

Evaluating societal outcomes of orthognathic surgery: an innovative application of the Social Return on Investment methodology to patients after orthognathic treatment

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Abstract

Outcomes after orthognathic treatment are complex, and include improvements to mental and physical health, and psychosocial adjustments. The Social Return on Investment (SROI), a framework that is recognised by the government, explores the wider social value of interventions, but has not yet, to our knowledge, been used to measure the value of surgical procedures. To test its feasibility in a surgical setting and to begin to understand the wider nature of the changes experienced by patients after orthognathic surgery, we designed a pilot study that focused on the first two stages of the six-stage model. We collected data from 16 participants about their perceptions and experiences of the short, medium, and longer term outcomes of their treatment during two qualitative storyboard workshops. A grounded theory-SROI method was used to explore their experiences through a process of constant comparison by which data were analysed for concepts and organised into distinct themes. This produced a theory of change that clearly expressed the short to medium-term and longer term outcomes of orthognathic treatment, and provided an initial framework for the approach. The theory captured several outcomes and showed that the framework can be used effectively to investigate the wider psychosocial changes after orthognathic treatment. It therefore provides a basis on which to develop potential indicators for the assessment and valuation of these outcomes over time. The application of these findings to the selection of patients, engagement, and postoperative care, is briefly discussed.

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Introduction

Patients are motivated to seek orthognathic treatment for a number of reasons (functional improvements, changes in appearance, and a range of psychological and social goals),^{1–4} and its positive effects on quality of life (QoL) and psychosocial status are broadly accepted.^{5–8} Success can be gauged from patients' feedback,⁹ and generic and disease-

specific QoL instruments have commonly been used.^{1,10,11} However, to our knowledge, studies on the wider societal value of medicine (including orthognathic surgery) that provide a further means of understanding surgical success, have not yet been conducted.

The failure, until now, to explore such values in surgery might be because the Social Return on Investment (SROI) is an emergent approach,¹² and the traditional focus on cost-effectiveness has overlooked the wider social outcomes. Exploration of these effects and the value of orthognathic treatment gives further insight into the complex determinants of health, which are contained in a range of social, political,

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Table 1
The six stages of the Social Return on Investment (SROI).

1. Identify key stakeholders
2. Map the outcomes
3. Measure and value outcomes
4. Establish impact
5. Calculate SROI
6. Reporting

personal, interpersonal, and economic factors,^{13,14} and helps to develop a more accurate picture of the impact of treatment. The use of a framework that seeks to explore and assess the wider societal value can help us to gain a deeper understanding of patients' outcomes and to relate them directly to their lives. The aim of the study therefore was to find out whether the SROI could be used to explore the wider effects of the changes experienced by patients after orthognathic treatment.

Patients, material, and methods

We used the SROI methodology to investigate the wider social outcomes associated with orthognathic treatment. The six-stage SROI, which is recognised by the government, measures the broader concept of value and change in ways that are relevant to the people or organisations that experience or contribute to it (Table 1).¹⁵ It has most often been used to quantify the impacts of social enterprises and to translate them into monetary values that show the difference that they make.^{16–18} The process involves finding out about people's experiences and using them to identify and select a range of measures to quantitatively assess changes over time across multiple socioecological domains. These changes can be valued to establish a ratio of social return on investment that reflects the broader socioecological context. However, the conceptual aspects of the framework are often understated, mainly because of a lack of appropriate theoretical grounding.

As a collaborative framework that is focused on outcomes, the SROI seeks to involve stakeholders – for example, patients and professionals who are involved at every stage of the process – to gain a complete understanding of the wider benefits to society of a given intervention, programme, or service.^{18,19} To our knowledge, its utility within the surgical setting has yet to be explored and so, as a pilot study, we primarily explored the first two stages: identifying key stakeholders, and mapping outcomes. We applied this restriction to enable us to explore whether the method was feasible in orthognathic surgery, and we intended to develop an initial theory that is derived from patients' experiences. Two members of the research team had previously been involved in the development and implementation of these approaches, and in the analysis and assessment of outcomes.

Patients who were invited to participate had had unilateral or bilateral orthognathic surgery for a non-syndromic dentofacial deformity between six and 18 months earlier, by

a single surgeon from a single hospital in the south west of England. In total, 20 consecutive patients were identified, of whom 12 were able to take part in one of two data-collection workshops. Four family members also participated. Surgical staff did not attend to avoid any influence on the patients' responses.

The study was approved by the NHS Research Ethics Committee. Information sheets and voluntary informed consent documents were sent directly to all those who agreed to take part. They were able to discuss the research with surgical staff before they gave their consent. The non-participation of other stakeholders — for example, surgical staff, was a limiting factor that is highlighted in the discussion.

We collected data at two qualitative workshops during which participants used a paper-based “journey of change” template to help them record information about the short, medium, and longer term outcomes of their treatment, and the factors that facilitated or prevented them being achieved. The mean (range) age of the patients was 23.4 (20–30) years, six were male and six female. Data from family members (two fathers, one mother, and one male sibling) were included to provide an additional perspective and to help the patients describe their experiences. This exercise intentionally sought to explore causal links between a range of outcomes and contextual factors that the patients had identified, and in doing so, to establish the chronological “journey” they had made. To support this process, the research team recorded and transcribed their discussions verbatim.

Data were analysed using a grounded theory-SROI method.¹² Grounded theory is a systematic process^{20,21} that helps researchers develop theories about social phenomena by establishing theoretical statements about causal associations within subjective experiences.²² It enables data to be coded into initial themes, which become increasingly theoretical through constant iterative comparison, to assist with the categorisation of the data.

Data were managed and analysed with the help of NVivo qualitative analysis data software, version 12 (QSR International Pty Ltd). This helped to generate the detailed knowledge that could explain the perceived changes that had occurred, or were occurring, as a consequence of the treatment. The process produced a conceptual model that described the wider nature of these outcomes.

Results

The resulting theory of change illustrated the outcomes described by the participants. Two conceptual pathways emerged (physical functioning and mental health) that included the short to medium term and longer term effects (Fig. 1). These were theoretically inter-related, which reflected the complexity of the contexts, and each one included a number of subthemes that helped to classify the

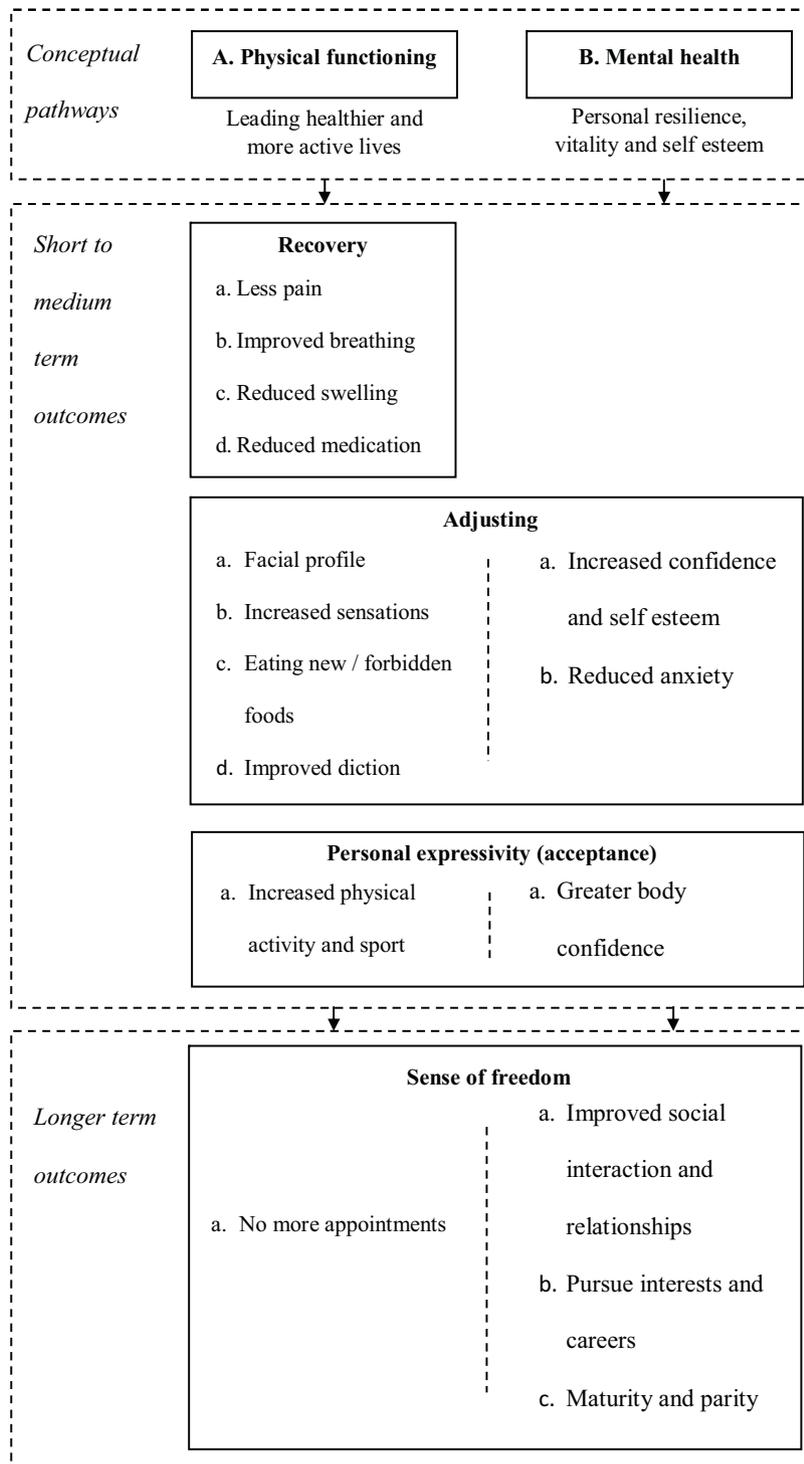


Fig. 1. Theory of change.

data. Table 2 provides a summary of extracts that were taken directly from the transcriptions.

Physical functioning

“Physical functioning” concerned a patient’s perceived ability to lead a healthier and more active life. Short to

medium-term outcomes included recovery, adjustment, and acceptance. After reflecting on their experiences, some patients found that they had needed longer than others to recover. Paradoxically, they felt largely the same inside as they had before the operation, but their new and evolving physical appearance challenged their sense of identity.

Table 2
Summary of extracts.

Physical functioning

“I’m definitely eating more healthily, before it was a lot of liquid foods, we were making things that were convenient. I think my diet is much improved, there’s much more variation which wasn’t the case before.” (NT)

“Growing up, you associate your appearance with your identity so when that changes suddenly you have to step back and readjust, so for me it was about adjusting to that change, which is a slow process. You realise you’re the same person but that you look a bit different.” (BB)

“...because I can breathe better at night it’s improved things. I feel less tired, I have more energy during the day, I can do more things and get out more. I’m more focused now, and less grumpy, and I think generally better at my job.” (NT)

Mental health

“I had my braces off later in the year (just after starting university) and I was feeling more confident. Whereas before I had my braces off I didn’t feel so confident, I felt people were judging, I wasn’t on a par. Now I’m more confident with job interviews, photographs. Before when I smiled in photographs it didn’t look like a smile, it didn’t look right, now it looks like a happy smile. So I’ve more confidence in myself.” (AP)

“Before, I’d be really self-conscious, I’d always cover my mouth when I was speaking to people, and I kind of limited what I would say, or if someone approached me I didn’t really want to interact with them. Now I’ve overcome that, I just feel kind of normal, I guess. Now I can smile without thinking about it...” (NT)

“...it was about self-respect; like I should be doing these things because I deserve it. Things like general health and fitness.” (CC)

“I didn’t necessarily notice being more confident but my peers, friends and family certainly commented on how I was. I came across more confident to them... but I do feel more confident speaking to people I don’t know without having to shy away. It feels more natural.” (DD)

“I was in the same job for ages where everyone knew me and I felt really comfortable. But, obviously, I was really conscious about my jaw, but after the surgery I was really confident. Literally weeks after I was changed drastically, and I wanted a new job, I wanted a change and I had the confidence to go for the interviews.” (IW)

“...you just want to walk down the street and not feel that people are judging you. To just be like everybody else, be mainstream like everybody else. Not be different, not categorised as something else.” (MU)

For some, the ability to eat new and previously forbidden foods was a strong motivation for treatment, and successful outcomes transformed family gatherings and meals out. Increased participation in, and enjoyment of, physical activity and sport showed the confidence to engage in new activities. In the longer term, the freedom patients felt when they no longer had to attend hospital appointments, was particularly important as they grew up and wished to pursue their own interests. Parents and siblings were also freed from the need to prepare for travel and take time off work, and from the emotional stress of supporting family members.

Mental health

“Mental health” was concerned with the impact of treatment on the participants’ resilience, vitality, and self-esteem, with respect to feeling less anxious, more confident, and better able to deal with challenges. Short to medium-term outcomes included adjusting, acceptance, and reduced anxiety. Most patients described psychological outcomes, which included an increase in confidence and self-esteem, and a reduction in anxiety about negative or challenging thoughts that they had about themselves because of their appearance. Family members noted the difference as patients gained in confidence and were less inhibited, particularly at family gatherings or special occasions when photographs were taken. This was also seen in a greater willingness to engage in social situations and relationships without feeling judged, and in a renewal of interests and career aspirations.

Several barriers and facilitators became apparent when the data were analysed. These helped us to consider patients’ postoperative journeys in context, and identified issues that might promote or hinder the achievement of outcomes. Facil-

itating factors, which included the support of family and peers, and external recognition of the physical impact of the operation, were important sources of encouragement and motivation that helped patients to come to terms with the challenges and impacts of the procedures. The journey was often deeply personal, and the care and support of others provided a crucial safety net and source of emotional support and validation. Barriers included a lack of information and understanding, concern about the procedure and its consequences, and the notion of expert control. Not knowing enough about various aspects of the procedure and its effects — for example, not fully understanding the recovery process and how best to manage it, led patients and their families to feel anxious. Consequently, they sometimes felt that they lacked the power to make decisions about various aspects of the surgical process.

Discussion

Our findings show that the SROI methodology can be used to investigate the wider psychosocial value of the changes experienced by orthognathic patients and their families, and to develop potential indicators of change over time. The results broadly reflect existing research that has reported improvements in quality of life and psychosocial status,^{5,8,23} as well as factors that facilitate or present barriers during treatment.²⁴ However, while existing research has shown the psychological, social, cosmetic, and functional effects, it has failed to capture its value to individuals and wider society. The SROI builds on the existing evidence and seeks to value the outcomes of orthognathic treatment as perceived by the patients. The use of their stories to explore and map these outcomes

was the first tentative step towards an economic assessment of the impact of treatment, both through cost savings to the state – for example, by avoiding unnecessary medical consultations, and the wider social value that is generated through improvements in well-being and self-confidence.

Use of the first two stages of the SROI methodology has shown that it can help patients to understand and articulate their experiences. This should be of interest to both surgeons and health care commissioners as a means of engaging patients throughout their treatment and beyond. A better understanding of the expected outcomes could not only improve patients' knowledge about their treatment, but also provide more targeted and effective postoperative care. Likewise, an appreciation of the barriers that hinder some from achieving such outcomes can inform the design of management and information systems, including the guidelines and procedures for the selection of patients.

While the present study is, to our knowledge, the first of its kind, it is only an initial investigation into the wider societal value of orthognathic treatment. To build on our findings and to develop indicators that will enable the systematic measurement and valuation of outcomes, we intend to develop further research that makes use of all six stages of the SROI methodology. This has the potential to show the impact of orthognathic treatment across multiple ecological contexts, which would improve the understanding of researchers and practitioners. We now need to cross-check and refine the theory of change with a wider group of patients and other stakeholders.

Our findings are limited by the small sample size and lack of more complex cases, but work with a larger sample that will provide a more diverse group is underway. This will validate and further refine the theory of change before we develop indicators that will allow the systematic capture and measurement of patients' outcomes. Although we sought to include a full range of stakeholders, limited time and practical issues meant that we could not include more participants in the workshops. To elicit additional perspectives and experiences, and to explore other factors such as the classification of the deformity, further research will seek to include other stakeholders – for example, surgical staff, in similar workshops.

We do not know how treatment with fixed appliances affects patients' perceptions earlier in the postoperative phase. Future research might usefully explore this, and also include a pretreatment group. As an interpretive method, the grounded theory approach enables the use of rich description and theory-building to explore the sociocultural and situated²⁵ dimensions of orthognathic outcomes. This in turn will provide the foundation for the implementation of a full SROI that includes a value-for-money assessment.

Conflict of interest

We have no conflicts of interest.

Ethics statement/confirmation of patients' permission

Research ethics were approved by the Health Research Authority (South West) Research Ethics Committee (ID: 16/SW/0166).

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