Authors' objectives
To review the reported psychosocial benefits of orthognathic surgery by addressing the following three questions.

1. Does orthognathic surgery result in psychosocial benefits for the patient?
2. What, if any, are the psychosocial benefits derived from orthognathic surgery?
3. Are the psychosocial benefits transitory or long term?

Searching
MEDLINE (from 1966 to December 2000), PsycINFO, and the Science Citation Index and the Social Sciences Citation Index (from 1981 to December 2000) were searched using the following terms: 'orthognathic', 'surgery', 'surgical', 'surgical-orthodontic', 'orthodontic', 'jaw', 'psychosocial', 'psychological', 'psychology', 'social' and 'outcome'. The reference sections of all relevant articles were also examined. The following journals were handsearched from 1984 to December 2000: European Journal of Orthodontics; American Journal of Orthodontics and Dentofacial Orthopaedics; British Journal of Orthodontics; International Journal of Adult Orthodontics and Orthognathic Surgery; Journal of Clinical Orthodontics; Clinical Orthodontics and Research; Journal of Oral and Maxillofacial Surgery; Plastic and Reconstructive Surgery; Oral Surgery; Oral Medicine and Oral Pathology; British Journal of Oral Surgery; Journal of Consulting and Clinical psychology; British Journal of Social and Clinical Psychology; and American Journal of Psychology. Articles written in any language were considered.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs), prospective studies with controls, prospective studies without controls, retrospective studies with controls and retrospective studies without controls, were considered for inclusion in the review. Studies that used interviews (structured, semi-structured and unstructured), questionnaires (standardised and unstandardised) or clinical examinations combined with either or both of the previous methods, were also considered suitable.

The study designs included in the review were prospective study with concurrent controls (1), prospective study with no controls (16), retrospective study with no controls (10), and cross-sectional study with no controls (2).

Specific interventions included in the review
The intervention was orthognathic surgery. No further details were given of the surgery or of the control interventions.

Participants included in the review
Patients who were considering orthognathic surgery, were about to undergo orthognathic surgery or had completed orthognathic surgery, were included. Studies focusing on patients with syndromal conditions such as cleft lip and palate were excluded.

Outcomes assessed in the review
Only studies in which the patients self-reported their psychosocial status were included. At least 30 different questionnaires were used to measure the outcomes in the included studies.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the reviewers performed the selection.
Assessment of study quality
The authors seemed to assess the validity of the included studies on the basis of study design (RCT, cohort study and so on), using a hierarchical system. However, other aspects of validity (appropriateness of the control group, and matching of the treatment and control groups) were discussed in the text. Two reviewers independently assessed the quality of the studies.

Data extraction
Two reviewers extracted the data. Data were extracted on the study design, sample size, number of data collection times, the data collection method, and results.

Methods of synthesis
How were the studies combined?
The studies were combined in a narrative summary according to the hierarchy of evidence, with the most reliable study design first and the least reliable last.

How were differences between studies investigated?
Differences between the studies were not discussed, except in terms of the study design.

Results of the review
Twenty-nine studies (n=2,313) were included.

Nearly all the studies reviewed concluded that orthognathic surgery had some beneficial psychosocial effects. However, the level of scientific evidence to support these conclusions was not strong, and was almost entirely derived from uncontrolled prospective and retrospective studies. No RCTs have been completed and only one longitudinal study used a control group. The control group in the latter study comprised patients with untreated dentofacial deformities rather than those with normal facial and dental appearance. The conclusions must, therefore, be interpreted with caution.

The lack of consistency in the techniques used to measure psychosocial status in the various studies of orthognathic patients makes it difficult to clearly identify the precise psychosocial benefits of this treatment. However, the research studies completed in this area reported a wide variety of psychological benefits. These included improved self-esteem, self-confidence, body image, facial-attractiveness image, personality, social functioning, emotional stability, overall mood and ability to mix socially, and life changes such as better personal relationships and employment prospects. Reductions in anxiety and self-consciousness were also reported.

One retrospective study assessed psychological status up to 16 years after orthognathic surgery. Another study provided results from cross-sectional samples of orthognathic surgery patients up to 16 years postsurgery. However, the absence of baseline data from before surgery made it difficult to draw definitive conclusions about the long-term psychological effects of orthognathic surgery. Among the longitudinal studies in which pre-treatment psychological status was recorded, the longest postsurgery assessment period was 2 years. One other longitudinal study stated that the patients had a minimum post-operative follow-up of 8 months and a maximum of 5 years. However, the study did not state how many of the 41 patients were evaluated at the 5-year stage. These latter studies and the other similar longitudinal studies appear to confirm that the beneficial psychosocial effects from orthognathic treatment are persistent at least in the medium term. Although one might expect the psychosocial benefits to continue longer than 2 years postsurgery, further long-term studies are required to confirm this assumption.

Authors’ conclusions
The authors’ conclusions appear to state that the results of the review indicated that orthognathic patients experience psychosocial benefits, including improved self-confidence, body and facial image and social adjustment, as a result of orthognathic surgery. However, there were wide variations in the study designs and a lack of uniformity in measuring the psychosocial constructs. This made it difficult to quantify the extent and the duration of the psychosocial benefits.
CRD commentary
The review question was clearly defined. The literature search seemed comprehensive, with no language restrictions, although there was no apparent attempt to locate unpublished studies. Some details of the review process were given but not all. The validity assessment was limited to hierarchical ordering of study designs and few details of the included studies were presented, particularly concerning the study participants. A narrative approach seems appropriate given the stated heterogeneity in the outcome measures.

The authors' conclusions seem suitably cautious given the limitations of the review and of the included studies.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors state that there is an urgent need for well-controlled longitudinal studies that follow patients from before their orthognathic treatment to 5, 10 and 15 years after treatment. Future studies should also include control groups without dentofacial deformities matched to the treatment group for all key variables, such as age, race, gender and socioeconomic status. It is also important to achieve greater consistency between orthognathic studies for the techniques used to evaluate psychosocial status. Psychological assessment methods should be developed to be more specific to orthognathic patients, and should be properly validated. Further improvements in study designs should also include more objective analyses of the types of skeletal deformities, the severity of the problems and the surgical approaches used.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.