into consideration the quality of the primary studies when formulating their conclusions.

6. RQ3: What are the effects of cosmetic interventions on post-procedure psychological and social outcomes?

6.1 Overall summary of findings

- The findings suggest limited effectiveness for psychological or social outcomes following abdominoplasty.
- Inadequate reporting limits understanding of the extent to which patients were satisfied with botulinum toxin type A as a cosmetic intervention.
- The findings suggest high satisfaction with breast augmentation surgery, but questionably biased positive effects with regard to psychological and social outcomes; three studies provided evidence of an association with suicide.
- In general, the findings from one review assessing methodologically limited primary studies of breast reduction surgery describe high levels of satisfaction, and trends toward improved psychological and social outcomes.
- High levels of satisfaction were reported in three primary studies examining patients undergoing LASIK eye surgery.
- Limited evidence suggests improved self-esteem and decreased anxiety following orthognathic surgery. The findings from weak studies suggest improvements to social functioning.
- Reviews examining rhinoplasty outcomes suggest high levels of satisfaction but mixed results for psychological disturbance and limited evidence suggesting improved self-esteem and decreased anxiety post-operatively; the findings from weak studies suggested improvement to social functioning.

6.2 Systematic reviews

We found nine systematic reviews relating to the effects of cosmetic interventions on post-procedure psychological outcomes. (Alanko et al. 2010, Castle et al. 2002, Cook et al. 2006, Fagien and Carruthers 2008, Goodman 2011, Honigman et al. 2004, Shridharani et al. 2010, Singh and Losken 2012, Solomon et al. 2009). Three eligible reviews were found to be unsound following quality assessment – i.e. they had an AMSTAR quality rating of three or less out of a maximum score of 11 (Castle et al. 2002, Singh and Losken 2012, Goodman 2011). We discuss the results of these reviews separately at the end of this chapter (see section 6.11). An additional 80 primary studies addressing this research question were also located but were not assessed because of the large number of identified systematic reviews. These primary studies are available from the review authors upon request.

The remaining six reviews are firstly critiqued, with a brief description of their aims and quality assessment. In the remainder of the chapter, the analysis is structured by procedure, and then outcome. To promote breadth of coverage, the findings from the individual primary studies within the reviews are described where they provide evidence relevant to the research question. Characteristics of all the reviews are presented in Table 6.5 at the end of this chapter.

In order to confidently determine effects upon post-procedure psychological and social outcomes, research study designs should incorporate an appropriate control or comparison group. If randomised controlled trials are unavailable, controlled trials and controlled observational studies such as cohort studies or case-control studies would normally be sought. Prospective studies usually have fewer potential sources of bias and confounding than retrospective studies. Where the design

of the primary research studies within the included reviews has been reported, we have recorded this information in Table 6.5.

6.2.1 Aims and quality of the six included reviews

Cook et al. (2006) (AMSTAR rating 9/11)

Cook et al. (2006) conducted a systematic review which aimed to examine the evidence on 1) the impact of elective cosmetic surgery on psychosocial outcomes, 2) the validity of currently used selection criteria to identify those for whom surgery is most effective. Quality assessment of this review by the review team resulted in an AMSTAR rating of 9 out of 11. It should be noted that Cook et al. (2006) scored positively for questions three, six and eight of the AMSTAR quality appraisal tool, having carried out a comprehensive search, provided detailed characteristics of the included studies and taken into consideration the quality of the primary studies when formulating their conclusions. Cook et al. reported that 'All [included studies] were prospective observational studies, and most provided low standards of evidence' (p1136). The authors understood the methodological limitations as a reflection of the difficulty in undertaking randomised controlled trials in this area: 'it is implausible that patients seeking such treatment would generally accept randomisation to be denied surgery for a year or more' (p1148). They highlighted a number of limitations with the primary studies, including poor reporting, lack of comparison or control groups, high attrition, inadequate follow-up and mixed population groups requiring surgery for cosmetic and non-cosmetic reasons.

This was the only review that was considered to be of high methodological quality. The remaining reviews should be interpreted with caution and are described in alphabetical order below.

Alanko et al. (2010) (AMSTAR rating 7/11)

Alanko et al. (2010) conducted a systematic review which aimed to determine which factors motivated orthognathic surgery patients to seek treatment, whether dento-facial disharmony affected patients' psychological status, whether patients' psychological status was affected by orthognathic treatment, whether patients were satisfied with treatment outcome and whether dento-facial disharmony and its correction had an effect on patients' quality of life. Quality assessment of this review by the review team resulted in an AMSTAR quality rating of 7 out of 11. Overall appraisal suggested that these findings should be interpreted with caution. In particular, Alanko et al. (2010) had taken the quality of the primary studies into account while formulating the conclusions of their review, but had not undertaken any systematic quality appraisal of the included studies. Data from individual primary studies was frequently unreported, such that the reader was reliant upon the reviewers' interpretation of the results. Alanko et al. (2010) noted that many of the included articles reported patients' mean scores and compared them to controls' scores or population norms. It was therefore possible that individual patients might have experienced problems not detectable when analysing mean scores only, and this might have explained some of the discrepancies between the results obtained from standardised questionnaires and patients' self-reports. In addition, the authors noted that in retrospective studies, it was possible that patients felt a need to emphasise the positive effects of cosmetic intervention in order to justify the burden and costs of the treatment. If true, this would result in an overestimation of the benefits of intervention. Finally, the authors note that comparisons of the reported results were hampered by wide variation in assessment times and methods. Alanko et al. (2010) also stated that a number of the primary studies were conducted with small groups, and in some cases, necessary statistical information was not reported.

Fagien and Carruthers (2008) (AMSTAR rating 5/11)

Fagien and Carruthers (2008) conducted a systematic review to determine the level of satisfaction with botulinum toxin type A treatment in aesthetic uses, with the aim of identifying strategies to optimise outcomes and positively influence patient retention in practice. Quality assessment of this review by the review team resulted in an AMSTAR rating of 5 out of 11. Overall appraisal suggested that these findings should be interpreted with a great deal of caution. In particular, Fagien and Carruthers (2008) declared a conflict of interest as consultants and advisers to Allergan Inc. and Medicis Inc., and failed to provide information regarding the quality or methodological limitations of the primary studies.

Honigman et al. (2004) (AMSTAR rating 5/11)

Honigman et al. (2004) conducted a systematic review to determine 1) whether elective cosmetic surgery improves psychological functioning and 2) whether there are identifiable predictors of an unsatisfactory outcome. Quality assessment of this review by the review team resulted in an AMSTAR rating of 5 out of 11. It should be noted that Honigman et al. (2004) scored positively for questions three, six and eight of the AMSTAR quality appraisal tool, having carried out a comprehensive search, provided detailed characteristics of the included studies and taken into consideration the quality of the primary studies when formulating their conclusions. We extracted data relating only to specific cosmetic procedures from this review. Seven of the 37 included primary studies related to unspecified or undefined 'cosmetic surgery' or 'various' cosmetic procedures and were not included in the synthesis because we could not elucidate which procedures were under examination. Overall appraisal suggested that these findings should be interpreted with caution primarily due to the limitations of the primary studies. The authors noted that all of the primary studies suffered from methodological shortcomings, including: small sample size; ascertainment bias (e.g. samples from specialist centres); high rates of refusal to participate in some studies; no accurate assessment of those who were eligible and were approached but chose not to participate; a lack of reliable and valid measures; and short duration of follow-up. The psychological and social domains of functioning were often not defined. Lack of details of interview schedules and diagnostic criteria cast doubt on whether patients were truly psychiatrically unwell. Of thirty-seven included studies, five were published in the 1960s, six were published in the 1970s, ten were published in the 1980s, fourteen were published in the 1990s and only two were published after 2000.

Shridharani et al. (2010) (AMSTAR rating 5/11)

Shridharani et al. (2010) conducted a systematic review investigating the psychological outcomes, background and personality types of patients seeking a variety of plastic surgery procedures. Quality assessment of this review by the review team resulted in an AMSTAR rating of 5 out of 11. Overall appraisal suggested that these findings should be interpreted with caution. In particular, Shridharani et al. (2010) failed to provide any information regarding the quality or methodological limitations of the primary studies. Data from individual primary studies were frequently unreported such that the reader was reliant upon the reviewers' interpretation of the results. It should be noted that with the exception of the large cohort studies examining increased mortality for breast augmentation patients, the studies from the review by Shridharani et al. (2010) relating to the outcomes of cosmetic surgery generally had small sample sizes and were often conducted some considerable time ago in the 1960s, 1970s and 1980s.

Solomon et al. (2009) (AMSTAR rating 8/11)

Solomon et al. (2009) undertook a systematic review to analyse the patient-reported outcomes of satisfaction after LASIK surgery. Quality assessment of this review by the review team resulted in an AMSTAR rating of 8 out of 12. Overall appraisal suggested that these findings should be

interpreted with caution. In particular, Solomon et al. (2009) failed to provide any information regarding the quality or methodological limitations of the primary studies. No details were given regarding the study design of the included studies. Only 3 of the 19 included studies measured satisfaction using questionnaires which were validated. The questionnaires used were not reported, so the aspects of satisfaction being measured could not be determined. The authors noted that they assessed the methodological quality of the primary studies using accepted criteria, but beyond reporting that some of the studies had low response rates, and 36.8 percent (7/19) were retrospective, failed to provide further details. The authors suggested possible reasons for underestimation of the rate of dissatisfaction, including patients rating their level of satisfaction higher in an effort to please their physician (Hawthorne effect) and low response rates resulting in bias because satisfied patients may be more prone to completing questionnaires.

Several types of cosmetic procedures were examined in the six contributing reviews; these are presented in Table 6.1.

Table 6.1: Cosmetic procedures

Review	**Cosmetic procedure (n=8)**							
	Abdominoplasty	Breast augmentation	Breast reduction	Orthognathic surgery	Rhinoplasty	Facelift	Botulinum toxin	LASIK
Alanko et al. (2010)				x				
Cook et al. (2006)	x	x	x	x	x			
Fagien and Carruthers (2008)							x	
Honigman et al. (2004)		x	x		x	x		
Shridharani et al. (2010)		x	x		x	x		
Solomon et al. (2009)								x

6.3 Abdominoplasty

One review provided information regarding the outcomes of abdominoplasty (Cook et al. 2006). This review aimed (in part) to review the evidence of psychosocial outcomes of cosmetic surgery. Only two of the 25 included studies in the review focused on abdominoplasty (Bolton et al. 2003, Klassen et al. 1996). Both studies were subject to methodological limitations. The findings suggested limited effectiveness for psychological or social outcomes related to abdominoplasty.

6.3.1 Psychological outcomes

Body image

A study of 30 female abdominoplasty patients by Bolton et al. (2003) found no significant post-surgical difference in body image as measured by the Multidimensional Body Self Relations

Questionnaire, Sociocultural Attitudes Towards Appearance Questionnaire, Appearance Schemas Inventory, or Situational Inventory of Body Image Dysphoria. A significant improvement in patients' appearance evaluation and body satisfaction were reported following surgery (Appearance Evaluation: *Cohen's d* 0.7, p <0.001; Body Satisfaction *Cohen's d* 0.54, p < 0.001) but significantly worse body image as measured by the Body Exposure During Sexual Activities Questionnaire (BESAQ: *Cohen's d* 0.54, p < 0.001).

Mental health

Two studies, both with methodological flaws, reported no significant change in post-operative mental health (Bolton et al. 2003, Klassen et al. 1996).

Self-esteem

A study examining 286 patients (approximately 80 percent females), reported a moderate improvement in self-esteem following abdominoplasty (Klassen et al. 1996). The methodological limitations of this study (including loss to follow-up of 31 percent) mean that the findings may reflect bias in the sample rather than actual improvement. Another study found no significant post-operative change in self-esteem for 30 female abdominoplasty patients (Bolton 2003).

6.3.2 Social outcomes

Health-related quality of life (HQRL)

There was insufficient evidence of a suitable quality to determine whether satisfaction with life or quality of life improved as a result of abdominoplasty in the two primary studies included within Cook et al. (2006). One study found statistical evidence of improvement in two out of eight HRQL subscales: emotional and social functioning (Klassen et al. 1996). This study suffered significant loss to follow-up so, as the review authors noted, the findings may be biased. Bolton et al. (2003) reported no significant post-operative improvement in satisfaction with life for 30 female abdominoplasty patients as measured with the Satisfaction With Life Scale (SWLS).

6.4 Botulinum toxin type A

One review examined patient satisfaction following botulinum toxin type A for aesthetic use (Fagien and Carruthers 2008). The review aimed to identify strategies to optimise outcomes and positively influence patient retention in practice.

6.4.1 Satisfaction

Two studies from Fagien and Carruthers (2008) provide limited information regarding the outcomes of treatment with botulinum toxin type A (Lowe et al. 2005, Sommer et al. 2003). Overall, it was unclear from the two relevant studies to what extent patients were satisfied with botulinum toxin type A as a cosmetic intervention.

Lowe et al. (2005) conducted a RCT involving 162 patients, which found that >70 to >80 percent of patients were somewhat satisfied, satisfied or very satisfied as measured by the Facial Line Treatment Satisfaction Questionnaire. At three months, >60 to >70 percent of patients were similarly satisfied with the procedure. The review, however, did not provide details of the exact numbers of patients that were satisfied with the procedure. We only know that, for example, ‘greater than 70%’ of patients were satisfied.

Sommer et al. (2003) assessed the satisfaction of 30 patients using the Freiburg Questionnaire on Aesthetic Dermatology and six questions from the Freiburg Life Quality Assessment instrument. The

proportion of patients describing the procedure as 'beneficial' eight to twelve weeks after treatment was reported as >80 percent. Again, the exact number of patients finding the treatment beneficial was not reported.

6.5 Breast augmentation

Three reviews provided information regarding the outcomes of breast augmentation (Cook et al. 2006, Honigman et al. 2004, Shridharani et al. 2010). These findings suggest high satisfaction with breast augmentation, but studies reporting positive effects on psychological and social outcomes may have been subject to bias.

The overlap in terms of primary studies included within more than one review is presented in Table 6.2. The results of the primary studies reported in more than one review are only reported once in this report.

Whilst patients may report high satisfaction levels, the undefined nature of 'satisfaction', limited follow-up and the likelihood of positive response bias mean that these results are suspect. There was limited evidence from three small primary studies to suggest an improvement in body image following breast augmentation. Three studies of indeterminate quality reported beneficial outcomes of breast augmentation with respect to self-esteem/confidence. Three primary studies provided evidence to suggest that there was an association between undergoing breast augmentation and suicide. However, the direction of effect cannot be inferred. Finally, limited evidence suggested improved interest from a sexual partner following breast augmentation surgery. These outcomes are described in more detail below.

Table 6.2: Primary studies examining breast augmentation outcomes across included reviews

	Cook et al. 2006	**Honigman et al. 2004**	**Shridharani et al. 2010**
Baker et al. 1974			x
Banbury et al. 2004	x		
Beale et al. 1985		x	x
Brinton et al. 2001			x
Cash et al. 2002		x	
Edgerton et al. 1961		x	
Hetter 1979			x
Kilmann et al. 1987		x	x
Koot et al. 2003			x
Meyer and Ringberg 1987		x	
Pukkala et al. 2003			x
Schlebush and Mahrt 1993	x		
Shipley et al. 1978		x	
Sihm et al. 1978		x	
Wells et al. 1994			x
Young et al. 1994		x	x

6.5.1 Satisfaction

All nine primary studies examining 'satisfaction' following breast augmentation reported high levels of satisfaction (78 percent to 95 percent). However, if must be noted that if those less satisfied with their operation were less likely to participate in follow-up questionnaires and interviews, the results may be subject to bias. The aspects or elements of 'satisfaction' were generally undefined.

Two prospective studies with 165 and 142 patients respectively suggested that patients who underwent breast augmentation reported high satisfaction (undefined) and 'psychological benefits' (Hetter 1979, Baker et al. 1974). Of a subsample of 39 of 61 breast augmentation patients followed up for 12 months, 78 percent reported being 'completely satisfied' with the outcome (Beale et al. 1985). Similarly, Cash et al. (2002) reported that more than 90 percent of 360 breast augmentation patients followed up at 6, 12 and 24 months were consistently satisfied with the surgery and attained their expectations of enhanced body image (attrition rate was not reported). Two retrospective studies with 75 and 302 patients respectively, also reported high satisfaction (undefined) and 'psychological benefits' for patients undergoing breast augmentation (Kilmann et al. 1987, Wells et al. 1994). A high satisfaction rate was also reported by Young et al. (1994) in a retrospective study which found that 95 percent of a sample of 112 augmentation mammoplasty patients felt that surgery met their expectations. Edgerton et al. (1961) found that an unspecified number within 84 augmentation mammoplasty patients were 'generally pleased' with the results. Finally, Meyer and Ringberg (1987) found that 86 percent of 38 augmentation mammoplasty patients were 'satisfied' and that their social and psychological expectations were fulfilled.

6.5.2 Psychological outcomes

Body image

There was limited evidence from three small primary studies to suggest an improvement in body image following breast augmentation. Inadequate reporting impeded an assessment of the methodological quality of these studies.

A study examining 47 breast augmentation patients, with a follow-up period of six months and 40 percent loss to follow-up, found a statistically significant improvement in patients' appearance evaluation and body satisfaction at both three and six months after surgery, but no significant post-surgical change in appearance orientation (Banbury et al. 2004). Two studies included within Honigman et al. (2004) examined body image following augmentation mammoplasty: Shipley et al. (1978) reported 'improved body image' among 19 augmentation mammoplasty patients with no effects on personality or self-concept, and Kilmann et al. (1987) also reported 'positive effects' on perceived attractiveness, body and self-image in a retrospective questionnaire study of 75 augmentation mammoplasty patients.

Depression

One study included within Cook et al. (2006) reported reduced prevalence of depression post-surgery in a sample of 20 patients selected for emotional distress (Schlebush and Mahrt 1993). Nevertheless, since 40 percent of the patients had previously sought mental health treatment and there was no appropriate comparison group, the improvements in mental health could be attributed to mental health treatment rather than surgery alone, or indeed to spontaneous improvement.

Self-esteem/confidence

Three studies of indeterminate quality included within Honigman et al. (2004) examined self-esteem/confidence following breast augmentation surgery (Edgerton et al. 1961, Sihm et al. 1978,

Young et al. 1994). Overall, studies reported beneficial outcomes of breast augmentation with respect to self-esteem/confidence.

Edgerton et al. (1961) reported 'improvement' in self-esteem among an unspecified number of 84 augmentation mammoplasty patients. Sihm et al. (1978) found that an unspecified number of 20 post-surgical augmentation mammoplasty patients were more self-confident but had no change in personality profiles. Finally, Young et al. (1994) reported decreased self-consciousness (86 percent), improved self-confidence (88 percent) and 'feeling better about themselves' (95 percent) in their retrospective telephone interview study of 112 augmentation mammoplasty patients.

Suicide

Three primary studies provided evidence to suggest that there was an association between undergoing breast augmentation and suicide. However, the direction of effect cannot be inferred. It may be that those choosing to undergo this operation had psychological traits which predisposed them towards suicide.

Three studies included within Honigman et al. (2004) examined suicide following breast augmentation. Brinton et al. (2001) conducted a retrospective cohort study of 13,488 breast augmentation and 3,936 patients/controls that had other types of plastic surgery, and found that the augmentation group had an increased risk for all causes of death, including suicide. Another study of 3,521 women who underwent breast augmentation reported that 50 percent of patients had excess mortality, attributed, in part, to increased risk of suicide (Koot et al. 2003). Pukkala et al. (2003) reported similar results for a retrospective cohort of 2,166 Finnish breast augmentation patients.

6.5.3 Social outcomes

Social functioning

Kilmann et al. (1987) reported 'greater sexual interest of partner' in a retrospective questionnaire study of 75 augmentation mammoplasty patients.

6.6 Breast reduction

Seventeen primary studies examined outcomes of breast reduction surgery. These were located within three systematic reviews providing information regarding the outcomes of breast reduction (Cook et al. 2006, Honigman et al. 2004, Shridharani et al. 2010). In general, breast reduction surgery was associated with high levels of satisfaction, and trends toward improved psychological and social outcomes. However, the review authors noted that the methodological limitations of included primary studies may have biased these associations.

The overlap in terms of primary studies included within more than one review is presented in Table 6.3. The results of primary studies reported in more than one review are only reported once in this report.

Table 6.3: Primary studies examining outcomes of breast reduction in included reviews.

	Cook et al. 2006	Honigman et al. 2004	Shridharani et al. 2010
Behmand et al. 2000	x		
Blomqvist et al. 2000	x		
Blomqvist et al. 2004	x		
Collins et al. 2002	x		
Faria et al. 1999	x		
Ferreira 2000			
Glatt et al. 1999		x	
Goin et al. 1997		x	
Guthrie et al. 1998			X
Hollyman et al. 1986		x	
Kerrigan 2001	x		
Kerrigan 2002	x		
Klassen 1996	x	x	X
Rogliani 2009			X
Schnur 1997		x	
Shakespeare and Cole 1997	x	x	
Shakespeare and Postle 1999	x		

6.6.1 Satisfaction

Three studies included within Honigman et al. (2004) examined 'satisfaction' following breast reduction (Glatt et al. 1999, Klassen et al. 1996, Schnur et al. 1997). All three studies reported high satisfaction rates following breast reduction surgery. Glatt et al. (1999) reported a 'high degree' of patient satisfaction in their postal questionnaire study of 61 female breast reduction patients. Klassen et al. (1996) reported that 86 percent of their sample of 166 female breast reduction patients reported 'great satisfaction' with their post-operative result. Finally, Schnur et al. (1997), in a retrospective review of medical charts and a post-surgical questionnaire, found that 97 percent of 363 female breast reduction patients believed that the outcome of surgery was 'very successful' and improved their lives. Once again it must be noted that limited information regarding the nature of ‘satisfaction’, follow-up periods and the likelihood of positive response bias mean that these results are rendered suspect.

6.6.2 Psychological outcomes

Anxiety and depression

One study included within Cook et al. (2006) found a significant post-operative reduction in both anxiety and depression among 19 breast reduction patients at four months follow-up (Anxiety: *Cohen's d* 0.84, $p < 0.01$; Depression: *Cohen's d* 1.32, $p < 0.001$) (Faria et al. 1999).

Body image

Two reports of one study and a further three small primary studies examined body image following breast reduction surgery. Overall, the studies suggested improvements to body image, but the quality of the primary studies was not sufficient to give confidence in these findings. Two of the reports with findings on body image pertained to the same study of 243 female breast reduction patients (Collins et al. 2002, Kerrigan et al. 2002). This study found that the 179 patients providing post-operative data demonstrated a significant improvement in their appearance evaluation (Appearance Evaluation: *Cohen's d* 0.94, $p < 0.05$) and a significant decrease in the extent of investment in their appearance (Appearance Orientation: *Cohen's d* 0.19, $p < 0.05$). However, the large loss to follow-up (26 percent) may have undermined the validity of these results. Hollyman et al. (1986) also reported improved body image as measured by pre- and post-surgical interviews and psychological testing in their study of 11 female breast reduction patients, while Faria et al. (1999) reported a significant increase in body satisfaction (Body Satisfaction *Cohen's d* 2.38, $p < 0.01$) among 19 breast reduction patients at four months follow-up. Finally, Kerrigan et al. (2001) found a statistically significant improvement in self-reported evaluation of appearance among 38 patients following breast reduction surgery.

Self-esteem

One study included within Cook et al. (2006) reported moderate improvements in self-esteem post-operatively: Shakespeare and Cole (1997) reported a significant increase in self-esteem at three-month follow-up (Self-Esteem 3 months: *Cohen's d* 0.55, $p < 0.001$) but the outcome for self-esteem at six months follow-up was not reported. At the subsequent two year follow-up, Shakespeare and Postle (1999) reported that most patients had better self-esteem than before surgery (55/60), but some (4/60) had equivalent self-esteem and (1/60) had deteriorated since the (non-reported) six-month follow-up. Along with contradictory findings, Cook et al. (2006) noted that 35 percent loss to follow-up after two years and the absence of statistical analysis rendered the findings suspect. Finally, Klassen et al. (1996) found a significant improvement in post-operative self-esteem (Self-Esteem: *Cohen's d* 0.90, $p < 0.001$) for 58 breast reduction patients in a study with considerable loss to follow-up (32 percent). Two primary studies within the review by Shridharani et al. (2010) reported 'improvement of self esteem' for women having undergone a breast reduction: Guthrie et al. (1998) in a prospective study of 52 patients and Rogliani et al. (2009) in a prospective study of 120 breast reduction patients. Statistical data from these studies were not presented, so we are unable to judge effect sizes and are reliant upon the review authors' interpretation of these results.

Psychological disturbance

Three studies included within Honigman et al. (2004) examined psychological outcomes following breast reduction (Goin et al. 1977, Hollyman et al. 1986, Shakespeare and Cole 1997). All three studies reported beneficial psychological outcomes of breast reduction. Goin et al. (1977) reported transient emotional disturbance in five of eight female breast reduction patients as measured by post-operative interview, but good long-term outcomes (follow-up to 13 months) with improved self-esteem. Hollyman et al. (1986) reported post-surgery relief of psychological distress as measured by pre- and post-surgical interviews and psychological testing in their study of 11 female breast reduction patients. Shakespeare and Cole (1997) reported substantial benefits to psychological health and well-being as measured by Short Form 36 and the Rosenberg Self-Esteem Scale in their study of 110 female breast reduction patients. Three primary studies included within Cook et al. (2006) found inconsistencies with respect to the psychological outcomes of breast reduction surgery (Behmand et al. 2000, Klassent et al. 1996, Ferreira 2000). In a study examining the outcomes of 69 patients, Behmand et al. (2000) reported significant post-surgical improvement on all scales (not listed). Klassen et al. (1996) found a statistically significant decrease in distress (Distress: *Cohen's d* 0.58: $p < 0.001$) in their study of 85 patients, of whom 58 provided post-

operative data. Ferreira (2000) found no significant difference in the post-operative mental health of 91 breast reduction patients.

6.6.3 Social outcomes

Health-related quality of life (HRQL)

Eight primary studies included within Cook et al. (2006) reported post-operative improvement across most domains of HRQL, such that they equalled or surpassed population norms (Behmand et al. 2000, Blomqvist et al. 2000, 2004, Faria et al. 1999, Collins et al. 2002, Kerrigan et al. 2001, 2002, Shakespeare and Cole 1997). However, seven out of the nine studies experienced 20 percent or more loss to follow-up which may have biased these findings.

6.7 Facelifts (rhytidectomy)

Two reviews reported outcomes for facelifts. These were Honigman et al. (2004) (one primary study) and Shridharani et al. (2010) (a further two primary studies). Short-term or transient psychological difficulties and limited improvement in self-esteem were noted across these primary studies; however, higher quality of life/satisfaction and improvement in social activities post-procedure were also reported.

6.7.1 Psychological outcomes

Depression

One study included in Honigman et al. (2004) reported transient post-operative depression in 30 percent of 50 patients as measured by the Minnesota Multiphasic Personality Inventory (Goin et al. 1980). However, it was not clear at what time point this outcome was measured (follow-up periods were 5, 14, 21, 60 and 180 days).

Psychological disturbance

One study within Honigman et al. (2004) carried out a longitudinal prospective study of 50 female facelift patients and reported that 54 percent displayed short-term psychological disturbance post-procedure (Goin et al. 1980). It was not clear at what time point this outcome was measured.

Self-esteem

One study included in Honigman et al. (2004) reported self-esteem outcomes for facelift patients. Goin et al. (1980) carried out a longitudinal prospective study of 50 female facelift patients and reported that 28 percent displayed improved self-esteem as measured by the Minnesota Multiphasic Personality Inventory. It was not clear at what time point this outcome was measured.

Quality of life

Two retrospective studies included in Shridharani et al. (2010) reported results concerning post-facelift quality of life. Of 90 patients providing follow-up data from the two studies, more than 85 percent said they felt happier and were more satisfied with their lives following surgery (Edgerton et al. 1964, Webb et al. 1965).

6.7.2 Social outcomes

Social functioning

Two studies within Shridharani et al. (2010) reported that greater than 85 percent of patients became more socially active following surgery (Edgerton et al. 1964, Webb et al. 1965).

6.8 Laser-assisted in-situ keratomileusis (LASIK)

One review analysed patient satisfaction after LASIK surgery (Solomon et al. 2009). As with other procedures, high levels of satisfaction were reported.

6.8.1 Satisfaction

Three of the 19 included studies measured satisfaction using validated questionnaires (Payvar et al. 2002, Schmidt et al. 2007, Tahzib et al. 2005). The overall satisfaction rate for the three studies was 93.7 percent (253/270 subjects). Payvar et al. (2002) reported a satisfaction rate of 96.8 percent (30 out of 31 Iranian patients). Schmidt et al. (2007) reported a satisfaction rate of 94.8 percent (92 out of 97 patients in the USA). Tahzib et al. (2005) reported a satisfaction rate of 92.2 percent (131 out of 142 patients in the Netherlands).

6.9 Orthognathic (jaw) surgery

Two reviews provided information regarding the outcomes of orthognathic (jaw) surgery (Alanko et al. 2010, Cook et al. 2006). None of the studies included within Cook et al. (2006) were also found within Alanko et al. (2010). The reviews reported conflicting findings. Based on one study, Cook et al. (2006) found that orthognathic surgery did not improve self-esteem or levels of emotional disorder. However, Alanko et al. (2010), based on 14 studies, concluded that the vast majority of patients were satisfied with treatment outcomes and that surgery had a positive effect on their life. However, the authors noted that 'changes have not been found with standardised questionnaires' (p258) and that there was a lack of high quality studies to confirm these findings.

6.9.1 Psychological outcomes

Anxiety

One study included within Alanko et al. (2010) showed that ten of 30 patients had not experienced elevated levels of anxiety either pre- or post-operatively (Plaumbo et al. 2006).

Body dysmorphic disorder (BDD)

Two studies included within Alanko et al. (2010) provided information regarding BDD following orthognathic surgery. In a prospective study, patients' mean scores did not fulfil the criteria for BDD either pre- or post-operatively, although the total score of BDD symptoms decreased after surgery (Rispoli et al. 2004). In a cross-sectional study, Nardi et al. (2003) found that post-operatively, the total BDD scores of 20 patients did not differ from those of 20 controls.

Depression

Six studies included within Alanko et al. (2010) provided information regarding depression following orthognathic surgery. Two small studies with 20 and 29 patients respectively, found that post-operatively, patients did not have depressive disorders (Nardi et al. 2003, Nicodemo et al. 2008). However, a prospective study of 164 patients found that four to six weeks following surgery, 52 percent of patients reported feeling at least a little depressed (Phillips et al. 2004). Three

retrospective studies, with post-surgical periods ranging between six months and nine years, reported 17-40 percent of patients with post-surgical depression (Derwent et al. 2001, Plaumbo et al. 2006, Williams et al. 2004).

Emotional disorder

Finlay et al. (1995) (included in Cook et al. 2006) reported that 33 percent of patients seeking orthognathic surgery were probable cases of emotional disorder pre-operatively, but that this did not change significantly after surgery. However, they included patients with physical reasons for seeking surgery, thus preventing generalisation to those with an exclusively aesthetic motivation for surgery.

Facial body image

Three studies included within Alanko et al. (2010) provided information regarding facial body image following orthognathic surgery. After surgery, Turker et al. (2008) reported that 27 of 30 patients were very satisfied with their body image as measured by an unvalidated questionnaire. In the retrospective study conducted by Lazaridou-Terzoudi et al. (2003), patients' facial body image scores were post-operatively lower than those of controls as measured by the modified version of Body Cathexis Scale, but in relation to facial profile, post-operative patients, although more satisfied than those anticipating surgery, were less satisfied than controls. Stirling et al. (2007) found that in their cross-sectional sample of 61 patients, scores were close to population means.

Self-esteem

Six studies from Alanko et al. (2010) and one study from Cook et al. (2006) provided information regarding self-esteem following orthognathic surgery. Nicodemo et al. (2008) found no improvements in self-esteem as measured by the Rosenbury Self-Esteem Questionnaire, but when asked directly how they felt about their self-esteem after surgery, the majority of 29 patients reported an improvement in self-confidence. Five studies concerning self-confidence as measured by unvalidated questionnaires reported an improvement (45-81 percent of patients) (Pahkala et al. 2007, Derwent et al. 2001, Williams et al. 2004, Turker et al. 2008, Zhou et al. 2001). The findings from one study included within Cook et al. (2006) showed no significant improvement in self-esteem for patients following cosmetic surgery (Finlay et al. 1995).

6.9.2 Social outcomes

Social functioning

Six studies included within Alanko et al. (2010) provided information regarding the social outcomes of orthognathic surgery. All six studies reported beneficial outcomes in terms of social functioning. A prospective study of 164 patients found that four to six weeks after surgery, half of the patients felt at least a little discomfort appearing in public, but less than half felt discomfort with work performance, interpersonal relations or socialising (Phillips et al. 2001). A retrospective study of 94 patients found that 69 percent reported a positive influence on social activity, two out of three felt it had had a positive influence on relationships with the opposite sex and less than half felt it had had a positive influence on their marriage or job prospects (Zhou et al. 2001). One year after surgery in a prospective study of 30 patients, Turker et al. (2008) found that 57 percent reported at least a partial improvement in social adjustment. Similarly, in a retrospective study of 327 patients, Williams et al. (2004) found that 33 percent reported improvement in social life. In a cross-sectional survey of 516 patients, Espeland et al. (2008) found that three years after surgery, 20 percent of patients felt that the treatment had had a ‘great impact’ on their relationships with family, friends and colleagues. Finally, a prospective study of 42 patients, (Modig et al. 2006) found

that more than half of the patients reported decreased bullying after treatment, with two out of three feeling more secure in the company of others.

6.10 Rhinoplasty

Three reviews provided information regarding the outcomes of rhinoplasty (Cook et al. 2006, Honigman et al. 2004, Shridharani et al. 2010). A total of 16 primary studies were examined for their effects. In general, their findings suggested high levels of satisfaction, mixed results for psychological disturbance and limited evidence to suggest improved self-esteem and decreased anxiety post-operatively. The findings from weak studies suggested improvement to social functioning. The overlap in terms of primary studies included within more than one review is presented in Table 6.4. The results of primary studies reported in more than one review are only reported once in this report.

Table 6.4: Primary studies examining outcomes of rhinoplasty in included reviews.

	Cook et al. 2006	**Honigman et al. 2004**	**Shridharani et al. 2010**
Edgerton et al. 1960		x	x
Ercolani et al. 1999a	x	x	
Ercolani et al. 1999b	x	x	
Goin and Rees 1991		x	x
Guyuron and Bokhari 1996		x	
Hay and Heather 1975		x	
Jacobson et al. 1960		x	
Klassen et al. 1996	x		
Knorr 1972		x	
Marcus 1991		x	
Meyer et al. 1960		x	
Moses et al. 1984		x	
Robin et al. 1998		x	
Sheard et al. 1996	x		
Slator and Harris 1992		x	x
Wright and Wright 1975		x	

6.10.1 Satisfaction

Four of 14 studies included within Honigman et al. (2004) examined satisfaction following rhinoplasty (Guyuron and Bokhari 1996, Jacobson et al. 1960, Knorr 1972, Moses et al. 1984). Three of the four studies reported high satisfaction rates. In their retrospective study of 468 patients, (19 percent male), Guyuron and Bokhari (1996) found that ‘most’ were very satisfied with outcome as measured by the authors' questionnaire. Similarly, Jacobson et al. (1960) reported that of 33 men having cosmetic surgery, 66 percent of whom had undergone rhinoplasty, all patients expressed ‘subjective satisfaction’. Moses et al. (1984) reported ‘high satisfaction’ with surgical outcomes as measured by post-surgical interview in 34 female patients. Case study interviews conducted to

investigate loss of identity syndrome among nine female rhinoplasty patients revealed that patients expressed dissatisfaction with the initial surgery, requested further surgery and felt that the surgeon had difficulty understanding their complaint (Knorr 1972).

6.10.2 Psychological outcomes

Anxiety

There was limited evidence, subject to methodological flaws, to suggest that rhinoplasty resulted in decreased anxiety. In an examination of the short-term psychological effects of rhinoplasty, Erconali et al. (1999a) found a significant post-surgical decrease in anxiety and neuroticism and increase in extraversion (Anxiety: *Cohen's d* 0.5 female/0.05 male, $p < 0.01$; Neuroticism: *Cohen's d* 0.45 female/0.12 male, $p < 0.001$; Extraversion: *Cohen's d* female 0.68/male 0.34, $p < 0.001$). No difference was found between those with an aesthetic motivation for surgery and functional controls. Similarly, in a further study assessing the short- and longer-term psychological changes in rhinoplasty patients (Ercolani et al. 1999b), a significant post-surgical decrease in anxiety and neuroticism and increase in extraversion were found (Anxiety: *Cohen's d* 0.32, $p < 0.05$; Neuroticism *Cohen's d* 0.47, $p < 0.01$; Extraversion: significant increase at 6 month follow-up, $p<0.05$, further data not reported). However, although small improvements in anxiety and neuroticism were found six months and five years post-operatively, an increase in extraversion at six months was not sustained. At five years, 28 percent of patients still exceeded scores indicating emotional disorder. There was a 15 percent loss to follow-up. Sheard et al. (1996) reported a post-surgical decrease in anxiety (Anxiety: *Cohen's d* 0.40, $p < 0.01$). However, the review authors were concerned that the short follow-up in this study (four months) might mean that these findings were a reflection of the loss of acute pre-operative anxiety. Two further studies, one a retrospective study of 41 patients, the other a prospective study of 121 patients, suggested that rhinoplasty resulted in improvement in self-esteem and reduction of anxiety, based upon patient self-report, brief symptom inventories and questionnaires (Goin and Rees 1991, Slator and Harris 1992).

Body dysmorphic disorder

Honigman et al. (2004) reported an outcome from Ercolani et al. (1999a) not found within Cook et al. (2006): no significant pre- to post-surgical change in BDD among 25 male and 54 female rhinoplasty patients.

Psychological disturbance

Overall, the results of the seven primary studies examining psychological disturbance following rhinoplasty were mixed and conflicting. The study of Edgerton et al. (1996), although not exclusively a rhinoplasty study (it included facelifts and facial surgery procedures), found some post-surgical psychological disturbance in 55 percent of the 35 female and 11 male rhinoplasty patients studied. In an earlier study, Meyer et al. (1960) found no significant difference between the pre- and post-surgical scores of psychiatric interviews and self-administered psychological tests in 30 female rhinoplasty patients. Similarly, Klassen et al. (1996) reported no post-operative change in emotional disorders. On the other hand, Robin et al. (1998) reported a marked reduction of psychiatric symptom scores among 31 rhinoplasty patients, whereas matched controls showed no change. Finally, in a study carried out to validate previous reports of psychiatric morbidity in rhinoplasty patients, Slator and Harris (1992) found no evidence that 41 patients requesting rhinoplasty were at high risk of psychiatric disorder as measured by the Rust Inventory of Schizotypal Cognitions.

Self-esteem/confidence

Overall, the six primary studies examining self-esteem following rhinoplasty provided weak evidence to suggest an improvement following the operation. Two studies included within Honigman et al. (2004) provided information regarding self-esteem/confidence (Hay and Heather 1975, Jacobson et al. 1960). Both studies reported beneficial outcomes of rhinoplasty with respect to self-esteem/self-confidence. Hay and Heather (1975) found that 16 of 17 rhinoplasty patients felt that surgery had helped them to feel better about themselves as measured by the Hysteroid Obsessoid Questionnaire and the Personal Illness Scale of the Symptom Sign Inventory. Jacobson et al. (1960) reported that 33 men having cosmetic surgery, 66 percent of whom had undergone rhinoplasty, reported less preoccupation with their appearance and an increased sense of well-being and self-confidence. Two further studies included within Shridharani et al. (2010), one a retrospective study of 41 patients, the other a prospective study of 121 patients, suggested that rhinoplasty resulted in improvement in self-esteem and reduction of anxiety, based upon patient self-report, brief symptom inventories and questionnaires (Goin and Rees 1991, Slator and Harris 1992). Two studies included within Cook et al. (2006) reported moderate improvements in patients' self-esteem post-surgery: Klassen et al. (1996) found a significant increase in post-rhinoplasty self-esteem (Self-Esteem: *Cohen's d* 0.58, $p < 0.001$); Sheard et al. (1996) found a significant increase in self-esteems four months after rhinoplasty (Self-Esteem: *Cohen's d* 0.54, $p < 0.001$). However, the methodological limitations of these studies mean that the findings must be regarded as susceptible to bias.

6.10.3 Social outcomes

Social functioning and health-related quality of life

Three studies included within Honigman et al. (2004) examined social functioning following rhinoplasty (Goin and Rees 1991, Marcus 1984, Wright and Wright 1975). All three studies reported beneficial outcomes. In a study of 103 female and 18 male rhinoplasty patients completing pre- and post-surgical Brief Symptom Inventories, Goin and Rees (1991) reported that 98 percent said that the cosmetic outcome was what they had desired, 53 percent said the operation had changed their lives and 21 percent said others behaved differently towards them. Marcus (1984) reported an increased ability to enjoy life and increased social confidence in 20 rhinoplasty patients completing pre- and post-surgical Anxiety, Depression and Self-Esteem questionnaires. Finally, Wright and Wright (1975) reported no major personality change, significantly improved self-concept and greater social self-assurance among 90 rhinoplasty patients as measured by the Minnesota Multiphasic Personality Inventory. One study included within Cook et al. (2006) found a 'small' post-operative improvement in general health to levels comparable with population norms (Klassen et al. 1996). However, as previously mentioned, this study may be subject to bias resulting from loss to follow-up.

6.11 Findings from unsound studies

Castle et al. (2002) reviewed the literature on psychosocial outcomes following cosmetic surgery. They identified 36 studies of varying study design and quality. Of these, 11 included a control group, and measurement of psychosocial outcomes ranged from the immediate post-operative period to 10 years follow-up. This review scored 2 out of 11 on the AMSTAR quality assessment tool. Reporting was insufficiently detailed to determine whether the research could be confidently described as a systematic review. There was little information about the methodology that they followed and minimal reporting on the quality of the included primary studies. The authors concluded that 'Most studies report that people are generally happy with the outcome of cosmetic procedures, but little rigorous evaluation has been done' (abstract).

Singh and Losken (2012) conducted a systematic review of research published between 1977 and 2010 on reduction mammoplasty, focusing upon a range of physical and psychological outcomes. Psychological outcomes included those related to bulimia, anxiety and depression, self-esteem, quality of life and psychosexual function. This review scored only 3/11 on the AMSTAR quality assessment. The quality of the review was poor in three of the most significant areas required for methodological rigour. A comprehensive literature search was not undertaken, no details of inclusion criteria or screening methods were provided and there was very little detail about the characteristics of the included studies, including study design. The authors did not appear to have assessed the scientific quality of the included studies. They concluded that psychological benefits included 'improved self-esteem, sexual function, and quality of life, in addition to reduced anxiety and depression' (abstract). These findings were based on studies with small samples: two very small studies (including a total of nine women) were used to draw positive conclusions about the impact of mammoplasty on women with existing symptoms of bulimia. Five further studies contributed to conclusions about women's psychological improvements post-mammoplasty. These studies considered outcomes related to anxiety, depression, self-esteem, quality of life and psychosexual function. The smallest of these studies included 20 women and the largest 57. All used standardised and validated outcome measures.

Goodman (2011) considered the rationale for, and outcomes of, vulvovaginal aesthetic surgery. This study only scored 3/11 during quality assessment. The reviewers did not conduct a comprehensive literature search, choosing only to search PubMed. Descriptions of inclusion criteria and screening methods were not reported and it was not possible to assess how many studies were excluded or included. Whilst the authors noted that all outcome studies were retrospective, observational and not case controlled, the characteristics of the included studies were unclear, and there was no evidence of formal assessment of their scientific quality. The review aimed to give an overview of the most commonly performed procedures: labiaplasty, clitoral hood size reduction, perineoplasty, vaginaplasty and hymenoplasty. Goodman concluded that the majority of patients undergoing genital plastic surgery reported overall satisfaction and subjective enhancement of sexual function and body image, but the literature was retrospective. The authors also noted the lack of research on hymenoplasty.

6.12 Discussion

In general, there was insufficient evidence of a suitable quality, such as controlled trials or controlled observational studies, to determine with confidence whether or not satisfaction, social functioning or psychological outcomes improved as a result of cosmetic surgery (abdominoplasty, breast reduction surgery, breast augmentation surgery, facelifts, LASIK, orthognathic surgery and rhinoplasty) or botulinum toxin type A employed for cosmetic use.

Although we located six systematic reviews of adequate quality, much of the primary research included within these reviews had methodological flaws, including: lack of control or comparison groups; small sample sizes; limited follow-up periods; and in particular, a susceptibility to positive response bias. Aspects of outcomes (e.g. satisfaction) were often undefined or measured using non-validated tools.

It must also be noted that much of the primary research included within these reviews was very old. For example, the findings relating to facelift surgery were derived from three primary studies conducted in 1964, 1965 and 1980. Of 37 primary studies included within the systematic review conducted by Honigman et al. (2004), only two were published after 2000. It is reasonable to assume that research conducted prior to the advancement of evidence-based medicine will be of a poorer quality than more recent research.

Only three of the six eligible reviews focused solely upon a single procedure (Alanko et al. 2010, Fagien and Carruthers 2008, Solomon 2009). In those reviews examining multiple procedures, the number of primary studies for individual procedures, and hence the pooled sample size, was often limited.

Whilst a major strength of systematic reviews lies in their ability to summarise information, the act of summarising necessitates loss of detail. As such, important information with regard to research design and study quality was often omitted from the included reviews. In particular, we were often reliant upon authors' interpretation of study findings rather than being presented with the study findings themselves.

It is also interesting to note that some of the review authors were subject to conflicts of interest in that they had a commercial interest in promulgating evidence to suggest that cosmetic surgery resulted in satisfied customers and had beneficial outcomes. For example, the stated aim of the review conducted by Fagien and Carruthers (2008) (who disclosed that they were consultants and advisors to 'Allergan Inc.' and 'Medicis Aesthetics Inc.') was to 'identify strategies to optimize outcomes and positively influence patient retention in practice' (p1915).

Whilst randomised controlled trials examining individual cosmetic procedures (surgical and non-surgical) represent the ideal for determining the effectiveness of these treatments in terms of psychological outcomes, it is worth noting that Cook et al. (2006) identified the methodological limitations of existing primary research as a function of the difficulty of undertaking randomised controlled trials in this area: 'it is implausible that patients seeking such treatment would generally accept randomisation to be denied surgery for a year or more' (p1148).

6. Research question 3

Table 6.5: RQ3 included studies

Review Quality rating	Aims	Number of included primary studies	Target population Demographics	Intervention	Outcomes	Findings	Overall appraisal/ strengths and limitations
Alanko et al. (2010) Systematic Review Interpret with Caution 7/11	To conduct a systematic review of studies concerning the psychosocial well-being of surgical-orthodontic patients	N=35 Prospective with controls (1) Prospective without controls (15) Cross-sectional with controls (5) Cross-sectional without controls (6) Retrospective with controls (2) Retrospective without controls (6)	Demographics not stated	Orthognathic cosmetic surgery	Anxiety Body dysmorphic disorder (BDD) Depression Facial body image Life satisfaction Self-esteem	Patients do not experience anxiety pre- or post-operatively (1 study) Total score of BDD symptoms reduced after surgery (1 study) Post-operatively, patients' total BDD scores did not differ from those of controls (1 study) Post-operatively, patients did not have depressive disorders (2 studies) Patients felt depressed after surgery (4 studies) Facial body image post-operatively lower than in controls (1 study) Facial body image post-operatively was close to population means (1 study). Improvement in self-reported but not measured self-esteem after surgery (1 study) Self-reported increase	**Reviewer assessment:** Interpretation of review results limited by insufficient reporting. Quality of primary studies not assessed **Author identified limitations:** Some primary studies only report patients' mean scores and compare them to controls' scores or population norms thus discrepancies between results obtained from standardised questionnaires and patients' self-reports are possible

Review Quality rating	Aims	Number of included primary studies	Target population Demographics	Intervention	Outcomes	Findings	Overall appraisal/ strengths and limitations
						in self-confidence after surgery (44-81%) as measured by researcher-made questionnaires (5 studies) 90% patients satisfied with body imaged after surgery (1 study) Post-operative patients more satisfied with facial profile than those anticipating surgery but less satisfied than controls (1 study)	

6. Research question 3

Review Quality rating	Aims	Number of included primary studies	Target population Demographics	Intervention	Outcomes	Findings	Overall appraisal/ strengths and limitations
Castle et al. (2002) Systematic Review 2/11 Unsound	To review the literature on psychosocial outcomes following cosmetic surgery	N=11	**Gender**: 100% female (5 studies) **Mean age**: 22.4 – 48 years	Multiple cosmetic surgery procedures (3 studies) Breast augmentation (3 studies) Breast reduction (2 studies) Rhinoplasty (3 studies)	Body image Psychological distress Psychiatric symptoms Quality of life (well-being, ability to enjoy life) Social functioning	n/a	**Reviewer assessment**: A priori design questionable. Only one inclusion criteria was reported. Interpretation of review results severely limited by insufficient reporting. Quality of primary studies was not assessed **Author identified limitations:** Primary studies had small sample sizes and potentially biased ascertainment. Patients who agreed to participate might represent a biased group. Clinical interviews might be subject to bias on the part of both the respondent and the interviewer. Very few studies employed 'blind' raters. Not all studies used valid assessment instruments. Most studies evaluated specific procedures with limited generalisability

Review Quality rating	**Aims**	**Number of included primary studies**	**Target population Demographics**	**Intervention**	**Outcomes**	**Findings**	**Overall appraisal/ strengths and limitations**
Cook et al. (2006) Systematic Review 9/11 Sound	To review evidence of psychosocial outcome of elective cosmetic surgery	N =22 Prospective observational studies	**Gender**: 100% female (14 studies); 50-90% female (8 studies) **Mean age**: 22 – 41 years	Multiple cosmetic surgery procedures (5 studies) Abdominoplasty (1 study) Breast augmentation (2 studies) Breast reduction (10 studies) Orthognathic surgery (1 study) Rhinoplasty (3 studies)	Body image Health-related quality of life Mental health (anxiety, depression, neuroticism, psychological distress) Self-esteem	**Abdominoplasty:** No significant post-surgical difference in body image (1 study) Significantly worse body image (1 study) Significant improvement in patients' appearance evaluation and body satisfaction (1 study) **Breast augmentation:** Significant improvement in body image (1 study) Reduced prevalence of depression post-surgery (1 study) **Breast reduction**: Significant post-operative reduction in both anxiety and depression (1 study) Significant improvement in body image (4 studies) Improvement in self-esteem (3 studies) Post-operative	**Reviewer assessment:** Well-conducted systematic review with clearly described methods. Conclusions based on the review's findings. **Author identified limitations:** Lack of clear descriptions of included studies' populations and exposure; lack of adequate controls across included studies and inadequate follow-up.

6. Research question 3

Review Quality rating	Aims	Number of included primary studies	Target population Demographics	Intervention	Outcomes	Findings	Overall appraisal/ strengths and limitations
						improvement across most domains of HRQL (8 studies) **Orthognathic surgery:** Significant improvement in self-esteem for patients (1 study) **Rhinoplasty:** Significant post-surgical decrease in anxiety (3 studies) Significant post-surgical increase in extraversion (2 studies)	

Review Quality rating	**Aims**	**Number of included primary studies**	**Target population Demographics**	**Intervention**	**Outcomes**	**Findings**	**Overall appraisal/ strengths and limitations**
Fagien and Carruthers (2008) Systematic Review 5/11 Interpret with Caution	To determine the level of satisfaction with botulinum toxin type A treatment in aesthetic indications with the aim of identifying strategies to optimize outcomes and positively influence patient retention in practice	N=23 Patient satisfaction N=2 (1 RCT, 1 'non-RCT')	Demographics not stated	Botulinum toxin type A (botox) injections	Facial line treatment satisfaction Satisfaction (with life quality assessment component)	Of 162 patients receiving Botox, >70% to >80% were somewhat satisfied, satisfied or very satisfied at 1 month follow-up; at 3 months follow-up >60% to >70% fell into these categories 8-12 weeks after treatment, >80% of 30 patients receiving botox reported the treatment as beneficial using a scale with a small generic life quality assessment component (Freiburg Life Quality Assessment)	**Reviewer assessment:** No quality assessment of primary studies. Characteristics of included studies not reported for all studies. Conflict of interest. Interpret with caution. **Author identified limitations:** Methodological descriptions of aspects of satisfaction were minimal, and little uniformity in the scales utilised. The reviewed literature also did not include variables that could potentially influence the extent of patient satisfaction, such as patient sex, cultural influences, individual expectations or the specifics of the treatment plan

6. Research question 3

Review Quality rating	Aims	Number of included primary studies	Target population Demographics	Intervention	Outcomes	Findings	Overall appraisal/ strengths and limitations
Goodman (2011) Systematic Review 3/11 Unsound	To discuss procedures designed to alter genital appearance and function and investigate sexual and ethical issues and outcomes	Unclear	**Gender**: Female only Demographics not stated	Labiaplasty of the labia minora and/or labia majora Clitoral hood size reduction Perineoplasty (vaginal rejuvenation) Vaginoplasty (vaginal rejuvenation) Hymenoplasty	Body image Sexual satisfaction Partner's sexual satisfaction Satisfaction	n/a	**Reviewer assessment:** Doubtful systematic review. Three exclusion criteria have been provided but no information regarding how many or which studies were included within the review. Unclear if all papers referenced in the text were included studies **Author identified limitations:** Outcome studies of female genital plastic surgery are retrospective, observational and not case-controlled
Honigman et al. (2004) Systematic Review 5/11 Interpret with Caution	To determine a) whether elective cosmetic surgery improves psychological functioning and b) whether there are identifiable predictors of an unsatisfactory outcome	N =37 Uncontrolled studies N = 23	**Gender**: 100% female (18 studies) **Mean age**: 21-56 years	Multiple cosmetic surgery procedures (10 studies) Breast augmentation (8 studies) Breast reduction (6 studies) Facelift (1 study)	Social functioning Sexual functioning Body mage Quality of life Self-esteem Psychological disturbance Psychological functioning Psychological	**Breast Augmentation**: Improvement in self-esteem/confidence (3 studies) Majority patients satisfied with results (5 studies) Improved body image (2 studies) Greater sexual interest of partner (1 study)	**Reviewer assessment:** Although no formal tool was used to assess quality, consideration was given to quality of primary studies. Comprehensive evidence tables provided **Author identified limitations:** All of the primary studies suffered from methodological shortcomings, including: small sample size;

Review Quality rating	Aims	Number of included primary studies	Target population Demographics	Intervention	Outcomes	Findings	Overall appraisal/ strengths and limitations
				Rhinoplasty (12 studies)	Distress Psychological Wellbeing Anxiety Body dysmorphic disorder (BDD) Depression Neurosis 'Severe Psychiatric Disorder'	**Breast reduction**: Decreased psychological distress (3 studies) Improved body image (1 study) Majority patients satisfied with results (3 studies) **Facelift** (1 study)**:** 54% displayed short-term psychological disturbance 30% transient depression 28% improved self-esteem **Rhinoplasty:** Majority patients satisfied with results (5 studies) Increased self-esteem/confidence (2 studies) Post-surgical psychological disturbance (1 study) No evidence that patients requesting rhinoplasty at high risk of severe	ascertainment bias (e.g., samples from specialist centres); high rates of refusal to participate in some studies; no accurate assessment of those who were eligible and were approached but chose not to participate; a lack of reliable and valid measures; and short duration of follow-up. Psychological and social domains of functioning were often not defined. Lack of details of interview schedules and diagnostic criteria cast doubt on whether patients were truly psychiatrically unwell. Only 11 studies included controls. No studies that used a randomized controlled design. Study samples may not be generalisable to the larger population of individuals who seek and receive cosmetic enhancement. Studies tended to report were often not defined. Lack of details of interview schedules and diagnostic

6. Research question 3

Review Quality rating	Aims	Number of included primary studies	Target population Demographics	Intervention	Outcomes	Findings	Overall appraisal/ strengths and limitations
						psychiatric disorder (1 study) Reduced psychological distress (2 studies) No significant change in psychological status (1 study) Decrease in anxiety and neuroticism and increase in extraversion but no significant change in BDD (1study) Improved social functioning (3 studies)	criteria cast doubt on whether patients were truly psychiatrically unwell. Only 11 studies included controls. No studies used a randomized controlled design. Study samples may not be generalisable to the larger population of individuals who seek and receive cosmetic enhancement. Studies tended to report aggregated results rather than individual outcomes and it was not clear whether outcomes for certain individuals differed from those of the group as a whole

Review Quality rating	**Aims**	**Number of included primary studies**	**Target population Demographics**	**Intervention**	**Outcomes**	**Findings**	**Overall appraisal/ strengths and limitations**
Shridharani et al. (2010) Systematic Review Interpret with Caution 5/11	Investigated the psychological outcomes, background, and personality types of patients seeking specific plastic surgery procedures	N=21 Prospective studies N=9 Retrospective studies N = 12	Patients with psychological abnormalities Patients undergoing revision operations not included. Demographics Not stated	Breast augmentation (12 studies) Breast reduction (3 studies) Facelift (3 studies) Rhinoplasty (3 studies)	Anxiety 'Psychological benefits' Psychological disturbance Satisfaction Self-esteem Suicide	Post-surgical breast augmentation patients reported 'high satisfaction' and 'psychological benefits' (6 studies) Post-surgical breast augmentation patients had an increased risk of suicide (3 studies) Post-surgical breast reduction patients reported increase self-esteem (3 studies) Post-surgical rhinoplasty patients report improved self-esteem and anxiety (2 studies) Post-rhinoplasty 'psychological disturbance' (1 study).	**Reviewer assessment:** Interpretation of review results limited by insufficient reporting. Reviewers are reliant on authors' interpretation of primary study results. Quality of primary studies not systematically assessed. **Author identified limitations**: None reported

6. Research question 3

Review Quality rating	Aims	Number of included primary studies	Target population Demographics	Intervention	Outcomes	Findings	Overall appraisal/ strengths and limitations
Singh and Losken (2012) Systematic Review 3/11 Unsound	To investigate functional outcomes after reduction mammoplasty with regard to physical and psychological symptom improvement, including weight-related effects, exercise and eating behaviours, in addition to aesthetic outcomes	N=22 Physical symptoms: n=7 Eating behaviours: n=8 Body image: n=3 Psyche: n=4	Reduction mammoplasty patients Demographics not stated	Reduction mammoplasty	Anxiety Bulimia Body image Depression Quality of life Self-esteem Sexual functioning Persistence	n/a	**Reviewer assessment:** Only studies with positive were outcomes included. No assessment of quality of primary studies. Only one database was searched. Lack of reporting of characteristics of included studies **Author identified limitations:** Heterogeneity of assessment tools impedes uniformity of reporting

Review Quality rating	**Aims**	**Number of included primary studies**	**Target population Demographics**	**Intervention**	**Outcomes**	**Findings**	**Overall appraisal/ strengths and limitations**
Solomon et al. (2009) Systematic Review 8/11 Interpret with caution	To analyse the patient reported outcome of satisfaction after LASIK surgery	N=19 UK (2) Egypt (1) France (1) India (1) Iran (1) Ireland (1) Netherlands (1) South Africa (1) Spain (1) UAE (1) USA (7) Turkey (1) Retrospective studies (7)	LASIK surgery patients Demographics Not stated	Laser-Assisted In-Situ Keratomileusis (LASIK) surgery	Satisfaction	The overall satisfaction rate for studies using validated questionnaires was 93.7% (250/270 subjects; range 92.2-96.8%) (3 studies)	**Reviewer assessment:** Interpretation of limited by insufficient reporting. Only 3/19 questionnaires were validated. Conflicts of interest reported. **Author identified limitations:** Some studies had low response rates and 36.8% (7/19) were retrospective. Underestimation of dissatisfaction rate was possible due to patients rating satisfaction higher to please their physician (Hawthorne effect). Low response rates can result in positive response bias as satisfied patients more prone to complete questionnaire

7. RQ4: What is the accuracy of pre-intervention assessment for identifying those who would not benefit from surgery?

7.1 Overall summary of findings

- The evidence base is small and varied in terms of quality.
- The heterogeneity of studies included in this chapter (differences in study design, factors screened for, population used, cosmetic procedures requested and assessment tool used) makes it difficult to confidently draw any firm conclusions on the accuracy of pre-intervention screening tools.
- The overall lack of follow-up assessments prevents us from commenting on the predictive value of the screening tools.
- The majority of authors recommended the use of a brief, self-report measure that could be easily and efficiently administered to patients.

7.2 Included studies

Studies that provide information on the development of pre-surgical screening assessment (i.e. item generation, validity, reliability), and test the ability of the screening tool to predict poor outcomes using pre- and post-operative data represent the ideal design for answering this research question.

We found one systematic review relating to pre-surgical screening tools specifically for body dysmorphic disorder (BDD) (Picavet et al. 2011) and four primary studies relating to pre-intervention psychological screening tools for patients seeking a variety of cosmetic procedures (Hayashi et al. 2007, Honigman et al. 2011, Kellett et al. 2008, Veale et al. 2012). The characteristics of the systematic review and primary studies are presented in Table 7.1, and they are described narratively in the following section.

7.3 Systematic reviews

Picavet et al. (2011) conducted a systematic review which aimed to provide an overview of the existing screening tools for BDD and assess their quality and feasibility in an aesthetic surgery population. BDD is characterised by excessive concern and preoccupation with a slight or imagined defect in appearance which leads to significant distress or/and impairment in daily functioning (American Psychological Association 2000). Their search resulted in 21 studies meeting the inclusion criteria. Thirteen studies included screening patients for BDD within a cosmetic surgery setting and eight of the studies screened for BDD in a psychiatric setting. Altogether they identified six different screening tools for BDD in patients seeking cosmetic surgery:

- **Body Dysmorphic Disorder Examination (BDDE).** The BDDE is a 34-item, semi-structured clinical interview designed primarily for diagnostic purposes and measuring the severity of BDD symptoms. The BDDE has been found to have adequate inter-rater and test-retest reliability and validity and good internal consistency in a psychiatric setting (Rosen and Reiter 1996). One study reported applying the BDDE into a cosmetic surgery setting to investigate patients seeking orthognathic surgery (Rispoli et al. 2004). However, the authors noted that no details about its application were described and none of the patients met the diagnostic criteria for BDD. The BDDE is described as less appropriate for use in a cosmetic setting because it requires a face-to-face interview with a trained examiner and the administration is time consuming.

Body Dysmorphic Disorder Examination Self Report (BDDE-SR). The BDDE-SR is a brief, self-administered version of the BDDE and for these reasons is more applicable and feasible for use in a cosmetic surgery setting. One study found adequate internal consistency and test-retest reliability and agreement with the clinical interview version (Sarwer et al. 1998b). However, details of the validation process have not been published. The BDDE-SR has been applied as a diagnostic tool for BDD in patients requesting facial plastic surgery (Crerand 2004) and in both female and male cosmetic surgery populations (Sarwer et al. 1998b, Pertschuk et al. 1998). However in these studies, the diagnosis of BDD by a structured clinical interview was not confirmed.

- **Body Dysmorphic Disorder Questionnaire (BDDQ, Phillips 1996).** The BDDQ is a brief, self-report questionnaire based on the DSM-IV diagnostic criteria (American Psychological Association 2000). It has shown 100 percent sensitivity and 89 percent specificity with a general population (Sarwer et al. 2005) and in a psychiatric setting (Malick et al. 2008). Two studies have applied the BDDQ in a cosmetic setting by investigating the prevalence of BDD in a cosmetic rhinoplasty population (Pecorari et al. 2010, Veale et al. 2003). However, neither of the studies used a structured clinical interview to confirm the diagnosis of BDD.
  Body Dysmorphic Disorder Questionnaire - Dermatology version (BDDQ-DV). The BDDQ-DV is a modified version of the BDDQ specifically for use in a dermatologic surgery setting. The BDDQ-DV has been validated in a dermatological setting (Dufresne et al. 2001, Phillips and Dufresne 2000); however, the authors noted that the validation process had a number of limitations, including a small sample size.
- **The Body Dysmorphic Disorder – Screening Test (BDD-ST, Vulink et al. 2008)**. This is based on the BDDE and the BDDQ-DV and has been used as a screening tool for BDD in a maxillofacial outpatient population (Vulink et al. 2008). No psychometric information on this questionnaire is available.
- **The Dysmorphic Concern Questionnaire (DCQ, Oosthuizen et al. 1998).** This is a brief, self-report instrument based on the General Health Questionnaire. The tool was not originally developed to screen for BDD, but one study applied the DCQ as a screening instrument in female dermatologic outpatients (Stangier et al. 2003). This tool has been validated in a dermatological setting (Jorgensen et al. 2001).
- **The Body Dysmorphic Symptom Scale (BDSS).** This is a self-rating instrument that estimates the presence of some important psychopathologic features of BDD. This scale has been applied as a screening tool for BDD in a dermatologic population (Kaymak et al. 2009). However, this study did not use a clinical interview to confirm the diagnosis of BDD.
- **Clinical interview based on the DSM-IV for Body Dysmorphic Disorder Screening (SI-BDD, De Jongh et al. 2009).** The SI-BDD has been designed for use as a clinical interview based on the DSM-IV. It has been used and validated as a screening instrument for BDD diagnosis in a cosmetic dental treatment population (De Jongh et al. 2008, De Jongh et al. 2009). However no information on its validation process has been published.

In collating their findings, the authors concluded that the BDDQ/BDDQ-DV and the DCQ were the most suitable screening tools for clinical use. These tools are brief, self-report questionnaires which are less time consuming to complete and require less effort from the patients than some of the interview-based tools. In contrast to the long and complicated psychometric tests often used by experts for diagnosing and assessing BDD in a psychiatric setting, the authors believe that these tools are easy to administer and easy to interpret by the cosmetic surgeon, making them feasible for use within a cosmetic surgery setting. Copies of these two scales are available in the Appendix of the following references: BDDQ-DV (Dufresne et al. 2001) and the DCQ (Oosthuizen et al. 1998). It is recommended that permission to use the scales is sought from the respective authors.

The authors noted that information regarding the predictive value of the screening tools on patients' subjective outcomes following cosmetic surgery was lacking. Only the BDDQ had been used to examine the influence of screening for BDD on patients' post-operative outcome (Pecorari et al, 2010, Veale et al, 2003). Veale et al. (2003) examined the relationship between positive screening for BDD using the BDDQ and patient satisfaction following rhinoplasty three and nine months after treatment. The authors found no difference in satisfaction scores between patients who scored positive on the BDDQ and patients who did not (n = 29). However, the patients who scored positive on the BDDQ had subclinical levels of BDD, suggesting that they might be suitable patients for surgery. In addition, Pecorari et al. (2010) used the BDDQ to identify BDD traits in rhinoplasty patients. The authors found no influence of BDD traits on the perceived effectiveness of the cosmetic procedure. However the outcome measured was related to functionality (i.e., Nasal Obstruction Symptom Evaluation) rather that aesthetics, which was in fact patients' primary reason for surgery. It is important to note that none of the studies using the other five BDD screening tools described above (BDDE/BDDE-SR, BDDQ-DV, DCQ, BDSS or SI-BDD) assessed the correlation between scores on the screening tool and patients' post-operative satisfaction.

The authors did not assess the quality of the included studies but they did comment on: 1) the strength of evidence concerning the examination of the psychometric properties of the screening tools; and 2) the feasibility of using the screening tools within a cosmetic surgery setting.

The findings of this review need to be interpreted with caution. The quality assessment score for this review was 7 out of 11 on the AMSTAR rating system.

7.4 Primary studies

7.4.1 Veale et al. (2012)

Veale et al. (2012) conducted a study which aimed to develop: 1) a screening questionnaire that was brief and could identify people who might require further specialist assessment; 2) a research tool that might predict either dissatisfaction with a cosmetic procedure or no change or deterioration in overall symptoms of BDD; and 3) a tool that might be sensitive to change after an intervention. They recruited 97 male and female participants with BDD based on DSM-IV who desired a cosmetic procedure and 108 participants from a community group wanting a cosmetic procedure. All participants in both groups completed the Cosmetic Procedures Screening (COPS) questionnaire, a measure developed by the authors to screen for BDD. In addition, participants completed the SCOFF questionnaire (anorexia and bulimia), the Hospital Anxiety and Depression scale (HAD), the Body Image Quality of Life Inventory (BIQLI) and the Body Image Disturbance Questionnaire.

The authors used a variety of statistical methods to assess the psychometric properties of the COPS:

- Item selection: The Mann-Whitney test determined which items of the COPS were most sensitive at discriminating between the BDD and the community group. Nine items were selected that met the criteria and were used to form the final COPS questionnaire. A *t*-test revealed that the BDD group scored significantly higher on the COPS than the community group.
- Internal consistency: The reliability of the COPS was evaluated using Cronbach's alpha = 0.91.
- Convergent validity: Pearson correlation of the COPS with the HAD and the BIQLI was computed. COPS correlated highly with the HAD depression and anxiety subscale and with the BIQLI. Higher scores on COPS were associated with lower body image quality of life.

- Factor validity: Horn's parallel factor analysis was computed for each group separately and this resulted in no items being removed.
- Receiver operating characteristics analysis was used to assess the sensitivity and specificity of the COPS in discriminating between BDD patients and the community group. To determine the optimal cut-off value of the COPS for the identification of subjects with BDD, kappa coefficients were computed for different cut-off scores.
- Sensitivity to change was assessed using a sample of five patients with BDD who were undergoing cognitive behaviour therapy. Scores on the COPS were examined at baseline, mid-treatment (6 weeks) and at end of treatment (12 weeks). A one-way repeated measures ANOVA found a significant effect across the three treatment points, with BDD scores showing a decrease.

The authors concluded that the scale had robust psychometric properties, with acceptable internal consistency, test-retest reliability and convergent validity. The tool was also found to be sensitive to change during cognitive behaviour therapy. A limitation noted by the authors was that the two groups varied in terms of demographics and types of procedures sought, with more participants in the community group requesting breast enlargement and liposuction. The authors believed that future studies needed to compare COPS scores with participants with and without BDD who were seeking a particular procedure.

The information describing the validation process of the COPS is useful and an important step in developing a robust screening tool; however, more research is required to test the performance of the scale.

The COPS is free to download, although it is recommended that permission is sought from the author to use the scale.

The review team gave this study a quality rating of 2 out of 4 on the QUADAS-2 scale, suggesting that these findings should be interpreted with caution. The study was scored 3/3 on concern for applicability, suggesting that there is low concern over the applicability of this study.

7.4.2 Honigman et al. (2011)

Honigman et al. (2011) conducted a study which aimed to: 1) investigate the relationship between post-operative dissatisfaction and preoperative characteristics; and 2) empirically derive a pre-operative psychosocial screening instrument to identify patients who might require pre-operative assessment or counselling. Only aim two is within the scope of this chapter and will be discussed below.

Eighty-four male and female prospective patients presenting for elective facial cosmetic surgery or dentistry surgery were recruited from participating practitioners. The patients filled out a variety of questionnaires pre-operatively and six months post-operatively. These included measures of psychiatric disturbance (General Health Questionnaire-30), generalised anxiety and depression (Hospital Anxiety and Depression Scale), global self-esteem (Rosenberg Self Esteem Scale), extent of concern with physical appearance (Dysmorphic Concerns Questionnaire) and a measure of body image using the Multidimensional Body-Self Relations Questionnaire. In addition to these well-validated measures, the authors included several questions to evaluate other psychosocial characteristics thought to be associated with poor outcomes to develop the pre-surgical screening instrument. These included:

- the length of time concerned with the problem;
- anticipated physical and emotional support during the recovery period;
- the degree to which the condition bothered the patient;

- any history of appearance related teasing or bullying;
- the degree to which appearance affected sexual attractiveness and the effect of the condition on the quality of sexual relationships;
- any previous surgical procedures;
- any identified concurrent stressors in the past six months;
- the likelihood of achieving their desired outcome.

The screening instrument, PreFACE Preoperative Facial Cosmetic surgery Evaluation, was developed using a single-item measure of post-operative dissatisfaction 'compared with your expectations, what was the overall result of the surgery'. Patients reporting 'better than' or 'as expected' results and 'worse than expected' results were compared on each item in the pre-operative questionnaire. Statistical analyses found nine items displaying statistical significance, and these were selected for inclusion in the screening tool. These nine items were generated from the GHQ-30 (general health, feeling constantly under strain, finding everything getting on top of oneself and losing confidence in oneself), the HADS-Depression scale (lack of anhedonia), the DCQ (worrying about appearance defect), the Multidimensional Body-Self Relations Questionnaire (MBSRQ) (time spent getting ready and face satisfaction) and dissatisfaction with previous cosmetic surgical procedures from the author's additional list of psychosocial characteristics.

Regression analyses revealed that the PreFACE questions significantly predicted group membership with a 99 percent success rate. Independent samples' *t* tests showed that the scores were significantly higher for patients reporting worse than expected outcomes. The authors examined the score distributions for patients reporting 'better than' or 'as expected' and 'worse than expected' outcomes on post-operative dissatisfaction. A cut-off score of 11 was selected to help identify patients who might benefit from preoperative psychological intervention. Higher scores on the PreFACE indicate a higher potential for post-operative dissatisfaction. The authors found that the PreFACE was able to identify most patients expressing post-surgical dissatisfaction using four separate measures of post-operative dissatisfaction. A copy of the PreFACE is available in the Appendix of the Honigman et al. (2011) paper.

The authors noted a number of limitations. First, the study had a small sample size, reducing the robustness of the analysis. Second, the psychosocial characteristics of post-operative dissatisfaction examined might be specific to patients undergoing elective facial cosmetic surgery and cosmetic dentistry. This could limit the ability to generalise these findings to other cosmetic surgery procedures. Third, other factors associated with post-operative dissatisfaction, such as neuroticism, were excluded from the study. Fourth, the PreFACE did not take into consideration other important issues that might influence post-operative dissatisfaction, such as the quality of the physician-patient relationship.

This is an important study because post-operative data were collected and analysed using a test sample, however a second validation sample is needed to test the actual performance of the scale.

The review team gave this study a quality rating of 2 out of 4 on the QUADAS-2 scale for assessing risk of bias, suggesting that these findings should be interpreted with caution, and 2 out of 3 for applicability.

7.4.3 Kellet et al. (2008)

Kellett et al. (2008) conducted a study which aimed to investigate clinical outcomes from psychological assessments for cosmetic surgery. They focused on a cohort of 64 female patients who had been referred from a general practice in the NHS due to requests for cosmetic surgery. In accordance with clinical guidelines they were seen for psychological assessment purposes. Twenty-three patients requested breast augmentation surgery, 23 requested breast reduction surgery and

18 requested abdominoplasty. All patients were seen by a female consultant clinical psychologist, who carried out a clinical interview examining clinical history, perceived need for surgery and body image issues. Patient suitability for surgery was based on the psychological assessment conducted by the clinical psychologist. Patients also completed a number of well-validated psychological measures to assess their body image disturbance and mental health. Body image was assessed using the Body Dissatisfaction Scale and the Experience of Shame Scale. The mental health measures included the Brief Symptom Inventory, the Beck Depression Inventory-II and Inventory of Interpersonal Problems.

Following the psychological assessment, patients were assigned into one of three groups:

1. recommendations for surgery
2. recommendations for psychological intervention prior to surgery
3. recommendation for a solely psychological intervention.

Overall, 42.33 percent of all patients seeking cosmetic surgery were recommended to receive either a psychological intervention prior to surgery, or just a psychological intervention. A Chi-square analysis revealed a significant trend for women seeking breast augmentation surgery to be recommended for psychological interventions instead of surgical treatment.

The authors computed ANOVAS to compare the three different groups by scores on the validated psychological measures. They found that lower scores on the measures of mental health and body image were associated with the clinical decision to recommend a surgical rather than psychological solution.

The authors addressed a number of methodological limitations. First, the sample consisted of women actively seeking surgery. They may have been motivated to increase their levels of psychological distress, thinking that this would act in their favour. Second, the study did not conduct a follow-up assessment to see if the surgery had actually taken place or assess whether the surgery had resulted in any psychological benefits. The authors only focused on recommendations for surgery; a follow-up assessment could have tested the validity of the recommendations provided.

The review team gave this study a quality rating of 3 out of 6 using the QA Cohort, suggesting that it should be interpreted with caution.

7.4.4 Hayashi et al. (2007)

Hayashi et al. (2007) conducted a study which aimed to evaluate the importance of a psychiatric approach in cosmetic surgery. They focused on patients who visited a single cosmetic surgery clinic; the surgical procedures requested were not specified. Using a cohort study design, 140 patients were interviewed by the surgeon to evaluate their psychiatric status, with a psychiatrist present. In addition, patients were given the Hamilton Depression Scale for depression and anxiety. In some cases, a more detailed interview was carried out and psychiatric diagnosis was determined according to DSM-IV. Based on the pre-surgical assessment, patients were divided into two groups:

1. determined psychiatric diagnosis; and
2. without diagnosis.

At the initial consultation, 43 percent of the patients were diagnosed as ‘suspicion of psychiatric disorder’. Further interviews conducted by the psychiatrist led to the diagnosis of psychiatric disorders in 32 percent of these patients. Body dysmorphic disorder and depression/depressive states were the most frequently diagnosed disorders.

The single methodological limitation addressed by the author was that the psychiatrist was aware that patients undergoing cosmetic surgery had a higher frequency of psychiatric disorders. It is therefore possible that such a bias led to the psychiatrist diagnosing higher rates of psychiatric disorders when screening. The authors also noted that a number of patients showed discomfort with someone else being present during the initial consultation.

The review team gave this study a quality rating of 3 out of 6 using the QA Cohort, suggesting that this study should be interpreted with caution.

7.5 Comparison of Picavet et al. (2011) and the primary studies

Picavet et al. (2011) and Veale et al. (2012) focused exclusively on screening for BDD, whereas Honigman et al. (2011), Kellett et al. (2008) and Hayashi et al. (2007) screened for a number of psychosocial characteristics associated with a poor outcome. All the studies in this chapter included patients undergoing different cosmetic procedures. Picavet et al. (2011), Veale et al. (2012) and Hayashi et al. (2007) included patients undergoing a variety of different cosmetic procedures, whereas Honigman et al. (2011) focused on elective facial cosmetic surgery and cosmetic dentistry, and Kellett et al. (2008) examined patients undergoing breast augmentation, breast reduction and abdominoplasty.

The screening assessments also differed among studies, with Kellett et al. (2008) and Hayashi et al. (2007) using pre-surgical clinical assessments conducted by the surgeon, consultant clinical psychologist or psychiatrist, whereas Veale et al. (2012) and Honigman et al. (2011) used a self-report questionnaire to screen prospective patients.

Interestingly, Kellett et al. (2008) reported that 42.33 percent of all prospective patients were recommended to receive psychological intervention, and similarly Hayashi et al. (2007) reported that 43 percent of their patients presenting for surgery were diagnosed as ‘suspicion of psychiatric disorder’.

7.6 Discussion

In considering the systematic review and primary studies which address this question, it appears that the majority recommend the use of a brief and easy to administer screening tool feasible for use in a cosmetic surgery setting (Honigman et al. 2011, Picavet et al. 2011, Veale et al. 2012). Picavet et al. (2011) recommended the use of the short, self-report Body Dysmorphic Disorder Questionnaire/Body Dysmorphic Disorder Questionnaire-Dermatology version or The Dysmorphic Concern Questionnaire. Similarly, the Cosmetic Procedure Screening Questionnaire (Veale et al. 2012) and Preoperative Facial Cosmetic Surgery Evaluation (Honigman et al. 2011) are both brief and easy to use. The authors reported some degree of evidence for the validation of these screening tools although the findings from these studies varied in quality.

It is difficult to draw any firm conclusions from Kellett et al. (2008) and Hayashi et al. (2007), as neither study described the exact decision-making procedures in relation to the pre-surgical assessment or provided any detailed information on the pre-surgical psychiatric assessment conducted. The lack of information on the development and validation of the clinical assessment, the content of the questions asked, and the details on scoring and cut-off points makes it difficult to draw any firm conclusions and reduces the relevance of these studies to this review. In comparison, both Veale et al. (2012) and Honigman et al. (2011) provided a copy of the questions included in their pre-intervention assessment and details of the validation process.

Overall, the evidence from the primary studies is small and varies in terms of quality. The majority of studies failed to follow up their participants to assess the predictive value of their pre-surgical

assessment tool. Only two studies included in the Picavet et al. (2011) review examined the influence of screening for BDD on patients' outcomes following cosmetic surgery. Both Veale et al. (2012) and Honigman et al. (2011) provided detailed information on the development of their screening tools, and Honigman et al. (2011) used a test sample to examine the predictive ability of the PreFACE; however, further validation is required to test the accuracy and performance of these screening tools.

The focus of the screening tools developed to date has been predominantly on BDD, yet there is evidence that other pre-existing psychological characteristics are also associated with poorer psychological outcomes (see RQs 1and 2 in Chapters 4 and 5).

7. Research question 4

Table 7.1: RQ4 included studies

Author/year Study design	Aims	Population details	Psychological predictors being screened for	Screening tool/ assessment	Findings	Overall appraisal/ strengths and limitations Study quality Overall relevance
Picavet et al. (2011) Systematic review	To provide an overview of the existing screening tools for body dysmorphic disorder and assess their quality and feasibility in an aesthetic surgery population	**No of studies**: 21 **Sample size**: 29 -268 **Types of cosmetic surgeries**: Face/neck Nose Other/non-ISAPS (see p.27) Unspecified	Body dysmorphic disorder	Body Dysmorphic Disorder Examination (BDDE)/Body Dysmorphic Disorder Examination Self Report (BDDE-SR). Body Dysmorphic Disorder Questionnaire (BDDQ)/Body Dysmorphic Disorder Questionnaire-Dermatology version (BDDQ-DV) The Body Dysmorphic Disorder –Screening Test (BDD-ST) The Dysmorphic Concern Questionnaire (DCQ). The Body Dysmorphic Symptom Scale (BDSS) Clinical interview based on the DSM-IV for Body Dysmorphic Disorder Screening (SI-BDD).	Among the currently used screening tools, the BDDQ-DV and the DCQ seem to be the most suitable There is limited information on the predictive value of the existing screening tools There is a lack of good screening tools for BDD in patients seeking cosmetic surgery	**Authors' description**: They comment on the strength of evidence for the included studies and discuss the feasibility of using the screening tool within a cosmetic surgery setting. **Reviewer's assessment**: Interpret with caution **Methodological quality**: AMSTAR scores 7/11 **Relevance**: High

Author/year Study design	Aims	Population details	Psychological predictors being screened for	Screening tool/ assessment	Findings	Overall appraisal/ strengths and limitations Study quality Overall relevance
Honigman et al. (2011) Pre/post study	To empirically derive a pre-operative psychosocial screening instrument to identify patients who may require preoperative assessment or counselling.	**Sample size**: 84 **Age**: 19-71 **Gender**: 69 women, 15 men **Country**: Australia **Types of cosmetic surgeries**:Elective facial cosmetic surgery Cosmetic dentistry **Sample source**: Prospective patients requesting the above procedures from participating practices	Psychiatric disturbance (General Health Questionnaire-30) Generalised anxiety and depression (Hospital Anxiety and Depression Scale), Global self-esteem (Rosenberg Self Esteem Scale), Extent of concern with physical appearance (Dysmorphic Concerns Questionnaire) Body image using the Multidimensional Body-Self Relations Questionnaire. **Psychosocial characteristics included**: Length of time concerned with the problem Anticipated	PreFACE Preoperative Facial Cosmetic Surgery Evaluation Self-report measure	Nine items were selected for inclusion in the screening tool. These items significantly predicted post-operative dissatisfaction. The PreFACE was able to identify most patients who were likely to express dissatisfaction with the cosmetic procedure.	**Authors' description**: Small sample size, issues with generalisability; the results are potentially only applicable to patients undergoing elective facial cosmetic surgery and cosmetic dentistry. A number of other factors and issues associated with post-operative dissatisfaction were not included in the study. **Reviewer's assessment**: Interpret with caution **Methodological quality**: 2/4 risk of bias 2/3 applicability using the QUADAS-2 **Relevance**: High

7. Research question 4

Author/year Study design	Aims	Population details	Psychological predictors being screened for	Screening tool/ assessment	Findings	Overall appraisal/ strengths and limitations Study quality Overall relevance
			physical and emotional support during recovery period Degree to which condition bothered patient History of appearance-related teasing or bullying Degree to which appearance affected sexual attractiveness; effect of condition on quality of sexual relationship Previous surgical procedures Identified concurrent stressors in the past six months Likelihood of achieving their desired outcome			

Author/year Study design	Aims	Population details	Psychological predictors being screened for	Screening tool/ assessment	Findings	Overall appraisal/ strengths and limitations Study quality Overall relevance
Kellett et al. (2008) Cohort	To investigate clinical outcomes from psychological assessments for cosmetic surgery	**Sample size**: 64 **Age**: mean age 35.72 **Gender**: Female **Occupation**: 49.30% unemployed **Marital status**: 67% married or in a long term relationship **Country**: UK **Types of cosmetic surgeries**: Breast augmentation Breast reduction Abdominoplasty **Sample source**: Referred from a general practice in the NHS due to requests for cosmetic surgery	Body image (The Body Dissatisfaction Scale and the Experience of Shame Scale) The mental health measures (Brief Symptom Inventory, which produces three composite scales: Global Severity Index, Positive Symptom Distress Index and Positive Symptom Total, and the Beck Depression Inventory-II and Inventory of Interpersonal Problems) Perceived need for surgery Clinical history	Clinical interview conducted by a female consultant clinical psychologist	Assessment outcomes fell into three groups: 1. Recommendation for surgery 2. Recommendation for psychological intervention prior to surgery 3. Recommendation for a solely psychological intervention 42.33% of all referrals for cosmetic surgery were recommended to receive either psychological treatment prior to surgery or psychological treatment alone Significant trend for women seeking breast augmentation to be identified as needing psychological interventions Lower scores on the measures of mental health and body image were associated with the clinical decision to recommend a surgical rather than psychological solution	**Authors' description**: The sample consisted of women actively seeking cosmetic surgery and therefore likely to have been motivated to inflate the degree of their psychological distress on the self-report measures There was no follow-up assessment to test the validity of the recommendations and potential psychological benefits **Reviewer's assessment**: Interpret with caution **Methodological quality**: 3/6 QA Cohorts **Relevance**: Medium
Hayashi et al.	To evaluate the	**Sample size**: 140	Interview to	Interviewed	Patients were divided into	**Authors' description:**

7. Research question 4

Author/year Study design	Aims	Population details	Psychological predictors being screened for	Screening tool/ assessment	Findings	Overall appraisal/ strengths and limitations Study quality Overall relevance
(2012) Cohort	importance of a psychiatric approach in cosmetic surgery.	**Age**: average 38.4 years **Gender**:16 men, 24 women **Types of cosmetic surgeries**: Variety of procedures **Sample sources**: Patients who visited a cosmetic surgery clinic at Kitasato University Hospital, Japan	evaluate psychiatric status Depression and anxiety (Hamilton Depression Scale)	by the surgeon to evaluate patient's psychiatric status. In some cases, a more detailed interview was conducted by a psychiatrist	two groups: determined psychiatric diagnosis; and without diagnosis 43% of patients were diagnosed as 'suspicion of psychiatric disorder' by screening at the initial visit BDD and depression were more frequently diagnosed	There is a potential for bias as the psychiatrist was aware of the fact that patients undergoing cosmetic surgery are more likely to have psychiatric disorder A number of patients showed discomfort with the presence of someone else during the initial consultation. **Reviewer's assessment:** Interpret with caution **Methodological quality**: 3/6 QA Cohorts **Relevance**: Medium

Author/year **Study design**	**Aims**	**Population details**	**Psychological predictors being screened for**	**Screening tool/ assessment**	**Findings**	**Overall appraisal/ strengths and limitations** **Study quality** **Overall relevance**
Veale (2012) Case control/ cross sectional	To develop: 1. a screening questionnaire that was brief and could identify people who may require further specialist assessment 2. a research tool that might predict either dissatisfaction with a cosmetic procedure or no change or deterioration in overall symptoms of BDD and 3. a tool that may be sensitive to change after an intervention.	**Sample size**: 97 in the BDD group; 108 in the community group **Age**: BDD group – average 30 Community group – average 33 Gender: BDD group – Male: 46% Female: 54% Community group – Male: 22% Female:78% Country: UK Types of Cosmetic Survey: -Variety of procedures.	Body Dysmorphic disorder, based in DSM-IV	Cosmetic procedures screening questionnaire (COPS) Self-report measure	The authors concluded that the scale had robust psychometric properties with acceptable internal consistency, test-retest reliability and convergent validity The COPS is a brief, sensitive and specific screening measure for BDD that can be used in cosmetic settings to screen patients with BDD for referral for further assessment	**Authors' description**: The two groups varied in terms of gender, marital status, occupation and types of procedures sought In future, studies need to compare COPS scores with participants with and without BDD who are seeking a specific procedure **Reviewer's assessment:** Interpret with caution due to risk of bias Low concern over applicability **Methodological quality**: 2/4 for the assessment of bias; 3/3 for assessment of applicability (QUADAS-2) **Relevance**: High

8. RQ5: For patients requesting cosmetic procedures who have body dysmorphic disorder (or other disorders with a body image component), does psychological therapy result in better psychological outcomes than cosmetic interventions (or no intervention)?

8.1 Overall summary of findings

- The results from the included studies indicate that both psychological interventions (i.e. cognitive behavioural therapy) and pharmacological (i.e. serotonin reuptake inhibitors) are useful in treating body dysmorphic disorder (BDD).
- Psychological and pharmacological interventions are also effective at reducing co-morbid disorders such as depression and obsessive compulsive disorder symptomatology.
- The studies suffered from a variety of limitations, although two of the included studies are considered 'sound'.
- Larger-scale randomised controlled trials with longer follow-up periods are needed to replicate these findings.
- No studies were found that directly compared patients with body image disorders undergoing cosmetic surgery versus alternative therapies.

8.2 Included studies

The randomisation of patients to either cosmetic surgery or psychological therapy would represent the ideal research design for comparing the effectiveness of these interventions on subsequent psychological outcomes, although this design presents a number of ethical issues. However, no studies were found that directly explored the primary research question.

We found two systematic reviews relating to alternative therapies to cosmetic surgery for people with a psychological disorder, in particular body dysmorphic disorder (Ipser et al. 2009, Williams et al. 2006). We also found one primary study examining an alternative therapy to cosmetic surgery (Rabiei et al. 2012). The characteristics of the included reviews are presented in Table 8.5 and they are described narratively in the following section.

8.3 Systematic reviews: alternative treatments for BDD

Ipser and Sander (2009) conducted a systematic review which aimed to determine the effectiveness of medication, psychotherapy or a combination of both interventions in treating BDD. The authors focused on patients diagnosed with BDD according to the DSM-IV criteria or the International Classification of Diseases (ICD-10). They systematically searched databases for randomised controlled trials which compared pharmacotherapy, psychotherapy or multi-modal treatment groups with a placebo and other comparison groups. They found five studies that met their inclusion criteria, including three of psychotherapy (cognitive behavioural therapy – CBT – and exposure and response prevention – ERP) and two of medication (the serotonin reuptake inhibitors – SRIs – fluoxetine and clomipramine). However, summary statistics could not be extracted from one of the psychotherapy trials, so this study was therefore excluded from the quantitative analysis.

The primary outcome of interest was BDD symptom severity measured using standardised instruments such as the Yale Brown Obsessive Compulsive Scale, modified for body dysmorphic disorder (BDD-YBOCS) and the Body Dysmorphic Disorder Examination (BDDE). Treatment response

and relapse rate was also noted. Secondary outcomes included co-morbid symptoms of depression and obsessive compulsive disorder, delusionality, quality of life and functional disability. All outcomes were measured using self-reported questionnaires.

A random effects model was employed for the analysis of outcome measures.

- **Pharmacotherapy (fluoxetine) versus placebo**. BDD symptom severity was significantly reduced by approximately 6 points on the BDD-YBOCS following the administration of fluoxetine relative to placebo (number of trials (N) =1, Weighted Mean Difference (WMD) = -5.90, 95%CI -10.52 to -1.28, number of participants (n) = 67). Treatment response was also significantly higher following treatment with medication than placebo (55.9 percent and 18.2 percent respectively, Relative Risk (RR) 3.07, 95%CI 1.40 to 6.72, n = 67). Levels of co-morbid depression (N=1, WMD = -7.00, 95%CI -11.94 to -2.06, n = 67) and delusionality were also reduced in participants given the medication. Fluoxetine failed to improve quality of life but was effective in reducing functional disability.
- **Pharmacotherapy (clomipramine) versus alternative medication (desipramine)**. Clomipramine was found to reduce BDD symptom severity on the BDD-YBOCS (WMD = -5.72, 95%CI –11.17 to -0.27, n = 23) and delusionality. There were also greater decreases in both co-morbid depression and obsessive-compulsive disorder (OCD) symptom severity scores (t =2.44, p =0.02 and t =3.01, p =0.007, respectively) and functional disability following the administration of clomipramine in comparison to desipramine.
- Psychological Intervention (CBT) versus waiting list. In comparison to patients receiving no treatment, CBT significantly reduced BDD symptom severity scores by 45 points on the BDDE (N=2, WMD = -44.96, 95%CI –54.43 to -35.49, n = 73) and co-morbid depression (N =1, WMD = -11.88, 95%CI -18.35 to -5.41, n = 19).

They concluded that both medication (fluoxetine, clomipramine) and psychological Intervention (CBT) may be effective in treating patients with BDD. They noted however that these findings should be interpreted with caution because only a few small controlled trials had been done. Larger studies are therefore needed to replicate and confirm these findings. The authors identified the following limitations associated with the studies included in the review: 1) the small sample sizes; 2) the inadequacies of reporting; 3) the dependency on published articles; and 4) the inability to tease apart the components of cognitive behavioural therapy.

The findings of this systematic review are sound. This is based on a quality assessment which gave the review 11 out of 11 on the AMSTAR rating.

Williams et al. (2006) conducted a systematic review and meta-analyses to examine the efficacy of treatments for BDD and to compare the effectiveness of psychological and pharmacological interventions. All participants included in the review were adults and met DSM-IV criteria for BDD. The authors examined databases for published and non-published randomised controlled trials and cross-over and case series studies using psychological (i.e. behavioural or cognitive or cognitive behavioural) or medication therapy (i.e. Clomipramine, Fluvoxamine, Fluoxetine, Citalopram) to treat BDD. The key outcome reported was BDD symptom severity. The authors also measured symptoms of depression because it is a well-documented and important correlate of BDD. All outcomes were measured using self-report questionnaires. The search resulted in five studies examining pharmacological treatments and ten examining psychological interventions.

- The authors found that BDD symptomatology and levels of depression improved with treatment, yielding large effect sizes (BDD r =0.51 and depression r=0.39). This was despite the heterogeneity of the studies included in the review (i.e., different research methods).
- They found that psychological therapies were more effective than pharmacotherapy at reducing BDD symptom severity, Q_B (1) = 15.80; p< 0.01. When exploring this further, they

found that CBT in particular yielded larger effect sizes than pharmacotherapy: chi-squared(1) = 15.65; p <0.01.

- There were, however, no differences revealed between the effectiveness of CBT and behavioural therapy or between behavioural therapy and pharmacotherapy.

The authors noted that there were some limits on the generalisability of the results, as the review included a relatively small number of studies, with small sample sizes. They also noted that several studies did not report the impact of concurrent use of medication on their participants. It is therefore impossible to tease apart the effects of psychological interventions over and above the use of medication. However, despite the heterogeneity of the included studies, the authors noted that the large effect sizes supported the effectiveness of these treatments for BDD. The authors included unpublished studies in this review to reduce the likelihood of publication bias.

The findings of this systematic review should be interpreted with caution. The review was rated 7 out of 11 on the AMSTAR scoring system.

Both Ipser et al. (2009) and Williams et al. (2006) found that BDD symptomatology improved with psychological and pharmacological treatment, indicating that they were both effective interventions. Similarly, both reviews found improvements in disorders commonly associated with BDD, such as levels of depression and OCD. However these reviews differed substantially in terms of their quality. Williams et al. (2006) synthesised outcomes based on studies using controlled and non-controlled trials. The differences in the type of control group used call into question the comparability of these studies. In addition, Williams et al. (2006) included multiple effect sizes from individual studies in the same comparison. However, Isper et al. (2009) only included randomised controlled trials in their analysis; this resulted in a very small sample of studies, which may impact on the strength of the evidence provided.

8.4 Primary studies

Rabiei et al. (2012) conducted a primary study which aimed to determine the effect of metacognitive therapy on symptoms of BDD and symptoms of thought fusion. They focused on patients with BDD diagnosed using the structured clinical interview for DSM-IV diagnoses. None of the patients were currently taking psychotropic medication. Twenty participants were randomly assigned, using simple sampling strategy, to either the intervention (metacognitive therapy, n=10) or waitlist control group (n=10). The intervention consisted of eight sessions of 45-60 minutes of metacognitive therapy. All participants completed questionnaire measures pre-test, post-test (two months later) and at six-month follow-up. The outcomes were BDD disorder severity (preoccupations, repetitive behaviours, insight and avoidance) measured using the Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder and thought fusion symptoms measured by the Thought-Fusion Instrument, which assesses meta-cognitive beliefs about the meaning, significance and dangerousness of intrusive thoughts. Both measures are self-report questionnaires.

The patients in the two conditions were not significantly different in terms of demographics, duration of past medication, duration of BDD and number of concerns (p>0.05). There were no significant differences between the two groups at baseline with regard to BDD (t (18) = -0.21, p>0.05) or thought fusion symptoms (t (18) = 0.81, p>0.05). Repeated measures of analyses of variance were conducted to examine the effectiveness of meta-cognitive therapy on body dysmorphic symptoms and thought-fusion symptoms in comparison to a waitlist control.

The findings indicated that, in comparison to the control group, which did not receive any form of intervention, meta-cognitive therapy was effective at reducing body dysmorphic symptoms and

thought-fusion symptoms in people with BDD. The largest improvements for both BDD and thought-fusion scores were observed between pre-test and post-test.

The authors noted that the results needed to be interpreted with some caution. Meta-cognitive therapy is a new technique, which has not been investigated extensively. Therefore, the effects might partly be explained by treatment novelty. The small sample size and the fact that the participants were all volunteers, highly educated, young, mostly female and single, limited the generalisability of these results.

Assessment of this study resulted in a quality rating of 3 out of 3 using the QA Trials scale, suggesting that these findings are sound.

8.5 Discussion

It is important to note that no studies were found that directly explored the primary research question. However, in considering the reviews which address this question, it appears that psychological interventions (i.e. cognitive behavioural therapy, meta-cognitive treatment) and pharmacological treatments (i.e. serotonin reuptake inhibitors) can effectively reduce the symptoms of BDD and their related co-morbid disorders such as depression and obsessive compulsive disorder. Due to the problematic methodology used in the review conducted by Williams et al. (2006), the finding that psychological therapies are more effective than pharmacological treatments in reducing BDD severity should be interpreted with caution. These findings are in line with the National Institute for Health and Clinical Excellence (2005) guidelines for treating BDD, which recommend a number of treatments, including psychological therapies (i.e., cognitive behavioural therapy) and medication (i.e., fluoxetine).

All the studies included in this chapter suffer from a variety of limitations, including poor reporting, small sample sizes, issues of generalisability and dependency on published articles. However, two of the studies are considered ‘sound’ (Ipser et al. 2009, Rabiei et al. 2012), giving us overall confidence in their findings.

The authors conclude that large-scale studies are needed in the future to replicate the findings from these reviews.

8. Research question 5

Table 8.1: RQ5: Included studies

Author/year Study design	Aims	Population details	Alternative Interventions	Psychological outcomes	Findings	Overall appraisal/ strengths and limitations Study quality Overall relevance
Ipser et al. (2009) Systematic review	To determine the effectiveness of medication, psychotherapy or a combination of both treatments in combating body dysmorphic disorder in comparison to control groups	**No. of studies**: 5 **Sample size**: 10-67 **Age**: 31.2-36.5 **Gender**: Male and female **Population**: people with BDD according to the criteria of DSM-IV or ICD-10 **Control**: All studies included an active or non-active control group	Clomipramine Fluoxetine Uncontrolled behavioural therapy Cognitive-behaviour therapy	BDD symptom severity Delusionality Depression OCD Quality of life Functional disability	Results suggest that Serotonin reuptake inhibitors (clomipramine, fluoxetine) and CBT may be useful in treating patients with BDD and reducing symptoms of co-morbid disorders such as depression, OCD	**Authors' description**: Small sample sizes Inadequate reporting of included studies Dependency on published articles Unable to tease apart aspects of CBT **Reviewer's assessment**: Sound **Methodological quality**: AMSTAR scores 11/11 **Relevance**: High
Williams (2006) Systematic review	To examine the efficacy of treatments for BDD and to compare the effectiveness of psychological and pharmacological interventions	**No of studies**:15 **Sample size**:4-54 **Age**: 25.1-36.7 **Gender**: Male and female **Population**: People with BDD according to the criteria of DSM-IV **Control**: Controlled and non-controlled trials	**Pharmacotherapy:** Clomipramine Fluvoxamine Fluoxetine Citalopram **Psychological:** Cognitive therapy Behaviour therapy CBT	BDD symptom severity Depression	BDD symptom severity and levels of depression improved with treatment Psychological therapies were more effective than pharmacotherapy, and in particular, CBT yielded larger effects sizes than pharmacotherapy	**Authors' description:** Small number of studies with small sample sizes Inadequate reporting - some researchers did not report the impact of concurrent medication use on their participants. **Reviewer's assessment**: Interpret with caution **Methodological quality**: AMSTAR scores 7/11 **Relevance**: High

Author/year Study design	Aims	Population details	Alternative Interventions	Psychological outcomes	Findings	Overall appraisal/ strengths and limitations Study quality Overall relevance
Rabiei et al. (2012) RCT/Primary study	To determine the effect of metacognitive therapy on symptoms of BDD	**Sample size**: 20 **Age**: 16-37 **Gender**: 18 females, 2 males **Education**: All had some high school diploma and university education **Socio-economic status**: average or above average - coded by income, education and job **Country**: Iran **Population**: People with BDD according to the criteria of DSM-IV **Control** group: Waitlist control	8 weekly sessions of 45-60 minute meta-cognitive therapy. This was based on Wells' manual (2000) and modified for BDD patients	Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder BDD-YBOCS Body Dysmorphic Disorder severity Thought fusion	In comparison to the control group, metacognitive therapy was effective at reducing body dysmorphic symptoms and thought-fusion symptoms	**Authors' description:** Results may be explained by treatment novelty, very small sample size, issues of generalisability (the sample were all highly educated, young volunteers who were predominantly female) **Reviewer's assessment**: Sound **Methodological quality**: 3/3 QA Trials Relevance: High

9. RQ6: What are the issues of informed consent among vulnerable patients undergoing cosmetic interventions?

9.1 Overall summary of findings

- In general, little synthesised empirical evidence specific to informed consent in cosmetic procedures was located; almost none related to non-surgical procedures (e.g. botox); and the type of cosmetic procedure was often poorly reported.
- Some studies used sampling frames from plastic surgery units; the focus on restorative and reconstructive interventions in these studies may not be generalisable to cosmetic surgery patients.
- The characteristics of study participants were sparsely reported; vulnerable patients were not described; women, doctors or documents were most often studied; patients were most often women in their mid-forties.
- Definitions of informed consent differed between included studies.
- Pre-procedure consultations were the most often described setting for informed consent to take place: this encounter, leading to informed consent, is comprised of issues related to both content and approach.
- Consultation appears to be influenced by doctors' perception of which risks merit discussion, and their need to manage professional ethics, reduce litigation risk and (in the private sector) facilitate profit.
- As well as discussion of all medical risks, women undergoing cosmetic breast surgery indicated an additional need for information about how having surgery (or not having it) would affect their future social and childbearing lives.
- The decision-making process in cosmetic surgery consultations appears to be shared: patients want doctors to understand what information they need in order to make a decision; and doctors want patients to understand why they provide the information that they do (i.e. so that patients can understand how to interpret the information).
- This may differ from what doctors are currently obliged or deem necessary to provide, in ensuring that informed consent has taken place.

9.2 Included studies

We located seven studies that examined the issue of informed consent in vulnerable patients (i.e. those with pre-procedure risk or who were at risk of poor outcomes) who requested or underwent cosmetic procedures: one systematic review (Chung et al. 2009) and six primary studies (Bismark et al. 2012, Boulton and Malacrida 2012, Elliott and Cawrse 2003, Makdessian et al. 2004, Mirivel 2010, Pleat et al. 2004). The characteristics of these seven included studies are described narratively in the following section and presented in Table 9.1 at the end of this chapter.

9.3 Systematic reviews

Chung et al. (2009) conducted a systematic review which aimed to identify studies discussing ethical issues in plastic and reconstructive surgery. This was done in order to determine whether ethical issues (autonomy, beneficence, non-maleficence and distributive justice) were underreported in this literature. The review focused on multiple unspecified cosmetic surgery procedures in the general population. The authors found that a relatively small proportion of the plastic surgery literature was devoted to the discussion of ethical principles, although over one-third of what was located concerned issues of informed consent. However, a large proportion of the located literature was non-research. Findings from one primary study by Makdessian et al. (2004)

were included in the Chung et al. (2009) review and discussed in detail. We discuss these findings below. The review team gave this report a quality rating of 10 out of 11, suggesting that its design was methodologically sound. However, its wider focus on plastic surgery may limit generalisability to all cosmetic procedures. Additionally, its lack of synthesis of included studies specific to informed consent limits its usefulness for our research question.

9.4 Primary studies

The six primary studies that were located and assessed by the team offer a more detailed picture of informed consent in cosmetic interventions. Three of the included studies were directly useful for our review question: that is, they were of high methodological quality and discussed process and content issues relevant to informed consent, specifically in those undergoing or performing cosmetic procedures. The remaining three included primary studies were not relevant specifically to issues of informed consent in those undergoing or performing cosmetic procedures, and varied in methodological quality. This suggests that their findings should be interpreted with caution. The characteristics and findings from these studies will be discussed below, beginning with the three high-quality, high-relevance primary studies.

Boulton and Malacrida (2012) conducted a primary study which explored how 24 women who had undergone cosmetic breast surgery negotiated the tensions between the associated medical, social and lifestyle risks. They used public advertising in community settings and snowball techniques to recruit participants. The authors conducted in-depth semi-structured interviews and grounded theory thematic analysis within a critical feminist framework, to understand women's decision-making processes about their experience of undergoing cosmetic surgery. The findings indicated that the participants recalled inconsistent and faulty discussion of medical risks during the consultations. Additionally, it was suggested that women considered social and lifestyle risks when deciding to undergo surgery, which were not discussed in consultations. For example, women were motivated by their beliefs that surgery would improve their satisfaction with their bodies and their relationships with potential or actual partners, and would contribute to their career prospects. Other women described waiting to undergo surgery after childbearing was complete. These social and lifestyle risks did not appear to be addressed by the doctors in these pre-operative consultations. The authors briefly discuss the limitations of retrospective analysis of this kind; it should be noted that the cosmetic breast surgery experienced by women in this group happened between six years and more than twenty years prior to interview. This type of recall bias could have influenced the results. However, the review team gave this study a high quality rating of 14 out of 18, and the study's focus on women undergoing cosmetic breast surgery is directly relevant to our research question.

A study by **Mirivel (2010)** undertook a discourse analysis in order to characterise plastic surgeons' consultations with new clients seeking cosmetic surgery in private practice, as a way of understanding how surgeons managed competing demands between their institutions' need for profit and their own medical ethics. No demographic information about the surgeons was provided, but the author described consultations for unspecified types of cosmetic surgery between surgeons and 17 clients (15 women and two men). The findings from direct observation and record review suggested that surgeons met and balanced health-related (i.e. ethical) and institutional (i.e. profit-making) goals in their interactions with their clients, and did so through a variety of communication techniques: withholding and resisting talk about surgery costs; framing ongoing activities during the consultation to help the client understand why and how the information was being presented; performing identity work to gain trust and cultivate credibility with clients; and trying to shape how patients interpret before-and-after photographs of previous surgical results. While the author did not discuss any potential limitations to their methods, the reviewers noted that no data checking within the study by a second researcher or confirmation of findings took place, both of

which could have enhanced the reliability of the study. Overall, the study rated highly (12 out of 18) in terms of methodological quality, suggesting that its results can be used with confidence. The author did not directly discuss informed consent in the study; however it can be inferred that aspects of this consultation process were important in communicating risks to prospective cosmetic intervention patients.

Bismark et al. (2012) conducted a primary study which aimed to describe the frequency, characteristics, clinical circumstances and outcomes involving alleged failings of informed consent. Using standardised tools, three trained reviewing doctors examined all malpractice claims made within a six-year period, identifying 77 cases related to cosmetic procedures. Descriptive frequencies were calculated of categorised process and content issues around informed consent, type of cosmetic procedure, and health and legal outcomes. The authors noted that liposuction, breast augmentation, face/neck lifts, eye/brow lifts and rhinoplasty/septoplasty cosmetic procedures were most often involved in malpractice claims. In 70 percent of such claims, the doctors failed to disclose the risks of a particular condition; 39 percent claimed that the potential lack of benefits was not discussed; and 26 percent of allegations centred on the process by which consent was sought. The authors also noted that several types of risks that patients considered important (albeit retrospectively) might not have been discussed or emphasised by the doctors. Further, the actual content of discussions of risk might be irrelevant if patients were not given the opportunity to 'hear, absorb and consider the information' (p1510). This study rates as a highly relevant and high-quality study. While the findings cannot be necessarily generalised to all cosmetic procedures, its focus on most frequently performed procedures means it is highly relevant for our review.

The remaining three included primary studies were not relevant specifically to issues of informed consent in those undergoing or performing cosmetic procedures, and varied in methodological quality. Described below, their findings should be interpreted with caution.

Elliott and Cawrse (2003) undertook a study in which they examined the documentation of informed consent obtained by surgeons before operative procedures. Two authors read 78 charts of all patients undergoing plastic surgery in one unit in the UK, using a standard checklist. Descriptive frequencies of provider characteristics and aspects of consent were presented. The findings indicated that the majority of records failed to show evidence that all four aspects of consent (treatment options, anticipated benefits, potential complications, and proposed procedure and aftercare) were covered in the pre-operative consultation. Almost 30 percent of these were signed by staff not competent to obtain informed consent. The findings from this study, while scoring high in methodological quality, must be interpreted with caution. This study is about informed consent in plastic surgery, but is not specific to cosmetic surgery; in fact, only one of the 78 included patients was clearly described to have undergone cosmetic surgery (i.e. had a mammoplasty).

A study by **Pleat et al. (2004)** aimed to determine the threshold at which the frequency and severity of specified general risks influenced the likelihood that plastic and reconstructive surgeons would discuss them with patients. A total of 60 questionnaires (developed and piloted with surgeons) were completed, and differences between distributions were assessed using the marginal homogeneity test. The type of surgeon and minor versus major risks were calculated and described. The findings suggested that for frequently occurring but minor risks, the incidence rates would have to be 5 percent before surgeons would discuss them with patients. The threshold incidence rate was less consistent among surgeons for major but infrequently occurring risks: the incidence rate at which surgeons would discuss the risks with patients was on average 0.1 percent, but this varied more widely between surgeons than for minor frequently occurring risks. This study is well described and conducted, but must be interpreted with caution; the setting and non-cosmetic focus of the surgeons in the study may have influenced the findings.

Finally, **Makdessian et al. (2004)** conducted a randomised controlled trial in order to examine the influence of oral (control) versus oral plus written (intervention) risk information on ambulatory facial plastic surgery patients' recall rate of the pre-operative risks to surgery. A total of 120 participants, described by sex, age and education, were randomised to either intervention or control groups and presented with a standardised set of risks, communicated by surgeons in pre-operative consultations. The participants were contacted two weeks later to establish which risks they could recall. The findings suggested that the group receiving oral plus written risk information recalled statistically significantly more risks than those receiving only oral risk information. Although this was a randomised controlled trial, these findings should be interpreted with caution for two reasons. First, demographic information was not provided separately for the intervention and control groups, and baseline equivalence was not reported. Further, Mann-Whitney tests were conducted, which suggests that the baseline equivalence of the groups was not assured. Second, the attrition rates for participants were not described or tested. Both of these shortcomings could have influenced the study's findings, making this study methodologically questionable and indicating that its results should be interpreted with caution.

9.5 Synthesis of included studies

Despite locating one well-conducted systematic review which itself identified over 100 primary studies, the findings of Chung et al. (2009) were limited in terms of informing our review question. The review examined ethical issues within cosmetic surgery; however informed consent is a concept that overlaps the four categorised ethical issues used in this review (autonomy, beneficence, non-maleficence and distributive justice). Further, simple descriptive reporting of findings limits our understanding and use of these studies.

Studies of cosmetic procedures and informed consent were undertaken across a range of countries: the UK (Elliott and Cawrse 2003, Pleat et al. 2004), Canada (Boulton and Malacrida 2012), the USA (Mirivel 2010) and Australia (Bismark et al. 2012). The systematic review (Chung et al. 2009) and one primary study (Makdessian et al. 2004) did not report the country in which the study took place.

Demographic information on study participants was provided sparsely across studies. Four of the seven studies reported on age (Boulton and Malacrida 2012, Bismark et al. 2012, Elliott and Cawrse 2003, Makdessian et al. 2004). Four studies reported on gender (Bismark et al. 2012, Boulton and Malacrida 2012, Makdessian et al. 2004, Mirivel 2010). Only one study reported on educational attainment (Makdessian et al. 2004). The systematic review did not report demographic information on participants from any included studies (Chung et al. 2009). Poor reporting of the demographic characteristics of study participants is a common finding in primary research and systematic reviews across health and social research (Brunton et al. 2012, Oakley 2005). This missing or sparse information creates challenges for readers when trying to generalise results to their own populations.

We found sparse reporting on the types of cosmetic procedures patients were undergoing. Where type of procedure was described, it was most often cosmetic surgery, and these were the most frequently performed cosmetic surgical procedures (International Society of Aesthetic Plastic Surgery 2012). These included cosmetic breast surgery (Bismark et al. 2012, Boulton and Malacrida 2012); liposuction, eye/brow lifts (Bismark et al. 2012), rhinoplasty/septoplasty and rhytidectomy (Bismark et al. 2012, Makdessian et al. 2004), and laser skin resurfacing (Makdessian et al. 2004). Mirivel (2010) did not specify which cosmetic procedures were being performed. Elliott and Cawrse (2003) and Pleat et al. (2004) did not specify which type of plastic surgery (although Elliott and Cawrse (2003) noted that the sample contained one mammoplasty patient). The findings about informed consent can be seen to be broadly generalisable to patients undergoing these kinds of

surgery; however, it is unknown whether the same issues are raised for other surgical, or for non-surgical cosmetic procedures.

Some differences in studies were apparent in relation to their publication date. Older studies tended to be of less direct relevance to cosmetic procedures, and focused on more concrete issues of informed consent (e.g. the adequacy of informed consent documentation, the delivery of risk information, the type of risk information to convey). New studies were of higher relevance to cosmetic surgery, and examined more contextual issues of informed consent within surgeons' practices and women's lives.

However, the data were collected retrospectively in almost all of the included primary studies. Of the studies directly relevant to cosmetic surgery patients, Bismark et al. (2012) collected data about informed consent from malpractice claims made between 2002 and 2008. Boulton and Malacrida (2012) collected data from women who had had cosmetic breast surgery between 11 and more than 20 years prior to interview. Only Mirivel (2010) prospectively examined consultations between cosmetic surgeons and patients over a nine-month period. Of the studies which were less relevant to this review because they examined plastic surgery patients or were of lower methodological quality, Elliott and Cawrse (2003) conducted a retrospective survey, while Pleat et al. (2004) and Makdessian et al. (2004) undertook prospective studies.

The way in which informed consent was defined varied between the studies. For example, Bismark et al. (2012) defined informed consent as: 'the quality or quantity of information provided to the patient about a treatment prior to a decision about whether to undertake it, or the process through which the patient was asked to consider such information and make decisions' (p1507). Boulton and Malacrida (2012) did not define informed consent per se, but rather situated it within 'interactions with medical professionals before, during, and after the surgery, and decision making in relation to risks and rewards' (p511). Chung et al. (2009) defined informed consent as an aspect contained mostly within the 'autonomy' precept of their ethical framework. Elliott and Cawrse (2003), while examining patient records within a plastic surgery unit rather than cosmetic surgery in particular, defined four key aspects of consent recommended by England's Department of Health at the time (Department of Health 2001): treatment options; anticipated benefits; potential complications; and the proposed procedure and aftercare. Makdessian et al. (2004) suggested that in addition to the latter items, professionals should also discuss any alternative treatments (including no treatment) and identify the practitioner performing the surgery.

Each of the three highly relevant primary studies examined informed consent by privileging a different viewpoint. Mirivel (2010) sought to understand the process of balancing informed consent and institutional demand for profit, from the cosmetic surgeons' point of view. They noted that surgeons focused on the process of surgery, a discussion of its possible risks, and positive effects; they did not always discuss or draw attention to negative effects. Boulton and Malacrida (2012) sought women's perspectives of medical, social and lifestyle risks associated with the cosmetic breast surgery they had undergone. They noted that women felt they did not receive adequate information about all medical risks associated with their surgery, or were given uncertain or contradictory information. Further, women indicated that their decision to proceed with surgery was also dependent on social and lifestyle factors. For example, some women considered the risk of not having the surgery to their future career and romantic relationships. Bismarck et al. (2012) perhaps looked at the end result of these interactions by examining malpractice claims that alleged deficiencies in informed consent. They highlighted that 'several types of risk that matter to patients … which clinicians may routinely undervalue … for example, the possibility that the treatment may confer no visible benefit, trigger the need for further surgery, or result in disfigurement, pain or altered sensation' (p1510). The medical focus on aspects of informed consent are echoed in the study by Elliott and Cawrse (2003), who sought to evaluate the completeness of four key aspects of informed consent (treatment options, anticipated benefits,

potential complications, proposed procedure and aftercare). They discovered that the majority of records failed to address all four of these aspects: at best, only one-third (32 percent) discussed potential complications; written information was given to only one mammoplasty patient (who had obtained that information in a prior private consultation); and only slightly more than two-thirds (69 percent) documented informed consent obtained by a professional qualified to do so. These findings suggest that patients and doctors value different pieces of information when deciding whether or not to have or recommend cosmetic surgery, which then influences what information is provided (and perhaps retained or remembered) when giving, obtaining and documenting informed consent.

The differences in the goals of discussion between patients and surgeons appear to influence their interactions during pre-procedure consultations. For example, Mirivel (2010) noted that in order to balance the ethical and moral imperatives dictated by their profession with the financial imperatives dictated by their commercial business, doctors withheld or refused talk of costs, framed their own activities within the consultation to frame patient's understanding of the discussion, worked to gain trust and cultivate credibility with patients, and worked to shape how patients interpreted before-and-after photographs of previous surgical results. In contrast, Boulton and Malacrida (2012) noted that, while most of the participants recognised that they had 'a responsibility to seek out additional information to make a well-informed risk assessment' (p518), some relied entirely on the doctor's medical knowledge to assess the risks and benefits of cosmetic breast surgery. Bismark et al. (2012) found that 25 percent of malpractice claims related to poor practice in obtaining informed consent (i.e. feeling rushed or pressured into making a decision). Additionally, the use of oral and written information in communicating risks may be beneficial, but further rigorous evaluation of this method is needed (Makdessian et al. 2004).

Finally, some apparent differences within studies were noted between doctors who practise privately versus those who practise in publicly funded health care systems. There appear to be differences in their approach to patients and in the content of provided information. Mirivel (2010) was the only included study which observed doctors in a private cosmetic surgery practice. The findings suggested that they worked to balance the need for professional ethics with the need to make a profit. They suggested that this drove the doctor's approach to patients, in that they took the time to build rapport and establish trust with patients, framing the information they provided to ensure that patients understood why it was being given and how they should use it. However, information seemed to focus more on the benefits of cosmetic surgery rather than including a full discussion of risks or alternative treatments. Studies that focused on doctors or informed consent issues in publicly funded health care settings also suggested that information for informed consent often lacked completeness, and the content might vary depending on the individual doctor's assessment of the importance of a particular risk. However, findings from malpractice claims suggest that, when patients are dissatisfied with their cosmetic surgery, they often describe feeling rushed or pressured into making a decision by their doctor.

9.6 Discussion

We reviewed one systematic review and six primary studies which discussed aspects of informed consent. The findings from this research highlight several issues.

Our research question was 'What issues influence informed consent for cosmetic procedures in vulnerable patients?' However, none of the included studies focused on vulnerable (i.e. at-risk) patients. Demographic data were sparsely provided across included studies; samples tended to describe inclusion of mostly women in their mid-forties. A gap in evidence exists to address the issues with respect to other potentially vulnerable patients undergoing cosmetic surgery (e.g. men, young people/children, those with underlying psychological vulnerabilities).

Overall, this rapid evidence assessment located very little synthesised empirical evidence specific to informed consent in cosmetic procedures. This finding was also noted in the systematic review of research on ethical issues in cosmetic surgery undertaken by Chung et al. (2009). This review initially appeared helpful, as it located 110 primary studies. This was not borne out upon closer appraisal: the included studies are only described in terms of whether they addressed four ethical components: autonomy, beneficence, non-maleficence and distributive justice. Informed consent straddles aspects of all of these components, making it difficult to identify which study is relevant to informed consent in particular. Thus the included systematic review contributes little to our synthesis.

Despite using very sensitive search strategies, the located research that met our inclusion criteria focused almost exclusively on cosmetic surgery. However, the type of cosmetic surgery was often poorly described. Where described, it was specifically on the most frequently performed cosmetic surgery: rhinoplasty, breast augmentation, facelifts, eye/brow lifts and liposuction. Further, screening located only one relevant study on informed consent issues, which was undertaken with some participants who received non-surgical laser skin resurfacing (Makdessian et al. 2004). The lack of located research on both less-frequently performed cosmetic surgery and non-surgical procedures is a significant evidence gap.

In interpreting the findings from these studies, methodological challenges to this literature should be considered. Older studies were, in general, less rigorous in their conduct, and tended to focus on narrower aspects of informed consent (e.g. which aspect of informed consent was documented; what failing of informed consent was described). Newer studies looking at informed consent tended to be of higher methodological quality, and set this discussion within its context (i.e. observing cosmetic surgeons undertaking consultation sessions, interviewing women about their decision-making experiences). This suggests that the methods of informed consent are moving from a concrete examination of separate aspects to understanding its role within the patient-doctor encounter. The retrospective nature of studies introduces a potential for significant recall bias, which may also influence the results seen. Research participants tend to overestimate their perceptions when asked to look back at an event (Elliott 2005, Hassan 2006). Further, the generalisability of some of the studies must temper the weight of the findings. Half of the primary studies were of informed consent in plastic and reconstructive surgery, of which cosmetic surgery was a very small or unquantified proportion. Because differences in the motivations for surgery could exist between plastic/reconstructive surgery and cosmetic surgery, the findings may be less generalisable to populations undergoing cosmetic surgery.

The pre-operative consultation is the most likely encounter for informed consent to occur. The literature revealed different definitions and standards for what constitutes informed consent, due in part to the focus of the studies (e.g. ethics theory, malpractice law, NHS standards). The content of the discussion in that consultation appears to be influenced by doctors' perception of which risks merit discussion, and their need to manage professional ethics, reduce litigation risk, and (in the private sector) facilitate profit. However, findings from a study of women who have undergone cosmetic breast surgery suggest that the content of this discussion should also include issues important to patients: the impact of having the surgery (or not having it) on their future social and childbearing lives. This information should be current and evidence based: for example, discussing what the research evidence indicates about relationship status in women having breast augmentation, or most current information on breastfeeding after breast augmentation.

The consultation session in which informed consent is obtained is a dyadic process, involving communication to promote shared decision making between the patient and the doctor (Légaré et al. 2009). Thus the way in which both patients and doctors approach each other in the consultation session is important. The research indicates that patients require doctors to understand what information they need in order to make a decision (and this may differ from what doctors are

obliged or themselves deem necessary to provide); doctors require patients to understand why they provide the information that they do, in order to understand how it should be interpreted. In a speciality which is fraught with litigation (Marchesi et al. 2012), undertaken in public and privately funded health care settings which require that ethical standards are met (Department of Health 2009a), and privileges patient involvement and satisfaction (Department of Health 2009b), this seems especially important.

Some evidence suggests that particular efforts are made by doctors in privately funded settings to establish rapport and build trust. This was not apparent in the studies of publicly funded practice. However, direct comparisons may be difficult because of the differences in study aims. In some of the included studies, shortcomings in doctors' approaches were evident in malpractice claims made by patients who were dissatisfied with their procedure, suggesting that this is a key element in informed consent. The need to build rapport, listen to patients and allow time for patients to absorb information before making a decision must still be balanced against an imperative to provide a clear explanation of the procedure and aftercare, all potential risks and benefits, and alternatives to treatment. These findings are supported by current UK guidance on obtaining ethical informed consent in healthcare settings (Department of Health 2009a). In addition to indicating that the informational content outlined above should be included, the guidance encourages professionals to ensure 'appropriate communication' with patients, suggesting that doctors put no pressure on patients to decide, and discuss the information well in advance of the procedure, to allow time to absorb this before making a decision.

This chapter represents a synthesis of the located literature on informed consent specific to cosmetic procedures obtained through rapid evidence systematic review methods. Findings from a previously existing systematic review indicate that little evidence on this topic can be located; findings from the analysis of primary studies confirm and extend this to note that while the methodological quality of the included studies is mostly sound, the fuzzy nature of informed consent means that not all findings from well-conducted studies are generalisable to patients undergoing particular cosmetic procedures. Additionally, the findings are most applicable to those undergoing most commonly performed cosmetic surgery procedures; however, there is little evidence to inform those who have less-often performed surgery and non-surgical cosmetic interventions. The process of rapid evidence assessment meant that some studies about issues of informed consent might have been located but not assessed; we sought to ensure the most complete search and assessment of informed consent studies by undertaking an additional text term search within the located studies in an effort to screen and include all possible studies on this subject.

9.7 Conclusions and recommendations

Findings from this rapid evidence assessment suggest that the consultation session is the most likely setting in which informed consent occurs. In line with current UK guidance, informed consent in these consultations requires, at a minimum, a discussion of the proposed procedure and aftercare, all potential risks and benefits, and alternatives to treatment. Further, the evidence suggests an approach by both doctors and patients that allows for understanding each other's needs for information, appropriate communication and adequate time to absorb information before deciding. Future research priorities in this area could focus on prospective studies which examine: informed consent in vulnerable patients; differences in informed consent needs for men; informational needs relating to different procedures; an examination of the differences between private and public sector practices relating to the informed consent process; and the impact of shared decision making in the cosmetic procedure consultation session on patient satisfaction and malpractice claims.

9. Research question 6

Table 9.1: RQ6 informed consent in cosmetic procedures: included studies (n=7)

Author, year Study design	Aims	Population details	Social/ psychological factors	Social/ psychological outcomes	Findings	Overall assessment/ study usefulness
Chung et al. (2009) Systematic review	'to identify articles that discuss ethical issues relating to the field of plastic and reconstructive surgery' 'to evaluate whether ethical issues are underrepresented in the plastic surgery literature' (abst p1711)	**No. of studies:** 110 **Setting:** Unspecified **Age:** Unspecified **Gender:** Unspecified **Ethnicity:** Unspecified **Other:** None **Country:** Not stated **Types of cosmetic surgeries:** Multiple; sparsely described	Exposure to media advertising Provider influences	Not studied	'A relatively small proportion of plastic surgery literature was dedicated to discussion of ethical principles' (abst p1711) 'Autonomy was the most common theme, which included issues ranging from informed consent' (p1715) '32% of included studies discussed issues of informed consent' (p1714)	**Authors' description:** Low quality of included studies acknowledged; potential for reviewer biases in definitions of bioethics was addressed by double screening/coding **Reviewer's assessment:** Many non-research reports included; plastic surgery not cosmetic surgery; descriptive categorisation of ethical aspects only, no synthesis **Methodological quality:** High (10/11) **Usefulness:** Interpret with caution

Author, year Study design	Aims	Population details	Social/ psychological factors	Social/ psychological outcomes	Findings	Overall assessment/ study usefulness
Boulton and Malacrida (2012) Qualitative grounded theory study set within critical feminist framework	to 'explore how ... [women who had undergone cosmetic breast surgery] ... negotiated the tensions between the medical, social, and lifestyle risks associated with CBS.' (p2)	**Sample size**: 24 **Age**: 21-71 years **Gender**: Women **Ethnicity**: Unspecified **Other**: None **Country**: Canada **Types of cosmetic surgeries**: Cosmetic breast surgery	**Body image/body satisfaction:** Belief in future satisfaction with their bodies after surgery (p518) **Perceived quality of life/satisfaction:** Perceived improvement after surgery (pp8,9) **Social functioning**: Social risk perceived as decreased 'success' in the social arena (p.8) **Employment status/ work performance**: Investment in their bodies considered a risk reduction strategy: their physical capital was used to secure economic success (p9) **Sexual functioning:** Husband's sexual satisfaction post op (p5) Own sexual attractiveness (p8) **Provider influences:** Perceived quality of surgeon (p8) **Procedural complications:** Medical risks (pp4-8) **Other factors:** Waiting until after having children in order to breastfeed (p9)	Provider influences Procedural complications Poor treatment by staff when seen in hospital for ruptured implant (p.10) Women felt 'blamed' for their problem	'Primary focus on medical risks during the consultation a significant shortcoming in the medical encounter' (p512) 'Informed consent should be expanded to include social and lifestyle risks' (p2) 'Women must negotiate medical, lifestyle and social risks … received little information on the medical risks ... or given uncertain or contradictory information ... even respondents who were well-informed expressed difficulties in making wise choices because risks were distant or unlikely and hence easily minimized.' (abst p1) 'Social risks of "failed beauty" often outweighed the ambiguous or understated risks outlined by doctors' (abst p1)	**Authors' description:** Some reflection by authors on limitations of retrospective data collection (p513) **Reviewer's assessment:** Well described, well conducted study More description of methods to enhance reliability would have been helpful **Methodological quality:** High (14/18) **Usefulness:** Use with confidence

9. Research question 6

Author, year Study design	Aims	Population details	Social/ psychological factors	Social/ psychological outcomes	Findings	Overall assessment/ study usefulness
Bismark et al. (2012) Retrospective survey of cosmetic surgery malpractice claims	'our aim was to describe the frequency, characteristics, clinical circumstances and outcomes of these cases, and inform efforts to prevent them' (p1507)	**Sample size:** 77 **Setting:** Unspecified **Age:** 42 years average **Gender:** 88% female **Ethnicity:** Unspecified **Other:** None **Country:** Australia **Types of cosmetic surgeries:** Breast augmentation, rhinoplasty/ septoplasty, neck/ facelifts, eye/ brow lifts, liposuction	**Provider influences:** Process and content of informed consent (p1508) **Other factors:** Type of cosmetic procedure	**Procedural complications:** Health outcomes resulting from cosmetic procedures (p1509) **Anxiety/ depression**: '31/77 (40%) complained of anxiety or depression following their procedure' (p1508)	77/481 (16%) of all malpractice claims in a six year period involved cosmetic procedures – in 54/77 (70%) claims, doctor failed to disclose risks of particular complication (abst p1507) In 39% claims, potential lack of benefit not discussed (abst p1507) 26% allegations centred on process by which consent was sought (abst p1507) Liposuction, breast augmentation, face/neck lifts, eye/brow lifts, rhinoplasty/septoplasty cosmetic procedure in 70% of cases (abst p1507) 'Our findings highlight several types of risks that matter to patients and which clinicians may routinely undervalue in ... (selecting which risks are discussed and emphasised)' … 'Actual content of conversations about risk, however exemplary, may be irrelevant if the dialogue occurs in circumstances in which patients are not given a reasonable opportunity to hear, absorb and consider the information' (p1510)	**Authors' description:** 'Addresses lack of empirical information on the process of obtaining consent' (p1509) Difficult to discern between cosmetic and non-cosmetic (e.g. reconstructive) treatments Sample may be unrepresentative because patients making allegations may differ from general cosmetic surgery population; allegations may be unfounded Generalisability to other countries unknown **Reviewer's assessment:** Well-conducted survey of malpractice claims examining the process and content of informed consent within some cosmetic surgery; findings cannot be generalised to all cosmetic procedures **Methodological quality:** High (5/6) **Usefulness:** Use with confidence

Author, year Study design	Aims	Population details	Social/ psychological factors	Social/ psychological outcomes	Findings	Overall assessment/ study usefulness
Elliott and Cawrse (2003) Retrospective survey of hospital records of patients undergoing plastic surgery procedures	To examine 'the documentation of informed consent obtained by surgeons before operative procedures' (p242)	**Sample size:** 78 **Setting:** Plastic/ reconstructive surgery unit **Age:** 1-95 years; mean 58 years **Gender:** Unspecified **Ethnicity:** Unspecified **Other:** None **Country:** UK **Types of cosmetic surgeries:** Unspecified plastic and reconstructive surgery; one mammoplasty patient defined	**Provider influences:** Surgeon's expertise (grade) Type of surgery (p243)	**Provider influences:** Documentation of informed consent which must include: treatment options; anticipated benefits; potential complications; proposed procedure and aftercare (p243)	Majority of records failed to show evidence that the four key aspects of consent had been covered in conversation (p244) 54/78 consent forms were signed by a competent clinician 21/78 signed by non-competent staff 3/78 not signed at all! (p244) Written information given to mammoplasty patient, but during previous visit to private consultant (p244) 'Poor compliance with local policy of obtaining informed consent' (p244)	**Authors' description:** No critical reflection on limitations of study by authors **Reviewer's assessment:** Focus on/lack of description for plastic surgery means limited usefulness to this review: only one of 78 patients was described as having cosmetic surgery (mammoplasty) **Methodological quality:** High (6/6) **Usefulness:** Interpret with caution

9. Research question 6

Author, year Study design	Aims	Population details	Social/ psychological factors	Social/ psychological outcomes	Findings	Overall assessment/ study usefulness
Makdessian et al. (2004) Randomised controlled trial	'to examine the rate of recall by patients of the preoperative risks, with and without written reinforcement, of the oral discussion of the risks' (p27)	**Sample size:** 120 **Setting:** Ambulatory surgery clinic providing facial cosmetic procedures **Age:** Mean = 41 yrs; Range = 14-72 yrs **Gender:** 32 males, 88 females **Ethnicity:** Unspecified **Others:** 54 university degree + 66 post-secondary or less **Country:** Unspecified **Types of cosmetic surgeries:** Rhinoplasty, rhytidectomy, laser skin resurfacing		**Risks of procedure:** Recall of risks	'The group that received a pamphlet had a better risk recall than the group that did not (1.5 of 5 risks, $p<0.001$). The recall rate in the following groups that received a pamphlet was also better: university-educated patients ($p=0.02$); patients who underwent rhinoplasty ($p<0.001$); patients who underwent laser resurfacing ($p=0.02$); female patients ($p<0.001$) (abst p26)	**Authors' description:** No critical appraisal of possible limitations of their own study; consent procedures not clearly described **Reviewer's assessment:** RCT with reasonable methods; however clear baseline equivalence and attrition rate not reported Analyses not clearly described or presented, e.g. Mann Whitney tests used, suggesting imbalance in intervention and control groups of some kind **Methodological quality:** Low (1/3) **Usefulness:** Interpret with caution

Author, year Study design	Aims	Population details	Social/ psychological factors	Social/ psychological outcomes	Findings	Overall assessment/ study usefulness
Mirivel (2010) Ethnographic study employing action-interpretive discourse analysis	'this analysis focuses on how plastic surgeons interact with patients who seek to alter their bodily appearance' (abst p788) 'to show how plastic surgeons manage competing institutional demands' (p788)	**Sample size**: 17 **Setting**: Plastic cosmetic surgery clinic **Age**: Unspecified **Gender**: 15 women,2 men **Ethnicity**: Unspecified **Other**: None **Country**: USA **Types of cosmetic surgeries**: Unspecified	**Provider influences:** Nature of surgeon/client interactions during the pre-operative consultation	Not applicable	Plastic surgeons '(a) withhold and resist talk about the cost of surgery, (b) frame ongoing activities during the consultation, (c) perform identity work to gain trust and cultivate credibility, and (d) try to shape how patients interpret before-and-after photographs of previous surgical results' (p788) Plastic surgeons must meet and balance health-related (i.e. ethical) and institutional (i.e. making profit) goals in their interactions with clients (abst p788, p799) Plastic surgeons try to separate medical talk from money talk (p793) Worked to be seen as trustworthy, credible, competent professionals (p794) Showing before/after photos used to persuade clients to proceed with surgery but also to educate them and manage expectations (p797)	**Authors' description:** Strength of using AIDA method of analysis discussed **Reviewer's assessment:** Well conducted and described study about the surgeon/client communication encounter Little critical reflection of methods Aspects of the consultation session have ethical implications which we could infer affect informed consent **Methodological quality:** High (12/18) **Usefulness:** Use with confidence

9. Research question 6

Author, year Study design	Aims	Population details	Social/ psychological factors	Social/ psychological outcomes	Findings	Overall assessment/ study usefulness
Pleat (2004) Prospective survey of doctors	'The extent to which the severity and frequency of specified general risks influence the likelihood of their discussion was investigated within an litigation-prone surgical specialty' (pp1377-78)	**Sample size:** 60 **Setting:** Plastic/ reconstructive surgery units **Age:** Unspecified **Gender:** Unspecified **Ethnicity:** Unspecified **Other:** Plastic and reconstructive surgeons **Country:** UK **Types of cosmetic surgeries:** Plastic surgery not further specified	**Provider influences:** NHS setting regional vs national (25 vs 35) grades of surgeon (16 senior house officers, 27 specialist registrars, 17 consultants)	**Risks of procedure:** Threshold of incidence at which surgeon would discuss risk with patient: Minor risk (e.g. wound infection) Major risk (e.g. stroke)	For frequently occurring but minor risks, the majority of surgeons appeared to rate 5% incidence as the threshold at which they would discuss the risk with patients For rarely occurring but major risks, an incidence rate of 0.1% appeared to be the threshold at which most surgeons would discuss risks with a patient However, the threshold incidence at which surgeons would discuss that major risk varied more widely between surgeons (excerpted from p1378)	**Authors' description:** Authors noted that the study did not investigate: influence of surgeon's recognition of patient's right to information about rare but serious complications, changes to junior doctor's teaching, and increased general knowledge of high-profile legal cases (p1379) **Reviewer's assessment:** Well-described and conducted survey; setting and non-cosmetic focus of participants may influence findings **Methodological quality:** High (6/6) **Usefulness:** Interpret with caution

10. Discussion

10.1 Overall summary of findings

- A considerable amount of research (13 systematic reviews and 179 primary studies) was located and assessed; however, the methodological quality of the primary studies (whether within reviews or stand-alone) was generally low (where assessed).
- Most research examines cosmetic surgery of the most frequently performed types; very few primary studies and no systematic reviews of non-surgical cosmetic procedures were located.
- Although many of the included studies appear to have been authored by plastic surgeons, conflicts of interest were reported in very few studies.
- Methodological limitations to primary studies cast doubt on who are 'vulnerable' (i.e. at-risk) patients, although some characteristics have been suggested (e.g. males; youth; those with pre-existing psychological or social difficulties).
- We located and mapped a large body of primary research on both (1) psychosocial factors associated with requesting and (2) psychological outcomes of cosmetic interventions; this has yet to be fully evaluated.
- Review findings suggested that being male, having pre-operative relationship issues with a partner, or having an unrealistic level of expectations were associated with poor mental health following cosmetic surgery.
- Associations were found between the uptake and requesting of cosmetic surgery and intimate partner violence, smoking, alcohol use and stress/poor mental health.
- Scientifically rigorous studies showed conflicting effects, and flawed studies described positive psychological and social effects, across cosmetic procedures; a potential relationship between breast augmentation and post-operative suicide merits further rigorous research.
- Considerable variation exists in the definition and measurement of user satisfaction across studies, making it problematic to draw conclusions.
- The small number of studies identified varied in quality and content, and showed that most screening tools assess BDD only; most authors recommended brief, self-report measures that can be easily and efficiently administered.
- For patients with BDD or co-morbid disorders (depression or OCD), specific psychological and pharmacological treatments were effective; however, no literature was located evaluating their use in patients with these disorders who also requested cosmetic procedures.
- Informed consent in cosmetic surgery involved issues of both the content of the information provided and the ways in which patients and doctors approach each other.
- Patients and doctors bring different needs to the pre-operative consultation, which appears to be a shared decision-making process requiring listening and tailoring of information by both parties.
- The extent to which this is facilitated through a trusting, communicative relationship between women and doctors and clearly documented appears to indicate the extent to which informed consent occurs (or does not).

10.2 Strengths and limitations

In this review we have examined 179 primary studies and 13 systematic reviews (which have themselves included 231 primary studies). This rapid evidence systematic review represents a

rigorous, transparent and comprehensive examination of the research evidence relating to the uptake and outcomes of cosmetic procedures. As such, it is a timely and reliable assessment of the current evidence base. The rapid nature of this review, completed in nine weeks, provides evidence synthesis in a timely manner. However, this means that some limitations of the process must be considered.

Due to the broad definition of 'cosmetic procedures', we searched sensitively for research literature. The resulting large number of references obtained (over 13,000) meant that not all references could be screened in time. For this reason, we restricted screening to references published between 2002 and 2012. While some earlier studies may not have been included, this seemed a reasonable trade-off for the ability to screen newer and potentially more rigorous and relevant research on cosmetic procedures. To increase the likelihood that all relevant research would be included in the review synthesis, we undertook two quality assurance checks: 1) contiguous text mining and end-of-screening free-text searches to identify those remaining unscreened references that were most likely to be relevant; and 2) prioritising retrieval of any potential systematic reviews and research-question-specific primary studies across the entire set of located references. We are confident that we have included the majority of relevant research.

As a means of configuring the evidence within the timelines imposed by this rapid evidence assessment, we chose to synthesise existing systematic reviews wherever possible, relying on either mapping or additional synthesis of primary studies where few or no systematic reviews could be located. This is good practice, as it avoids duplicating effort; and it also shows where the evidence base could benefit from future research syntheses (Gough et al. 2012). One or more systematic reviews were located for each research question posed in this rapid evidence assessment; however, all of these reviews cited limitations due to the weak methodological quality of most of the included primary studies. Our assessment of the systematic reviews and the primary studies confirmed this. The evidence base thus contains research of mixed quality. This calls into question the confidence with which we can suggest, and readers should infer, relationships between psychosocial predictors, assessment and outcomes of cosmetic interventions, particularly in vulnerable patients who undergo these procedures.

Several primary studies were identified as a result of searching and screening: 104 primary studies of factors associated with requesting cosmetic interventions (RQ1); 22 studies examining the psychological outcomes of cosmetic interventions (RQ2); and 80 primary studies examining the effectiveness of cosmetic interventions on psychosocial outcomes (RQ3). These were not assessed due to the rapid timelines required of this review, but may usefully inform the research questions posed in this report. At present they await further synthesis in a future systematic review.

The timeline of this rapid evidence assessment did not allow systematic retrieval and assessment of the primary studies included in the Chung et al. (2009) systematic review included in our research question on issues of informed consent within cosmetic procedures. We performed a cross-check of the authors and titles of the 110 included studies listed by Chung et al. (2009) against all of the references located for our review. Of these, 51 references in Chung et al. (2009) were located by our searches; after screening these on titles, 47 of these were excluded. Two studies were included in our review (Makdessian et al. 2004, Pleat et al. 2004); the remaining two studies were potentially relevant on title and abstract but not retrieved in time for synthesis. Of the 59 references included by Chung et al. (2009) which our searches did not locate, a total of 58 were excluded based on their titles; only one appeared on title to be potentially relevant, but was not located in time to include in this synthesis. Our rapid systematic review evidence assessment in this area is more specific to informed consent than the Chung et al. (2009) review, and also contains research published since 2009. Of the six primary studies we included, two were included in the Chung et al. (2009) review; three have been published since 2009, and another primary study not included in the Chung et al. review was located. Five of these six are of sufficient quality to be

confident that their findings controlled for bias adequately; however not all of them were directly relevant to patients undergoing cosmetic procedures.

By definition, cosmetic procedures encompass a potentially broad range of surgical and non-surgical techniques, as indicated by the list in Appendix 1. While we searched sensitively for all possible cosmetic procedures, most of the relevant research identified focused on cosmetic surgery; and these tended to report the most frequently performed surgical interventions. No synthesised evidence and very little primary research was located which examined non-surgical cosmetic procedures.

10.3 Issues across and within research questions

It is crucial to understand which patients are 'vulnerable' in predicting poor psychological outcomes. It has been widely acknowledged that psychological and social factors such as body image dissatisfaction, appearance-related self-consciousness, social anxiety and additional life stressors play a key role in motivating people to have cosmetic surgery (Rumsey and Harcourt 2005). Some patients presenting for cosmetic surgery have inflated expectations of what the procedure can achieve in terms of the anticipated psychological and social benefits (Sarwer, 2006). Patients primarily seeking lifestyle changes (for example to gain a romantic partner) often end up disappointed with their surgical outcome (Gorney, 2006). It is therefore important to address and understand patients' motivations for seeking appearance-enhancing procedures. To some extent, it is normative for patients to experience pre-operative psychosocial anxiety and body dissatisfaction; however there is a group of patients presenting for cosmetic surgery with pathological levels of body image dissatisfaction (Crerand et al. 2012). It has been suggested that their desire for cosmetic surgery is often fuelled by underlying psychological disorders such as body dysmorphic disorder, and some research has shown that patients with BDD are typically dissatisfied with their outcome, despite a good technical procedure (Sarwer et al. 2011). Identifying potentially vulnerable patients for whom cosmetic surgery is not appropriate is therefore crucial.

However, the evidence is methodologically limited to inform us about the factors that predict the requesting or undergoing of cosmetic procedures. This creates difficulty when identifying which patients actually are vulnerable. It can be established that most UK patients who have been studied are female, and between the ages of 35 and 50 years. The proportion of male patients has remained unchanged between 1998 and 2003. Some findings about this and other potentially vulnerable groups merit further examination. For example, research on procedures between 1998 and 2003 found no evidence to suggest that people are requesting cosmetic procedures at a younger age. However, a need exists to determine whether this has changed in the intervening ten years.

The evidence base of two systematic reviews, two illustrative primary studies and a map of 104 primary research studies suggests that individual and behavioural factors are more predictive of undergoing cosmetic interventions than are demographic characteristics, although this may simply be a lack of evidence testing these relationships, rather than a lack of association. For example, an association with reported intimate partner violence was noted in women who reported undergoing cosmetic procedures. Those undergoing cosmetic procedures were also more likely to smoke, use alcohol, and report stress/poor mental health (of an undefined nature). Although drawn from methodologically limited evidence, these potential relationships merit new and rigorous exploration. Finally, some evidence suggests that macroeconomic factors such as higher interest rates may influence cosmetic procedure uptake, suggesting some parallels to the consumption of luxury goods.

Despite locating four systematic reviews examining which groups are at risk of poor psychological outcomes after undergoing cosmetic procedures, the limitations to the primary studies included in

those reviews again preclude making confident conclusions. Some evidence suggests that male gender, relationship issues and unrealistic expectations may be factors in poor post-cosmetic procedure outcomes, but higher quality evidence is required to confirm these relationships.

The findings from nine systematic reviews examining the effectiveness of cosmetic procedures on psychological and social outcomes present a mixed picture. Satisfaction is frequently measured as an outcome across cosmetic procedures: studies reported high satisfaction for patients undergoing abdominoplasty, breast augmentation and reduction, LASIK, orthognathic and rhytidectomy surgery. However, it was not clear whether patients undergoing botox injections were satisfied with their procedure.

The elements or aspects of 'satisfaction' were frequently undefined. For example, satisfaction was often measured in respect to either an undefined aspect (e.g. patients asked if they 'were satisfied'); or with different aspects (e.g. satisfaction with surgery versus satisfaction with body image). This made comparisons difficult. In addition, many studies only measured satisfaction once (i.e. either pre-operatively or post-operatively). In studies where satisfaction was measured before and after a cosmetic procedure, it was measured in the treatment group only, without a non-procedure control group for comparison.

In terms of other outcomes, a picture of conflicting findings from methodologically diverse studies emerges. A limited number of studies of effectiveness in abdominoplasty patients showed mixed findings for body image, mental health, self-esteem and health-related quality of life. Evidence from potentially biased studies of breast augmentation also described conflicting findings: some studies showed positive changes to body image, depression and self-esteem; however, three studies noted an association between breast augmentation and suicide. Evidence from several methodologically questionable studies indicated an improvement in anxiety, body image, psychological disturbance and self-esteem in breast reduction patients. Studies of orthognathic surgery outcomes suggested improved post-operative self-esteem and decreased anxiety, and findings from weak studies suggested improved social functioning. Finally, rhinoplasty showed mixed effects on post-operative outcomes for psychological disturbances; evidence from a few studies suggests that self-esteem improved and anxiety lessened, and there were suggestions from weak studies that patients experienced improved social functioning.

The methodological flaws noted in much of the primary research included within these reviews included: lack of control or comparison groups, small sample sizes, limited follow-up periods and a susceptibility to positive response bias. For each of the cosmetic surgeries, conflicting findings for psychological and social outcomes were noted; however, across the surgeries described above, methodologically limited studies suggest mostly positive and few negative psychological and social outcomes to cosmetic procedures. Less can be determined concerning longer-term outcomes, since the length of follow-up in studies varied considerably. These methodological limitations reduce the extent to which conclusions can be made about the effects of cosmetic interventions on psychosocial outcomes.

We assessed the evidence for accurate sensitive screening tools to detect psychological disorders in patients undergoing cosmetic procedures. This research literature was small and of varied quality, with considerable differences in the types of study design, factors screened, populations, types of cosmetic procedures and assessment tools used. This heterogeneity, as well as the lack of follow-up assessments undertaken in primary studies, limits the ability to draw firm conclusions for individual screening tools. Narrative synthesis of the studies indicates that authors most often recommended a brief, self-report measure that can be easily and efficiently administered. The majority of current screening tools assess underlying BDD; however, given that findings suggest potential associations with other psychological disturbances, there may be a case for screening more broadly for psychological disturbances.

A synthesis of the literature around alternative treatments in patients with underlying psychological disorders did not evaluate alternative treatments directly against cosmetic interventions. However, research of effective treatments in disorders which have also been associated with cosmetic procedures, such as BDD and co-morbid disorders (e.g. depression and OCD) were assessed. This research suggests that psychological (e.g. cognitive-behavioural therapy) and pharmacological (e.g. serotonin reuptake inhibitors) treatments were effective.

Additionally, limited evidence was located on issues of informed consent in vulnerable patients undergoing cosmetic procedures. No included studies discussed issues particularly relevant to 'vulnerable' patients (i.e. those at risk of poor psychosocial outcomes). In studies of women, doctors and hospital documentation, it was apparent that limitations in the extent to which informed consent was achieved involved issues of both content and approach. The pre-operative consultation is the setting in which it is assumed that informed consent should be achieved. This consultation appears to be one in which shared decision making is taking place between prospective patients and doctors. However, each party brings different needs to the consultation. Prospective patients require information on the medical risks of the procedures, but also information on costs and the social and lifestyle impacts of undergoing (or not undergoing) cosmetic procedures. Doctors appear to decide which risks merit discussion, balancing this with their need to manage professional ethics, reduce litigation risks and (in the private sector) facilitate profit. The extent to which this is facilitated through a trusting, communicative relationship between women and doctors and documented clearly appears to indicate the extent to which informed consent occurs (or does not).

Related to this, conflicts of interest were reported in very few studies, although many of the studies appear to have been authored by plastic surgeons. The extent to which conflict of interest may influence the study findings remains questionable.

In summary, the poor overall quality of the primary studies included within existing systematic reviews suggests a potential lack of good quality research into psychosocial predictors of poor psychological outcome in cosmetic interventions. While this limits the extent to which conclusions can be drawn about predictors and outcomes in cosmetic interventions, it also highlights promising areas for future primary research. This includes further research synthesis: the rapid nature of this review identified several hundred primary studies that could not be assessed in time, but which may inform these questions in future.

11. Conclusions and recommendations

This systematic rapid evidence review assessed a considerable amount of research on the subject of cosmetic procedures in vulnerable patients and in the general population. Several recommendations were drawn, which follow below.

The methodological quality of primary studies included in the located reviews was generally low. Future primary research designs across these research questions should ensure that appropriate control/comparison groups are used, with adequate power calculations for adequate sample sizes. Further, prospective and longitudinal studies are needed to apply both short and longer follow-up periods.

Most research examines cosmetic surgery of the most frequently performed types; very few primary studies and no systematic reviews of non-surgical cosmetic procedures were located. A research gap exists in addressing these issues in relation to less-often performed cosmetic surgeries and other non-surgical procedures (such as dermabrasion, hyaluronic acid or botox injections).

Although many of the studies appear to have been authored by plastic surgeons, conflicts of interest appear to have been assessed and reported in very few studies. To ensure that readers can assess generalisability to their own practice, and assess the extent to which the findings are influenced by context, authors should declare conflicts of interest related to for-profit practice.

Methodological limitations to primary studies cast doubt on who 'vulnerable' patients are. Evidence from systematic reviews and selected primary studies provide some potential characteristics of vulnerable patients which merit further examination. Associations between cosmetic procedures and decreasing age (since 2003), intimate partner violence, alcohol and tobacco use, and stress and poor mental health need to be empirically evaluated. Stronger methodology will lend confidence to the findings and help to establish firm conclusions about the characteristics of vulnerable groups. If significant associations are discovered, knowledge of these characteristics will help inform future screening tool development, assessment and treatment of these potentially vulnerable patients.

In addition, we located a considerable body of primary research on psychosocial factors associated with request for or uptake of cosmetic interventions, which has been mapped but has yet to be fully evaluated. A systematic review of this literature could identify other characteristics of vulnerability.

Future research exploring and confirming associations between male gender, relationship issues, level of expectations and poor post-cosmetic procedures outcomes is urgently needed to confirm whether these are characteristics of vulnerable populations. Similarly, more rigorously conducted research on the relationship between breast augmentation surgery and post-operative suicide is needed in order to inform future assessment and treatment of such patients.

At present, a wide variety of psychological outcomes are measured, using multiple constructs. This impedes knowledge accumulation, as the resulting findings are too heterogeneous to combine. A priority task should be to gain consensus on the core psychological outcomes to be measured in patients undergoing cosmetic procedures.

Studies measuring satisfaction in patients undergoing cosmetic procedures vary in definition and measurement. These need to clearly define what aspect of satisfaction is being measured (e.g. satisfaction with procedure; with results; with body image) and use validated tools. Satisfaction should be measured pre- and post-procedure, with an appropriate separate control or comparison group.

A small number of heterogeneous studies of varied quality show that most screening tools assess BDD only; most authors recommended brief, self-report measures that can be easily and efficiently administered. The development and sensitivity testing of brief self-report measures of other aspects of psychological health, such as depression or obsessive-compulsive disorder, is recommended. Future research and development of such tools will be informed by confirmation from more rigorously conducted research of other psychological and social factors which may lead to requests for cosmetic surgery or predict poor outcomes, as discussed in Chapters 4 and 5.

For patients with BDD or co-morbid disorders such as depression or obsessive-compulsive disorder, psychological (e.g. cognitive-behavioural therapy) and pharmacological (e.g. serotonin-selective reuptake inhibitor) treatments were effective; their use in these patients requesting cosmetic procedures should be evaluated. Further evaluation is warranted of the use of alternative psychological and pharmacological treatments, comparing them directly in patients with psychological disorders requesting cosmetic procedures. However, in order to determine a diagnosis, this merits careful pre-procedure assessment of psychological status using validated tools.

Informed consent in cosmetic surgery involved both the content of the discussion and the ways in which patients and doctors approach each other in the decision-making process. Efforts to develop and facilitate a trusting, communicative relationship between patients and doctors, and whether this is documented clearly, appear to indicate the extent to which informed consent occurs (or does not).

Patients and doctors bring different needs to the pre-operative consultation, which appears to be a shared decision-making process that requires listening and tailoring of information by both parties. Recognition of this shared responsibility between patients and doctors could change their exchange of information in the pre-cosmetic procedure consultation, as well as the ways in which informed consent is documented.

The ways in which doctors approach patients with information in order to obtain consent for procedures, and the types of questions asked by patients, are not often documented by doctors in informed consent procedures, but are mentioned by patients in malpractice claims. Future practice could examine the utility of documenting these aspects of shared decision making and relationship building, as a way of indicating that conditions for informed consent were met.

In summary, this rapid evidence systematic review identified a wide variation in the quality of primary studies included in reviews. This suggests a need for considerable co-ordination and academic collaboration in order to establish better regulation within the cosmetic procedures industry, particularly with respect to the obligatory collection of standard measures, using agreed methods.

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Appendices

Appendix 1: Examples of cosmetic interventions

Examples of included cosmetic interventions

- Abdominal reduction
- Abdominoplasty
- Aesthetic enhancement
- Blepharoplasty
- Body contouring
- Body lift
- Body reshaping
- Botulinum toxin injections
- Breast enlargement, augmentation, lifting or reduction
- Buttock augmentation or lifting
- Cheek implants
- Chemical peels
- Chin augmentation
- Cosmetic dentistry
- Cosmetic dermatology
- Cosmetic facial injections
- Cosmetic fillers
- Cosmetic injections
- Cosmetic laser therapies
- Cosmetic rhinoplasty
- Dermabrasion and microdermabrasion
- Dermal fillers
- Endermologie
- Eyebrow lifting
- Eyelid surgery
- Facelift
- Facial rejuvenation
- Female vaginal cosmetic surgery
- Forehead lift
- Genioplasty
- Gynecomastia
- Injectable fillers (AND cosmetic/aesthetic)
- Laser hair removal
- Lip augmentation
- Lip enhancement
- Lipoplasty
- Liposuction
- Mammoplasty
- Mastopexy
- Mesotherapy
- Microsclerotherapy
- Otoplasty

- Refractive eye surgery (to eliminate need for spectacles or contact lenses)
- Reshaping chin/cheeks
- Rhytidectomy
- Sclerotherapy
- Skin filling injection
- Skin rejuvenation
- Tattoo (or permanent make-up) removal
- Thermacool
- Thigh lift
- Tooth bleaching
- Tooth whitening
- Upper arm lift
- Vaginal rejuvenation
- Vein wave (thread vein removal)

Examples of excluded interventions

- Reconstructive surgery after clinically indicated surgery such as post-mastectomy for breast cancer
- Fitting of limb prosthesis
- Bariatric surgery
- Joint replacement (knee, hip for degenerative conditions)
- Body art (e.g. tattooing, body piercing)
- Research related to sex change – a majority of this population are receiving gender confirmation surgery due to clinically diagnosed gender dysphoria
- Circumcision

Appendix 2: Review timelines

Task	22-26 Oct	29 Oct-2 Nov	5-9 Nov	12-16 Nov	19-23 Nov	26-30 Nov	3-7 Dec	10-14 Dec	17-20 Dec
Protocol/question development	ea								
Inclusion development	ea	ea							
Searching	ea	ea	ea	e					
Screening	ea	ea	ea	ea					
Coding development	ea	ea	a						
Quality assessment		ea	ea	ea	ea				
Data extraction		e	ea	ea	ea	ea	ea		
Synthesis				ea	ea	ea	ea		
Writing				ea	ea	ea	ea	ea	ea
Draft report to DH									20 Dec

e=estimated at protocol stage

a=actual (maintained concurrently)

Appendix 3: Search terms/strategy used: Medline (EBSCO host)

29 October 2012

Results: 9,370

Search strategy

Concept 1: Cosmetic surgery

AND

Concept 2: Quality of life, psychosocial aspects, mental health, informed consent, demographics

Limited to English language and timescale 1992-2012

Search modes - Boolean/phrase

Notes

N2 = words within two places of each other in any order

W2 = words within two places of each other in the order written in the text

= wildcard of 1 or 0 characters

* = truncation

MH=MeSH Term

MW= Word within MeSH

PX=Psychology subheading

TI=title word

AB=Abstract word

S45	S43 and S44
S44	LA(English)
S43	S38 NOT S42
S42	S39 NOT S41
S41	S39 AND S40
S40	MH(“humans+”)
S39	MH(“animals+”)

S38	S37 NOT S18
S37	S35 or S36
S36	(S15 AND S7) OR S1
S35	S10 AND S34
S34	S11 or S12 or S13 or S14 or S16 or S17 or S19 or S20 or S21 or S22 or S25 or S26 or S27 or S28 or S29 or S30 or S31 or S32 or S33
S33	MH("Psychology")
S32	AB(demograph* OR motivation* OR phenomenolog* OR sociodemograph* OR "socio demograph*" OR socioeconomic* OR "social influence#" OR "social factors")
S31	TI(demograph* OR motivation* OR phenomenolog* OR sociodemograph* OR socioeconomic* OR "social influence#" OR "social factors" OR request* OR uptake OR characteristic# OR epidemiolog* OR influenc* OR predictor#)
S30	MH("Interview, Psychological")
S29	MH("psychotherapy+")
S28	TI(patient N2 agreement) OR AB(patient N2 agreement)
S27	TI(patient N2 consent) OR AB(patient N2 consent)
S26	TI("informed consent") OR AB("informed consent")
S25	MH("informed consent+")
S24	S7 AND S15
S23	S19 or S20 or S21 or S22
S22	TI("body image" N2 (disorder* OR disturb* OR distort* OR disfunction* OR dysfunction* OR perception)) OR AB("body image" N2 (disorder* OR disturb* OR distort* OR disfunction* OR dysfunction* OR perception)) OR TI(body N2 satisfaction) OR AB(body N2 satisfaction) OR TI(body N2 dissatisfaction) OR AB(body N2 dissatisfaction) OR TI(dysmorphophobia) OR AB(dysmorphophobia) OR TI(Psycholog* OR Psychiatric) OR AB(Psycholog* OR Psychiatric)
S21	TI (Schizo* OR Catatonia OR catatonic OR Depression OR "Bi-polar" OR bipolar OR Mania OR Hypomania OR Cyclothymia OR Dysthymia OR "Mood disorder#" OR "Depressive Disorder#" OR OCD OR "obsessive compulsive" OR "Eating Disorder#" OR bulimi* OR "Bulimia Nervosa" OR anorexi* OR "anorexia nervosa" OR "Binge-Eating Disorder#" OR "Personality disorder#" OR "Affective Disorder#" OR "Neurotic Disorder#" OR

	“Antisocial Personality Disorder#” OR “Borderline Personality Disorder#” OR “Compulsive Personality Disorder#” OR “Dependent Personality Disorder#” OR “Histrionic Personality Disorder#” OR “Paranoid Personality Disorder#” OR “Passive-Aggressive Personality Disorder#” OR “Schizoid Personality Disorder#” OR “Schizotypal Personality Disorder#” OR (anankastic W1 person) OR (Asocial W1 person) OR (Antisocial W1 person) OR (Avoidant W1 person) OR (Borderline W1 person) OR (Dependent W1 person) OR (Dissocial W1 person) OR (Histrionic W1 person) OR (Narcissistic W1 person) OR (Obsessive W1 person) OR (Compulsive W1 person) OR (Paranoid W1 person) OR (“Passive-aggressive” W1 person) OR (Sadomasochistic W1 person) OR (Disorders N1 (“Psychotic Feature#”)) OR “Capgras Syndrome” OR “Paranoid Disorder#” OR “Psychotic Disorder#” OR ((Sexual OR Gender) W1 Disorder#) OR (Disorder# W1 “Sex Development”) OR (“Sexual Dysfunction#” N1 Psychological) OR “Somatoform Disorder#” OR “Body Dysmorphic Disorder#” OR “Conversion Disorder#” OR “Hypochondriasis” OR “Neurasthenia” OR “Adjustment Disorder#” OR “Anxiety Disorder#” OR “Impulse Control Disorder#” OR “Reactive Attachment Disorder#” OR “Dissociative Disorder#” OR “Multiple Personality Disorder#” OR “Cognitive Disorder#” OR “Stress Disorder#” OR “Cognition Disorder#” OR “Consciousness Disorder#” OR “Panic Disorder#” OR “Phobic Disorder#” OR “adjustment disorder#” OR “overactive disorder#” OR “disintegrative disorder#” OR “pervasive developmental disorder#” OR “hyperkinetic disorder#” OR Dementia OR Alzheimer* OR amnesi* OR delirium OR hallucinosis OR delusional OR asthenic OR “emotionally labile” OR Posttraumatic OR “post traumatic” OR postencephalitic OR postconcussion* OR “trance disorder#” OR “possession disorder#” OR (anxious W1 (problem* OR difficult* or disorder* or ill*)) OR (anxiety W1 (problem* OR difficult* or disorder* or ill*)) OR “multiple personalit*” OR dissociate OR neurasthenia OR depersonali?ation OR derealisation OR derealization OR suicid* OR parasuicid* OR “Self harm” OR “self injur*” OR Coprophagia OR “Female Athlete Triad Syndrome” OR “Pica” OR “Factitious Disorder#” OR “Munchausen Syndrome” OR “Trichotillomania” OR “Agoraphobia” OR “Neurocirculatory Asthenia” OR hebephreni* OR oligophreni* OR somatisation OR (psychiatric W1 (problem* OR difficult* or disorder* or illness)) OR Psychosis OR (“mental health” W1 (problem* OR difficult* or disorder* or ill*)) OR “psychological disturbance#” or “psychologically disturbed” OR neuros* OR “psychological stress” OR “psychological distress” OR “mental health status” OR “mental stress” OR “mental health patients” OR “mental health patient” OR “mental health treatment” OR “mentally ill” OR “severe stress” OR comorbid*)
S20	AB (Schizo* OR Catatonia OR catatonic OR Depression OR “Bi-polar” OR bipolar OR Mania OR Hypomania OR Cyclothymia OR Dysthymia OR “Mood disorder#” OR “Depressive Disorder#” OR OCD OR “obsessive compulsive” OR “Eating Disorder#” OR bulimi* OR “Bulimia Nervosa” OR anorexi* OR “anorexia nervosa” OR “Binge-Eating Disorder#” OR “Personality disorder#” OR “Affective Disorder#” OR “Neurotic Disorder#” OR “Antisocial Personality Disorder#” OR “Borderline Personality Disorder#” OR “Compulsive Personality Disorder#” OR “Dependent Personality Disorder#” OR “Histrionic Personality Disorder#” OR “Paranoid Personality Disorder#” OR “Passive-Aggressive Personality Disorder#” OR “Schizoid Personality Disorder#” OR “Schizotypal Personality Disorder#” OR (anankastic W1 person) OR (Asocial W1 person) OR (Antisocial W1 person) OR (Avoidant W1 person) OR (Borderline W1 person) OR (Dependent W1 person) OR (Dissocial W1 person) OR (Histrionic W1 person) OR (Narcissistic W1 person) OR (Obsessive W1 person) OR (Compulsive W1 person) OR (Paranoid W1 person) OR (“Passive-aggressive” W1 person) OR (Sadomasochistic W1 person) OR (Disorders N1 (“Psychotic Feature#”)) OR “Capgras Syndrome” OR “Paranoid Disorder#” OR “Psychotic Disorder#” OR ((Sexual OR Gender) W1 Disorder#) OR (Disorder# W1 “Sex

	Development") OR ("Sexual Dysfunction#" N1 Psychological) OR "Somatoform Disorder#" OR "Body Dysmorphic Disorder#" OR "Conversion Disorder#" OR "Hypochondriasis" OR "Neurasthenia" OR "Adjustment Disorder#" OR "Anxiety Disorder#" OR "Impulse Control Disorder#" OR "Reactive Attachment Disorder#" OR "Dissociative Disorder#" OR "Multiple Personality Disorder#" OR "Cognitive Disorder#" OR "Stress Disorder#" OR "Cognition Disorder#" OR "Consciousness Disorder#" OR "Panic Disorder#" OR "Phobic Disorder#" OR "adjustment disorder#" OR "overactive disorder#" OR "disintegrative disorder#" OR "pervasive developmental disorder#" OR "hyperkinetic disorder#" OR Dementia OR Alzheimer* OR amnesi* OR delirium OR hallucinosis OR delusional OR asthenic OR "emotionally labile" OR Posttraumatic OR "post traumatic" OR postencephalitic OR postconcussion* OR "trance disorder#" OR "possession disorder#" OR (anxious W1 (problem* OR difficult* or disorder* or ill*)) OR (anxiety W1 (problem* OR difficult* or disorder* or ill*)) OR "multiple personalit*" OR dissociate OR neurasthenia OR depersonali?ation OR derealisation OR derealization OR suicid* OR parasuicid* OR "Self harm" OR "self injur*" OR Coprophagia OR "Female Athlete Triad Syndrome" OR "Pica" OR "Factitious Disorder#" OR "Munchausen Syndrome" OR "Trichotillomania" OR "Agoraphobia" OR "Neurocirculatory Asthenia" OR hebephreni* OR oligophreni* OR somatisation OR (psychiatric W1 (problem* OR difficult* or disorder* or illness)) OR Psychosis OR ("mental health" W1 (problem* OR difficult* or disorder* or ill*)) OR "psychological disturbance#" or "psychologically disturbed" OR neuros* OR "psychological stress" OR "psychological distress" OR "mental health status" OR "mental stress" OR "mental health patients" OR "mental health patient" OR "mental health treatment" OR "mentally ill" OR "severe stress" OR comorbid*)
S19	MH ("mental disorders+") OR MH ("mentally ill persons+") OR MH("Body image")
S18	TI(cancer* OR carcinoma* OR neoplasm* OR mastectomy OR amputation OR burns OR bariatric OR obesity) OR MH("neoplasms+" OR "mastectomy" OR "Wounds and injuries+" OR "burns+" OR "obesity+" OR "bariatric surgery") OR MH("Limb salvage")
S17	TI(DALY OR HRQL OR "Health state" OR "Health status" OR "Quality of life" OR QOL OR "Life quality" OR Wellbeing OR "Well being" OR Depression OR Indifference OR Stoicism OR angst OR anguish OR anxieties OR anxiety OR anxious* OR apprehens* OR attitude OR attitudes OR attitudinal OR cope OR copes OR coping OR dependence OR dependency OR depression OR depressive OR dissatisfaction OR dissatisfied OR distress OR distressed OR emotion* OR fear OR fears OR feelings OR helplessness OR "mental health" OR mood OR moods OR morale OR psychopathol* OR psychologic* OR Psychology OR psychosocial OR psychosocial OR "self efficacy" OR "self identification" OR "Self worth" OR "self concept" OR stress OR worry OR (patient N5 satisfaction) OR (patient N3 preference#))
S16	AB(DALY OR HRQL OR "Health state" OR "Health status" OR "Quality of life" OR QOL OR "Life quality" OR Wellbeing OR "Well being" OR Depression OR Indifference OR Stoicism OR angst OR anguish OR anxieties OR anxiety OR anxious* OR apprehens* OR attitude OR attitudes OR attitudinal OR cope OR copes OR coping OR dependence OR dependency OR depression OR depressive OR dissatisfaction OR dissatisfied OR distress OR distressed OR emotion* OR fear OR fears OR feelings OR helplessness OR "mental health" OR mood OR moods OR morale OR psychopathol* OR psychologic* OR Psychology OR psychosocial OR psychosocial OR "self efficacy" OR "self identification" OR "Self worth" OR "self concept" OR stress OR worry OR (patient N5 satisfaction) OR (patient N3 preference#))

S15	MW(psychology)
S14	MH (“Mental Health+” OR “mental disorders+” OR “body dysmorphic disorders+” OR “Health status+” OR “Quality adjusted life years+” OR “Quality of life+” OR “Psychometrics+” OR “Age factors+” OR “ethnopsychology+” OR “attitude to health” OR “personal satisfaction” OR “attitude” OR “behavioural symptoms+” OR “depression+” OR “Emotions+” OR “health behavior+” OR “health knowledge, attitudes, practice” OR “mental health+” OR “morale+” OR “patient preference+” OR “personal satisfaction+” OR “self concept” OR “Self Efficacy+” OR “Stress, Psychological+” OR “psychology, social” OR “psychology”)
S13	(MH “Attitude to Health”) OR (MH “Patient Acceptance of Health Care”) OR (MH “Health Knowledge, Attitudes, Practice”) OR MH(“Patient satisfaction”) OR MH(“patient participation”) OR MH (“unnecessary procedures”) OR MH(“health services misuse”)
S12	MH(“Motivation”) OR MH(“Psychology, Social”)
S11	MH(“Socioeconomic Factors+”) OR MH(“Sex Factors”) OR MH(“Demography+”)
S10	S7 or S8 or S9
S9	AB(“esthetic surgery” OR “aesthetic surgery” OR (cosmetic W2 procedure*) OR (aesthetic W2 procedure*) OR ((cosmetic or plastic or aesthetic or esthetic) N2 (surger*)) OR (cosmetic N2 surgical) OR (“cosmetic intervention”) OR (“cosmetic interventions”) OR facelift# OR (breast N1 (augment* or reduction or implant* or enlarg* OR uplift*)) OR (“Appearance enhancing” N2 (surger* OR treatment* OR procedure*)) OR (“appearance enhancement” N2 (surger* OR treatment* OR procedure*)) OR (“cosmetic enhancement” N2 (surger* OR treatment* OR procedure*)) OR “face lift#” OR “Abdominal Reduction” OR “abdomino plasty” OR abdominoplasty OR “Aesthetic enhancement” OR blepharoplasty OR “Body contouring” OR (“Body lift” N3 surgery) OR (“Body lifting” N3 surgery) OR (“Body reshaping” N2 surgery) OR (“Botulinum toxin injection” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (“Botox injection” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (“Botulinum toxin injections” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (“Botox injection” N5 (cosmetic or plastic or aesthetic or esthetic)) OR (“Breast lift” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (“Buttock lift” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (“Buttock lifting” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (Buttock N1 (augment* or reduction or implant* or enlarg* OR uplift)) OR (Cheek N1 (augment* or reduction or implant* or enlarg* OR uplift)) OR (Cheeks N1 (augment* or reduction or implant* or enlarg* OR uplift)) OR “Chemical peel” OR “chemical peels” OR “chemical peeling” OR “Chin augmentation” OR “Cosmetic breast” OR “Cosmetic dentistry” OR “Cosmetic dermatology” OR “Cosmetic enhancement” OR “Cosmetic interventions” OR “Cosmetic facial injections” OR “Cosmetic facial injection” OR “Cosmetic fillers” OR “Cosmetic filler” OR “Cosmetic injection” OR “Cosmetic injections” OR “Cosmetic lasers” OR “Cosmetic rhinoplasty” OR “Dermabrasion” OR “Dermal fillers” OR (“eyebrow lifting” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (“eyebrow lift” n5 (cosmetic or plastic or aesthetic or esthetic)) OR Endermologie OR “Eyelid Surgery” OR “Facial rejuvenation” OR (“Forehead lift” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (“Forehead lifting” n5 (cosmetic or plastic or aesthetic or esthetic)) OR Genioplasty OR (“Injectable fillers” n5 (cosmetic or plastic or aesthetic or esthetic)) OR

	(“Laser hair” N2 remov*) OR (“Laser therapy” N2 cosmetic) OR (“Laser therapy” N2 esthetic) OR (“Laser therapy” N2 aesthetic) OR “Lip Augmentation” OR “Lip enhancement” OR (Lipoplasty AND (cosmetic or plastic or aesthetic or esthetic or beauty)) OR (liposuction AND (cosmetic or plastic or aesthetic or esthetic or beauty)) OR Mammoplasty OR Mastopexy OR Mesotherapy OR Microdermabrasion OR Microsclerotherapy OR (nonsurgical N1 rejuvenation) OR “non surgical” N1 rejuvenation OR Otoplasty OR (“Permanent makeup” N2 remov*) OR (“Permanent make up” N2 remov*) OR (Reshaping N1 chin) OR (reshaping N1 cheek*) OR rhytidectomy OR (Sclerotherapy AND (cosmetic or plastic or aesthetic or esthetic or beauty)) OR “Skin filling injection” OR “Skin filling injections” OR (skin N2 rejuvenation) OR (surgical N2 rejuvenation) OR (Tattoo N3 remov*) OR Thermacool OR ((Thigh N1 lift*) AND (cosmetic or plastic or aesthetic or esthetic or beauty)) OR (tooth N1 bleaching) OR (tooth N1 whitening) OR (teeth N1 bleaching) OR (teeth N1 whitening) OR (“Upper arm lift” AND (cosmetic or plastic or aesthetic or esthetic or beauty)) OR “Vein wave” OR veinwave OR “laser eye surgery” OR (refractive N2 surgery) OR (laser N2 keratoplasty) OR LASIK OR (radial N1 keratotomy) OR thermokeratoplasty OR (photorefractive N1 keratectomy) OR (cosmetic N3 injection#) OR “vaginal rejuvenation” OR (gynecomastia AND treatment) OR “noninvasive tightening” OR (cosmetic N2 “laser treatment#”))
S8	TI(“esthetic surgery” OR “aesthetic surgery” OR (cosmetic W2 procedure*) OR (aesthetic W2 procedure*) OR ((cosmetic or plastic or aesthetic or esthetic) N2 (surger*)) OR (cosmetic N2 surgical) OR (“cosmetic intervention”) OR (“cosmetic interventions”) OR facelift# OR (breast N1 (augment* or reduction or implant* or enlarg* OR uplift*)) OR (“Appearance enhancing” N2 (surger* OR treatment* OR procedure*)) OR (“appearance enhancement” N2 (surger* OR treatment* OR procedure*)) OR (“cosmetic enhancement” N2 (surger* OR treatment* OR procedure*)) OR “face lift#” OR “Abdominal Reduction” OR “abdomino plasty” OR abdominoplasty OR “Aesthetic enhancement” OR blepharoplasty OR “Body contouring” OR (“Body lift” N3 surgery) OR (“Body lifting” N3 surgery) OR (“Body reshaping” N2 surgery) OR (“Botulinum toxin injection” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (“Botox injection” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (“Botulinum toxin injections” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (“Botox injection” N5 (cosmetic or plastic or aesthetic or esthetic)) OR (“Breast lift” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (“Buttock lift” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (“Buttock lifting” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (Buttock N1 (augment* or reduction or implant* or enlarg* OR uplift)) OR (Cheek N1 (augment* or reduction or implant* or enlarg* OR uplift)) OR (Cheeks N1 (augment* or reduction or implant* or enlarg* OR uplift)) OR “Chemical peel” OR “chemical peels” OR “chemical peeling” OR “Chin augmentation” OR “Cosmetic breast” OR “Cosmetic dentistry” OR “Cosmetic dermatology” OR “Cosmetic enhancement” OR “Cosmetic interventions” OR “Cosmetic facial injections” OR “Cosmetic facial injection” OR “Cosmetic fillers” OR “Cosmetic filler” OR “Cosmetic injection” OR “Cosmetic injections” OR “Cosmetic lasers” OR “Cosmetic rhinoplasty” OR “Dermabrasion” OR “Dermal fillers” OR (“eyebrow lifting” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (“eyebrow lift” n5 (cosmetic or plastic or aesthetic or esthetic)) OR Endermologie OR “Eyelid Surgery” OR “Facial rejuvenation” OR (“Forehead lift” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (“Forehead lifting” n5 (cosmetic or plastic or aesthetic or esthetic)) OR Genioplasty OR (“Injectable fillers” n5 (cosmetic or plastic or aesthetic or esthetic)) OR (“Laser hair” N2 remov*) OR (“Laser therapy” N2 cosmetic) OR (“Laser therapy” N2 esthetic) OR (“Laser therapy” N2 aesthetic) OR “Lip Augmentation” OR “Lip enhancement” OR (Lipoplasty AND (cosmetic or plastic or aesthetic or esthetic or

	beauty)) OR (liposuction AND (cosmetic or plastic or aesthetic or esthetic or beauty)) OR Mammoplasty OR Mastopexy OR Mesotherapy OR Microdermabrasion OR Microsclerotherapy OR (nonsurgical N1 rejuvenation) OR "non surgical" N1 rejuvenation OR Otoplasty OR ("Permanent makeup" N2 remov*) OR ("Permanent make up" N2 remov*) OR (Reshaping N1 chin) OR (reshaping N1 cheek*) OR rhytidectomy OR (Sclerotherapy AND (cosmetic or plastic or aesthetic or esthetic or beauty)) OR "Skin filling injection" OR "Skin filling injections" OR (skin N2 rejuvenation) OR (surgical N2 rejuvenation) OR (Tattoo N3 remov*) OR Thermacool OR ((Thigh N1 lift*) AND (cosmetic or plastic or aesthetic or esthetic or beauty)) OR (tooth N1 bleaching) OR (tooth N1 whitening) OR (teeth N1 bleaching) OR (teeth N1 whitening) OR ("Upper arm lift" AND (cosmetic or plastic or aesthetic or esthetic or beauty)) OR "Vein wave" OR veinwave OR "laser eye surgery" OR (refractive N2 surgery) OR (laser N2 keratoplasty) OR LASIK OR (radial N1 keratotomy) OR thermokeratoplasty OR (photorefractive N1 keratectomy) OR (cosmetic N3 injection#) OR "vaginal rejuvenation" OR "noninvasive tightening" OR (gynecomastia AND treatment) OR (cosmetic N2 "laser treatment#"))
S7	S2 or S3 or S4 or S5 or S6
S6	(MH "Corneal Surgery, Laser") OR (MH "Keratectomy, Subepithelial, Laser-Assisted") OR (MH "Keratomileusis, Laser In Situ") OR (MH "Photorefractive Keratectomy")
S5	(MH "Enamel Microabrasion") OR (MH "Tooth Bleaching") OR (MH "Esthetics, Dental")
S4	(MH "Reconstructive Surgical Procedures") OR (MH "Blepharoplasty") OR (MH "Chemexfoliation") OR (MH "Dermabrasion") OR (MH "Lipectomy") OR (MH "Scleroplasty") OR (MH "Rhytidoplasty") OR (MH "Rhinoplasty") OR (MH "Mammaplasty") OR (MH "Breast Implantation") OR (MH "Guided Tissue Regeneration, Periodontal")
S3	(MH "Surgery, Plastic")
S2	(MH "Cosmetic Techniques") OR (MH "Chemexfoliation") OR (MH "Dermabrasion") OR (MH "Hair Removal") OR (MH "Lipectomy") OR (MH "Mammaplasty") OR (MH "Mesotherapy") OR (MH "Plasma Skin Regeneration") OR (MH "Rhinoplasty") OR (MH "Rhytidoplasty") OR (MH "Breast Implantation")
S1	(MH "Surgery, Plastic/PX")

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