‘What’s the point in extending your life if this is your life’: A qualitative exploration of pre-surgery, short-term and long-term responses to bariatric surgery

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Abstract

This study examined experiences of weight, physical activity, diet, and quality of life of individuals prior to and following bariatric surgery. Twenty-seven people participated who represented three periods related to bariatric surgery: pre-surgery; short-term post-surgery (i.e., 1-2 years) and long-term post-surgery (i.e., 3-7 years). A qualitative descriptive design was adopted, with data collected through interviews and analysed using Braun and Clark's (2006) approach to thematic analysis. Themes in the pre-surgery period were identified as follows: a) Growing up: Variation by family and ability, b) Weight gain: Transitions, traumas, and triggers; c) Perceptions of self: Hate, loathing, and worthlessness; d) Spiralling weight: Lack of control over vicious cycles of dieting and weight gain, and; e) Surgery: A final and essential lifeline. Short-term post-surgery themes were: a) Physical changes: Rapid weight loss and enhanced health versus hesitation and disappointment; b) Physical activity: Changes in engagement and perceptions despite ongoing barriers; c) Finding oneself: Increased emotional wellbeing, self-concept and confidence, and; d) Quality of life: Renewed physical capabilities and capacity but some continuing challenges. In the long-term following surgery, themes of: a) Weight plateau/regain: Disappointment and feelings of failure, and; b) Excess fat: Frustration and feelings of vulnerability emerged from the data. It is evident that participants go on an extended journey in the years before and after bariatric surgery and experience a range of both positive and negative outcomes. Overall, the findings highlight the importance of practitioners understanding individual's overall journeys when seeking to help them lose weight and improve psychological health.

Keywords: **Bariatric surgery, weight loss, physical activity, diet, quality of life**

Introduction

In 2016, the worldwide prevalence of obesity was nearly three times greater than in 1975, with approximately 13% of the world's adult population being classified as obese (BMI > 30 kg/m^2; World Health Organisation 2018). Psychological disorders such as depression and anxiety, and reduced quality of life are more apparent among individuals who are classified as obese (Simon et al. 2007). In individuals who experience frequent weight regain following conservative treatment options, bariatric surgery is becoming a popular weight loss option (O' Brien et al. 2006; Colquitt et al. 2014). Individuals undergoing bariatric surgery often regard it as the "only" option to avoid future illnesses, weight cycling (Hoffman 2010), and acceptance by society (Groven and Engelsrud 2016a).

Research shows that bariatric surgery can result in substantial short-term weight loss as well as improvements in obesity-related comorbidities (Colquitt et al. 2014), and quality of life (Karlsson et al. 2007; Sarwer et al. 2010). Further, people who have undergone bariatric surgery often highlight positive consequences of surgery (e.g., Ogden, Clementi, & Aylwin, 2006), with the process sometimes being associated with a feeling of being reborn and a recovery of identity (Bocchieri, Meana, and Fisher; 2002a; Magdaleno, Chaim, and Turato; 2010). Collectively, these studies appear to indicate that surgery can improve patients' lives and, compared to pre-surgery, can substantially improve physical and mental health. However, a review conducted by Colquitt et al. (2014) concluded that the majority of studies assess the effects of surgery up to 2 years post-surgery and therefore the long-term effects of surgery are unclear.

Moreover, post-surgery psychological outcomes are not as encouraging as they may first appear. An increased risk of suicide or non-fatal self-harm has been identified in post-bariatric surgery individuals compared to a control population (Neovius et al. 2018). Post-surgery, individuals have also described how their lives are dramatically restricted due to

chronic pain and loss of energy (Groven 2010). Feelings of emotional distress when attempting to adjust to physical changes and a 'non-obese' identity are evident in the first postoperative year (Warholm, Øien and Råheim 2014). Weight loss, maintenance, and weight regain coupled with the resulting body image dissatisfaction is also still apparent in some people after surgery (Groven 2010). The likelihood of post-surgical negative psychological health appears to be related to pre-surgical psychopath as well as unrealistic expectations of post-surgical life, thus an understanding of both pre- and post-operative experiences is needed (cf. Kubik et al., 2013).

Due to the mixed and in some cases conflicting results following bariatric surgery, there are still areas that require further attention. For instance, an understanding of how and why changes in psychological wellbeing occur following surgery remains unknown. (Jumbe, Bartlett, Jumbe and Meyrick 2016). It appears that greater post-surgery quality of life is associated with weight loss maintenance (Ryder et al. 2018), thus understanding how to optimise such weight loss for inidividuals is crucial, which will require an understanding of their pre-surgery experiences. In considering pre- and post-bariatric surgery experiences and outcomes, considerations of both physical activity and diet (i.e., behaviours often associated with weight loss/gain) are important because these two factors are most commonly associated with weight loss (Swift et al. 2014; Mozaffarian et al. 2011).

To date, researchers who have assessed physical activity among weight-loss surgery candidates have demonstrated that many people are insufficiently active to experience related health benefits (Bond et al. 2010a). Following surgery, self-report studies have indicated an increase in activity levels (Jacobi, Ciangura, Couet and Oppert 2010). However, the validity of such findings remains questionable (King et al., 2012) and when physical activity has been assessed pre- to post-surgery through qualitative interviews, results have been less encouraging with large variation between participants being identified (e.g., Homer 2016).

Data from five year post- surgery follow ups have indicated that while participants may hope to increase their physical activity, additional support is needed and a range of barriers are encountered (e.g., Stenmark Tullberg, 2017; Zabatiero et al., 2018). It is clear from such findings that there are a number of challenges associated with physical activity engagement for individuals pre and post bariatric surgery, but what is unknown is how such challenges emerge throughout the journey or how pre-surgery experiences may be subsequently impacting on post-surgery outcomes.

Explorations into the dietary experiences of bariatric surgery candidates have revealed similar findings, such that individuals continue to encounter a range of barriers to healthy eating following surgery. For example, dietary complications including intolerances to various foods and dumping syndrome (often characterised by vomiting, diarrhoea and nausea) have previously been highlighted as issues after surgery (Geraci, Brunt and Marihart 2014). Long-term data has revealed that participants who were on average 6 years post-surgery and had reached weight stabilisation or were experiencing weight regain, had developed unhealthy food habits whereby they were less aware and mindful of their food choices (Benson-Davies, Davies and Kattelmann 2013). Specifically, convenience foods, high fat foods, and high caloric beverages were more prevalent in these individuals' diet. It is evident that participants face extensive barriers to healthy eating and experience substantial changes in eating behaviours post-bariatric surgery, but a further understanding of exactly when in the journey these barriers arise and if pre-surgery experiences influence post-surgery findings is essential.

Although there is growing evidence regarding experiences of diet, physical activity, and wellbeing before and after bariatric surgery, there is still a lack of a research considering these aspects collectively. Specifically, little to no attention has been given to considering these three aspects together across the course of the bariatric surgery journey (i.e., pre,

immediately post, and post surgery). It is well known that a healthy lifestyle combines both physical activity and a balanced diet, and a sustained caloric deficit will lead to weight loss which ultimately, is the overall goal of bariatric surgery. Data has also shown positive links between psychological wellbeing and bariatric surgery outcomes (Herpertz et al. 2004). Given that obesity costs the NHS upwards of £5.1billion each year (Scarborough 2011) and more than 60% of individuals experience substantial weight regain by 5 years post-bariatric surgery (Magro et al. 2008), further work is essential to understand these individuals' overall experiences. Understanding pre- or post-surgery experiences is useful; however, understanding stories as individuals transition through the bariatic surgery phases will enable the development of more effective strategies to help individuals negotiate the challenges faced at different points in the journey and enhance long-term success. Thus, the purpose of this study is to examine the experiences of individuals prior to and following bariatric surgery. Specifically, it explores individuals' experiences of physical activity, diet, and quality of life leading up to and following bariatric surgery.

Method

Methodology

This study was part of a larger multi-method project conducted with individuals prior to and following bariatric surgery. The overall aim of the multi-method project was to examine changes in physiological and psychological parameters, physical activity engagement, and dietary patterns immediately before, after, and in the years following bariatric surgery. The larger study was completed in three parts whereby part one involved the collation of blood test results from 127 pre bariatic-surgery patients (not included in the current study) into a database to compare to established healthy threshold levels. Part two comprised interviews to explore individuals' experiences of weight, physical activity, diet, and quality of life leading up to and following bariatric surgery (the focus of this paper). In

159 part three, participants (the same participants as in part two) were required to complete a
160 General Practice Physical Activity Questionnaire (GPPAQ), provided with a Fitbit Flex
161 which was used to track daily physical activity levels over a 7-day period and based on recent
162 blood results the 10 year cardiovascular risk was calculated for each participant.
163 The qualitative component of this study sought to gain an in-depth understanding of
164 participants' experiences before and after bariatric surgery, through rich descriptions.
165 Moreover, the production of results that would be accessible to practitioners and could
166 underpin practical changes or application were sought. As such a Qualitative Descriptive
167 approach (Sandelowski, 2000) was adopted, underpinned by an interpretivist perspective. The
168 research team sought to gain insights into individual's unique experiences leading up to and
169 following bariatric surgery, recognising that each experience is socially constructed and
170 based on their individual interpretation.
171 ***Participants***
172 Twenty-seven participants were recruited from a hospital in Wales, UK to take part in
173 the study. Potential participants were purposefully sampled to ensure information-rich
174 accounts and thus sufficient information to address the research questions (Patton 2002).
175 Participants were invited to take part if they were a candidate for or had undergone surgery
176 between either one to two years (short-term) or three to seven years (long-term) previously.
177 Pre-surgery patients that fulfilled rationing criteria based on modified Swansea-DUBASCO
178 scores were included. This metabolic scoring system is an analysis of the number and
179 severity of various major comorbidities associated with bariatric surgery patients as it has
180 been recognised that body mass index alone may not be the most accurate predictor of
181 patients that would benefit most from the surgery (Labib et al. 2011). In total, 26 people took
182 part in the study: 15 women and 11 men, with a mean age of 42 years. Of the 26 participants,

10 were awaiting bariatric surgery, six were between one and two years post-surgery, and 10 were between three and seven years post- surgery.

Procedure

Following service based evaluation approval by the Joint Scientific Research Committee & Department of Research and Development within ABMU Health board (May 2014), the clinical nurse specialist at a local hospital identified potential participants fulfilling the sampling criteria. These participants were then approached in person when attending the bariatric surgery clinic and provided all the necessary information regarding the study. Additionally, consultants at the hospital also advertised the study to individuals when they attended appointments and a few participants suggested other potential participants in their interviews. Potential participants then contacted the research team directly to indicate their interest. This direct communication with the research team was important to ensure that participants did not feel that they had to participate or felt compelled to answer in a specific manner.

Data Collection

Once participants had indicated their interest in the study, the lead researcher arranged a suitable time to meet each participant. On meeting the participant, the researcher explained all aspects of the study and obtained informed consent. Time was then spent talking with the participant and developing rapport before initiating the semi-structured interviews, which were broadly based around a life-history interview structure. That is, the participants were encouraged to share stories from throughout their life and, where possible, located these stories within specific historical times (e.g., childhood, particular transition times) (Smith & Sparkes, 2017). Such an approach was deemed appropriate to allow participants to take control of the interviews and to situate their experiences as they felt appropriate within their lifetime. However, rather than sticking rigidly to a life-history approach and explicitly

identifying historical context in their stories, many participants instead spoke about their experiences as a journey, broken up by key aspects of their life (i.e., childhood, leaving home, traumatic events, weight gain, approaching surgery, following surgery etc). Consequently, throughout this paper the process of undergoing bariatric surgery is likened to a journey. Within the metaphor of a journey, certain theoretical elements are debated and contribute to an interpretive framework for developing an understanding of the process in question (Mackenzie and Ling 2009). The journey in this instance is that experienced by the individuals as they progressed through the stages of bariatric surgery from pre-surgery to short-term post-surgery and finally long-term post-surgery.

Prior to conducting interviews with study participants, we piloted the interview guide with one individual who had not undergone bariatric surgery to allow the interviewer to become familiar with the questions being asked.. A bariatric surgery candidate also completed a complete pilot trial, which included a pilot interview, completion of the GPPAQ questionnaire, and wearing a fitbit for 7 days. The pilot trial was conducted to assess the delivery of instructions regarding the use of the Fitbit and completion of the questionnaire while the pilot interview was conducted to practice interview techniques and review the structure of the interview guide. The interview guide was revised such that introductory questions were expanded on and more time was spent building rapport with individuals prior to commencing the interview. The layout of the interview guide was also slightly altered to reflect the journey (aligned with a life history interview approach) that individuals had been through up to the present day. The data obtained from the interview with the bariatric surgery candidate was used in the final analysis as the individual revealed interesting information that helped in addressing the research questions.

The lead researcher then conducted the participant interviews under the supervision of clinicians providing routine clinical care. There were no clinicians present in the room when

the interview was taking place, they were simply aware that interviews were taking place in case any issues (i.e., participant distress) arose. Data collection for the entire study (both qualitative and quantitative aspects) was completed over a 6 month period. The interview guide included questions about perceptions, experiences and expectations for bariatric surgery, views and experiences of physical activity and diet, and quality of life. Interviews ranged in length from 18 to 109 minutes (M= 39 mins 20 secs; SD= 18 mins 53 secs) excluding the considerable time spent building rapport before starting the formal interviews and were transcribed verbatim. The research team are aware that an 18-minute interview is short, however, based on the quality of information provided in the interview, it was deemed appropriate to include it within the study.

Data analysis

Thematic analysis, based on Braun and Clarke's approach (Braun and Clarke 2006; Braun, Clark, & Weate, 2017) was carried out. The lead researcher familiarised herself with the data (i.e. transcripts) through a process of immersion, which involved repeated readings of the data. She then read the interviews specifically searching for meanings and patterns. Next, she undertook a detailed reading of each transcribed interview, highlighting interesting or meaningful ideas and allocating them to different headings (termed codes; e.g. 'bad physical activity memories', 'surgery as a lifesaver', 'lack of long- term success on diets', 'overweight as a child'). Themes, which were developed next, were interpretative and focused upon elements of the participants' experiences, for instance of physical activity or diet. Coded data were grouped under identified themes and relationships between the codes, themes, and varying levels of themes (e.g. main overarching themes and sub-themes) were also considered. During and following this process, the themes were then refined so as to comprehensively capture all appropriate codes. Such refinement occurred individually and then with the broader research team. Through discussion with the research team the final

labels, definitions, and presentation of the participants' experiences through the themes were proposed.

Methodological Rigour

It has been suggested that a relativist rather than criterion approach to judging the quality of qualitative research is appropriate (Sparkes & Smith, 2009). Aligned with this approach, we have drawn upon the nine suggestions of Smith and Caddick (2012) that we deemed appropriate for the current study. However, we recognize that these criteria are open-ended and subject to reinterpretation and encourage the reader to make their own judgments.

Specifically, we sought to produce a paper that provided a *substantive contribution* to the understanding of experiences leading up to and following bariatric surgery; the justification for which is provided through the manuscript introduction. We perceive that through the engagement with individuals at different stages in the bariatric journey this study will have *impact* by stimulating new research questions and also encouraging practitioners to consider the support they provide to individuals before and after surgery. Through the use of extensive quotes and explanations of the data we hope to have provided *comprehensiveness of evidence*. Further, we have attempted to demonstrate *coherence* by ensuring continuity between the philosophical underpinnings of the study, the research question, the data collection and analysis methods, and the presentation of the results.

This study has already garnered of attention from practitioners at the hospital where the participants were from, which we believe indicates *catalytic and tactical authenticity*. By locating the findings as a journey and situating them in previous literature we hope the results *resonate* with readers. Finally, we sought *credibility and transparency* by completing a pilot interview, engaging with multiple individuals at each stage, and completing a larger study to provide additional insights.

Results

Through their interviews, all participants were asked to reflect on their experiences; pre-surgery, immediately after surgery and in the years following surgery as appropriate. Thus, all participants commented on their pre-surgery experiences, 1-2 year post and 3-7 year post surgery participants commented on immediate post-surgery experiences and 3-7 year post participants commented on the long-term post surgery experiences. In the results individuals prospectively and retrospectively create meaning and understanding of the journeys they took to arrive at their current destination. Themes are structured and presented in line with the journey approach whereby early experiences of physical activity, diet and wellbeing are presented first, followed by the factors that led to the arrival at the decision to undergo bariatric surgery and finally the short- and long-term effects of the surgery in line with the research questions.

Pre-surgery

Growing Up: *Variation by family and ability*

When recalling their early experiences of physical activity and diet, there was a great variation between the participants; some participants described having healthy diets and being active during their childhoods, while others indicated more limited engagement in physical activity or unhealthy diets.

In those participants who described unhealthy childhood lifestyles, a number of factors were identified as contributing to this. For example, for some it was negative PE experiences, as one participant (woman, 1 year post, P1) mentioned how she "never particularly liked PE at school" and she was "never good at it". She then went onto say that her experiences of physical education in school "had a detrimental effect rather than a positive one" and "I think that being in school it was enough putting me off maybe going to the gym and things like that later on". For others it was the home environment, for instance a participant (14; man, 1 year post) described the unhealthy environment at home when he was

growing up by saying, “I was just eating constant junk then, takeaways and stuff” and that “Both [his] parents were obese”. Another attributed it to her parents splitting up, explaining, “I think because my parents split up when I was a young age I think my mother always tried to make up for that and you know we’d go out for meals or we’d go out for coffee and cake”.

Weight Gain: Transitions, traumas, and triggers

Whatever their preceding diet and activity behaviours, a change in circumstances appeared to shift participants’ diet or physical activity levels, which resulted in or further stimulated weight gain. For instance, when participants left home, went into employment, or started families, they often experienced a change in time for, or value placed upon, physical activity or healthy food. These lifestyle changes were clearly apparent in one participant who growing up described himself as “very healthy and very fit” but when he met his now wife, physical activity “wasn’t as important to me as other things in my life” and so he “left the RAF, concentrated more on the relationship and got a job” (man, pre-surgery, P6). Similarly, another participant (woman, pre-surgery, P22) discussed the influence her relationship had on her weight, explaining:

> When I first got married, which would have been about 25 years ago, perhaps emm my ex-husband then had a particularly bad eating habit and I possibly, rather than me transforming him into my eating habits, he possibly took me to his eating habits and I think that’s when my weight issue started.

Another participant described how a change in his job influenced his weight gain, saying, “At 18 I was doing a sports programme, playing rugby 2 or 3 times a week, so I had an active lifestyle… After 18 I went into retail management and it just went completely the opposite way then” (man, 5 years post, P14).

Although some participants voluntarily reduced their physical activity levels, others were forced to terminate or limit their engagement and subsequently experienced weight

gain. One woman (5 years post, P10) told the story of how a man came into her work "demanding drugs and I was attacked and I had stitches, kicked in the knee, so that started my weight, that was actually the start of my weight problem." She then mentioned that she "had 3 knee operations and I was sort of stuck in wheelchairs and then I was just eating for the sake of eating and boredom and my weight piled on". As a result of injuries/experiences, many participants reported subsequently engaging in "emotional eating".

Traumatic events such as the one outlined above that triggered weight gain as a result of "emotional eating" were shared by many participants. For example, one participant shared that she "brought him (her baby) home from the hospital and he was thirteen days old when I found his father dead in bed. So I physically, I was eating on that" (woman, pre-surgery, P18). Two other participants associated family deaths with emotional eating and weight gain. One (woman, pre-surgery, P13) said, "My mother passed away 4 years ago and I did go through a bit more of an emotional eating". Likewise, another man described comfort eating following his divorce and the death of his mother:

> Yeah, got divorced in 2004, emotional time, my mother died the same time as the divorce so I think a lot of comfort eating then, I was living in a flat on my own and I think then I was having takeaways and just felt useless basically (5 years post, P23).

Perceptions of Self: Hate, loathing, and worthlessness

The cycle of emotional eating and subsequent weight gain appeared to lead to or reinforced extremely negative perceptions of self and self-worth. Negative self-perception was highly evident in some participants, with one going as far to say that "prior to surgery I absolutely hated myself" and "I would very often punish myself" (woman, 1 year post, P1). Another spent considerable time describing the depths of her perceived worthlessness, explaining that at her lowest point she felt as though she was "breathing in air that someone with a purpose could be breathing in" (woman, pre-surgery, P22). She continued:

> My husband decided that he didn't particularly love me last year, and emm I think my whole world fell to pieces. My daughter didn't particularly, she was with, she was in a different relationship. My son moved out because I was the worst mother in the whole world. My husband didn't love me and wanted to leave as well, but couldn't leave because we weren't in a financial situation for him to leave. Umm my mum passed away in the year 2000, my dad passed away in 2006, and I just suddenly felt that actually there's no one who particularly wants me or needs me and I didn't love myself, I really didn't think there was any point in my being around at all.

Sharing similar feelings, a man (pre-surgery, P23) explained that prior to surgery he "just felt useless basically" and another (woman, pre-surgery, P18) described how she, "didn't like me, I didn't love me".

Depression was an issue for many participants. One woman believed that she suffered with "lifestyle depression where I was physically anxious, upset, and absolutely distraught with the way that I was" (1 year post, P1). The cycle of depression around weight gain was pointed out by one man (5 years post, P26) who shared, "Then I ended up putting more weight on so then you get depressed and then you start eating more". One participant highlighted how she faked her happiness before surgery:

> I was big and I didn't really see any harm that I was doing to myself, even though deep down you know you're doing it and people used to say to me do you think you should lose weight, "why? I'm happy", you're never really happy but you do convince yourself that you're happy (woman, 5 years post, P27).

Consistently throughout their stories, the participants indicated that they had negative perceptions of their self -worth and that they were desperate to find a "cure" to their uncontrollable weight issue and associated side-effects.

Spiralling Weight: Lack of Control over Vicious Cycles of Dieting and Weight Gain

Once participants had started to gain weight and experience an associated decrease in self-worth, many described feeling they were trapped in vicious cycles and were unable to control their weight. A woman (pre-surgery, P22) explained, "[my weight] is a bit of a vicious circle because I'm so fat, because I'm so out of condition I don't do the exercise, because I don't do the exercise I'm fat and out of condition". Another participant said, "you don't consider what you are eating until it gets too late" and if he had not had the surgery he thinks "[I] would have continued spiralling gaining weight" (man, 5 years post, P14). Participant 1 believed that her lack of control resulted from her shorter term struggles with her weight by saying, "Because I have never suffered with my weight as a child maybe it was more difficult for me to control as I got older." (women, 1 year post).

As participants experienced a spiralling weight gain, they continued to describe a lack of control over what they were eating. For example, before surgery, one participant "used to scoff choccy bars back then though. I always made sure there was a stock of things in case people come around but they didn't have a chance because I usually necked it" (man, 1 year post, P7) and another women shared:

> I remember the first day that I bought my own flat. My brother bought me a bar of chocolate as a moving in present, and I sat on the steps in the flat and just ate the bar of chocolate….Even now when I buy myself a treat, this is going back to when I was a teenger, even now I buy myself a treat, I eat the whole treat all at once, so that no-one else can touch it (pre-surgery, P12).

To counter their lack of control over their eating habits, participants often started engaging in dieting programmes. However, these were invariably unsuccessful, which reinforced their negative perceptions of self-worth. For example, one participant said, "I could always lose like a stone, maybe half a stone, a stone. I could never go past that, I just couldn't do it" (man, 1 year post, P4). With such a lack of success with "dieting" participants ultimately

engaged in a seemingly "never ending cycle" of dieting and weight gain. As one woman explained, she had, "been on and off diets all my life," (pre-surgery, P8), whilst another spoke about how he would, "lose weight and it went back on within 6 months" (man, 5 years post, P14).

Surgery: A Final and Essential Lifeline

As a result of many unsuccessful attempts at diets, almost all participants identified surgery as the last resort to achieve long-term weight loss. One man (pre-surgery, P21) mentioned, "I really don't know where else I could turn to try and lose the weight" whilst another explained, "I had tried other solutions and clearly I had struggled to get a long-term solution" (man, 5 years post, P11). Such a "need" for surgery appeared to be driven by participants' decreased quality of life. For example, one man (pre-surgery, P21) described his quality of life as "pretty miserable really, I'd say probably about a four or something." Another participant (woman, 1 year post, P24) explained her unhappiness before surgery, "Minus 10, I was really down before, I was so overweight and so unhappy".

For many, surgery was the final option to keep them alive. For instance, a man explained, "If I don't have it in 10 years time I'm going to be dead anyway I reckon" (pre-surgery, P21) and another shared, "my whole attitude to life was when's it going to happen, when are you going to die, that's how bad it felt" (woman, 5 years post, P25). Another individual described how the surgery was a lifesaver as medical professionals had said, "I had about two years left you know that's what they reckoned if I didn't have the surgery" (man, 5 years post, P23). One woman detailed the frightening series of events that led to her surgery; "ended up with a blood clot in my arm in my subclavian artery, turned my hands navy, rushed myself into casualty and they found that I was diabetic… I was looking for my funeral, now I am looking up" (1 year post, P15), whilst another pre-surgery man described;

"Like now I am looking forward to it [the surgery] because I think it's, it's a new start of life for me you know, because it's been hell the last couple of years" (P2).

Short-term Post-surgery Experiences

Physical Changes: Rapid Weight Loss and Enhanced Health Versus Hesitation and Disappointment

When participants were asked to comment on post-surgery weight loss they described substantial reductions in their body size over the first 12-months. However, participants' views of this rapid weight loss were mixed. Many were overjoyed at the "massive weight loss" in the few weeks and months immediately following surgery, with one participant saying, "I was throwing a stone a week off" (woman, 5 years post, P9), and another explaining, "It was incredible the amount that came off me the first 6 months, I mean I think I lost about 8 stone in the first 6 months" (woman, 5 years post, P25). In contrast, some participants found the rapid weight loss challenging. For example, a man explained:

> It frightened me at the start, I was in, I was losing half stones every week, stone every week, first month or two and it really worried me, I could feel my skin, it was all starting to go loose and it really, it really concerned me so I ate chocolate bars and I slowed it down (1 year post, P20).

Some participants initially went in for surgery to improve weight-related comorbidities and the majority saw improvements. However, there were a few participants who did not experience improvements in their weight-associated comorbidities. For example, a woman explained that, "PCOS [Polycystic Ovary Syndrome] was the driving factor to doing it (having surgery)" but as a result of the surgery, "unfortunately that's the one thing it hasn't helped" (1 year post, P4).

Vomiting and being unable to stomach certain foods were substantial issues for participants. A few people highlighted specific foods that they could no longer digest after

surgery, for example, “I can’t handle red meat… it just makes me feel sick” (woman, 5 years post, P10), and, “I throw up every day” (woman, 1 year post, P4). Another explained how she was, “still learning what my body will accept and what it don’t, some food upset, especially fruit and stuff, does upset my body, my guts, which I have learnt. Some days are good, some days are bad” (woman, 1 year post, P15). A few participants explained how they found unhealthy food was easier to digest, and explained, “I tend to eat a lot of junk food because it’s the only thing that seems to stay down” (woman, 1 year post, P4).

Physical Activity: Changes in Engagement and Perceptions Despite Ongoing Barriers

After surgery most participants reported improved perceptions of and increased engagement in physical activity. This increased engagement in physical activity seemed to result from the participants’ weight loss and increased self-confidence. As a woman explained, “[I] lost about 5 stone and I started going back in the swimming pool,” (5 years post, P10) and another stated that, “I have got the confidence and I have started using the gym as well” (woman, 1 year post, P15).

Although participants generally reported higher levels of physical activity engagement after surgery, there were still barriers to exercise. For some there were physical barriers, for instance, one participant explained how she was “struggling with exercise due to me having a prolapse” and “due to “embarrassment because my skin is so loose when I’m exercising” (woman, 1 year post, P1). One participant explained, “behind my knee I’ve actually got moderate to advanced arthritis” and “it’s been very restricting” (woman, 1 year post, P24). For others, the barrier was time as a woman (1 year post, P24) explained, “Because I’m in work quite early in the mornings and sometimes I’m here quite late, it’s having the time to do it and feeling as if I’ve got the energy to do it”.

Another perceived barrier was a lack motivation to exercise. One participant (woman, 5 years post, P9) described, “I just don’t do it, I just never think about doing it” and “I’m not

disciplined enough to go every day and do the certain things every day." Finally, a lack of self-confidence was cited as another barrier to exercise in the postpartum period. For example, a participant felt:

> Self-conscious about people looking at me and you know because it's down the gym there's a lot of fit fellows down there. You know, body builders and there's a lot of fit women there like you know young women and you know I think well you know I'm down here with my big belly (man, 1 year post, P5).

Finding Oneself: Increased Emotional Wellbeing, Self-Concept and Confidence.

Participants reported improved emotional wellbeing and increased self-concept in the months after surgery. As one participant shared, "Prior to my surgery my emotional wellbeing was probably a 1 or a 2, bordering on depression because of my lifestyle and the way I was, the way I looked… I put myself at an 8 or 9 now" (woman, 1 year post, P1). One woman (5 years post, P10) believed the surgery "gives you self-esteem as well, it makes you more confident" whilst another described the increased self-confidence that the surgery had given her:

> Put my make up on, that's something I hadn't worn for years, at least 5 days out of the week I have got make up on and stuff like that and that makes me feel different and put perfume on, starting to feel like a woman again, which I hadn't before" (woman, 1 year post, P15).

Such enhanced self-confidence also appeared to be associated with a perceived social acceptance and being a "normal" weight. A woman (1 year post, P15) explained, "I can walk around the supermarket without, I am not worrying about being in a supermarket if people see me now". For some participants their emotional wellbeing was enhanced by the ability to shop in high street shops. For example, a woman (5 years post, P27) mentioned, "All I was actually focused on is being able to get into small clothes and actually go and buy from

Tescos[2] rather than going to Evans[3] or something and I focused on that a lot" and another expressed, "One of the seminal moments in my life was when I walked into Next[4] in [name of place] and I could put something on that fitted me… that gave me such a buzz" (man, 5 years post, P11). Engaging in such activities helped participants to feel socially acceptable, as a participant shared:

> It's being able to look around and think I am actually, I don't want to be beautiful, I don't want to be anything like that, just want to be socially acceptable. And for the first time in years and years and years I actually feel socially acceptable (woman, 1 year post, P1).

Such feelings of social acceptance and confidence, was associated with profound outcomes for some, such as one woman who shared:

> Now I have actually gained enough confidence to think that I am actually a human being too and I deserve the same as everybody else deserved in life, I deserve to be happy and I deserve to be able to move forward and progress in my life the way I want it to be (1 year post, P1).

Quality of Life: Renewed Physical Capabilities and Capacity but Some Continuing Challenges

As indicated, quality of life was often greatly improved after surgery. Improvements in perceived quality of life seemed to be related to participants being able to do more as one man (1 year post, P5) mentioned how he can "get out and about more often. I haven't used my wheelchair in well over a year". Improved family time was also noted by two participants as a contributor to increased quality of life. One woman said, "I have got a 9-year-old

[2] UK supermarket chain
[3] UK plus size clothing brand
[4] UK clothing brand

nephew I can now keep up with him… it's nice to be able to enjoy doing things like that with him" (1 year post, P15) and another described the joy at being able to play with her grandson:

> Those two older ones [grandchildren] I've lost so much pleasure with like playing you know taking them out because I couldn't but with this youngest one, [name] my son's boy, we have him over in the day time. I take him out. I take him walking now like I interact more with him now because I can (woman, 1 year post, P5).

One man shared his happiness at being able to, "go on holidays now with my wife again, I never used to do that before because I'd just feel like a whale" due to being "much happier and "more confident" (5 years post, P26).

However, some participants reported that in some respects surgery had reduced their quality of life. One described how, "Quality of life health wise its improved 100% but on the other hand relationships, if you call that quality of life, it's not so you know there's pluses and minuses" (man, 5 years post, P23). He went on to describe how before surgery "my confidence was much more and personality was better, now I get into mood swings and things like that, sometimes I'm not a nice person to be around". Additionally, a woman (1 year post, P4) had a number of problems post-surgery and explained, "People say 'well you've extended your life' well what's the point in extending your life if this is your life…If you told me I could have my old life back and reduce it by twenty years that would be quite appealing right now". One other woman identified the inability to eat the same foods as before surgery as a cause for unhappiness:

> I do feel down sometimes mainly as I said I can't eat what I used to eat before and I don't drink, I don't smoke, I don't have sex so I used to like my food that was all and even the food I like to have I can't have (1 year post, P5).

554 ***Long-term Responses to Surgery***

555 In the first few years after surgery, the majority of participants described substantial
556 improvements in weight, weight-related comorbidities, emotional wellbeing, and quality of
557 life. However, the longer-term responses to surgery were described as more challenging.

558 *Weight Plateau/Regain: Disappointment and Feelings of Failure.*

559 All participants in the 3-7 years post-surgery category described how their weight had
560 either plateaued or they had experienced some weight regain. As a result of this weight
561 regain, one woman (5 years post, P25) mentioned how she still feels "disappointed with
562 myself because I lost 6 stone more or less after the surgery and then I've put 3 stone back on"
563 and consequently she feels "as if I'm a failure because of it".

564 A number of participants offered extensive insights into their feelings surrounding
565 weight regain. For instance, Participant 11 (man, 5 years post) described great
566 disappointment when he started to gain weight after the second postoperative year. He
567 explained, "I am disappointed with myself that I haven't been able to control those external
568 factors" and then went onto detail the changes in his life that had led to his weight gain:

569 In the last couple of years my life has been a lot more complex. My wife and I have
570 adopted a boy, I have got a busy job and I am running around a lot and these are often
571 excuses and I will use them as excuses but they are things that intervene in your
572 ability to focus on keeping your diet very strict, keeping your exercise levels up and
573 in the last 2 years my weight has increased because I haven't been as strict as I was
574 with my diet when I was following the Paleo diet.

575 Participants also detailed the consequences of weight regain. For example, participant 3
576 (man, 5 years post) explained that he "won't have an ice cream, I don't want anyone to see
577 me eating ice cream" in public. He explained his reasons for this by saying, "possibly
578 judging, possibly thinking "he's too fat to eat ice cream."

A few participants described how following weight regain they had recognised the need for better control over their food intake, as one man explained:

> I think the benefit from the surgery has gone, I don't think that I can rely on the volume of my stomach as a means to support me in my weight loss, I have to do everything myself so I, psychologically I believe I have to do everything (5 years post, P11)

This same individual (man, 5 years post, P11) went onto describe how he believed that "everybody with a weight issue has psychological issues with food" and learning "to deal with the way that the surgery changes your physical ability to consume food has to be linked in with the mental change in how you view food" if long-term success is going to be possible. He also described the steps he had taken to change his mentality around food, explaining:,

> I don't view food as anything more than a fuel for my body now, because that gives me a little more ability to just view it as something that helps me keep going. And where I am trying to go with that is I don't view it as comfort.

One other man (5 years post, P3) mentioned that he "wasn't very happy" and that "people I was talking to on Facebook who had the operation said, 'oh yeah, we've hit a plateau as well', just that mine lasted longer". He described going on the Atkins diet but with similar results by saying, "I'm not losing anything, but I'm not gaining, I'm just on the plateau."

Unfortunately, a number of participants highlighted that the psychological reasons surrounding their excessive eating (and lack of control over consumption) had not been addressed and appropriate support had not been offered before surgery, which ultimately led to long-term weight regain following surgery. As one women simply said, "the psychological issues of why I was eating in the first place haven't been addressed" (5 years post, P25). Further, a lack of support and guidance from medical professionals was also highlighted. For instance, one participant shared her thoughts on the after surgery care:

> I honestly believe they need someone there that's been through it to educate them better, it's alright giving them a piece of paper and say read it, how many skip through it, you don't read it all, it's like giving you a book innit, you go to the best parts and that's the truth that is (woman, 5 years post, P27).

Excess Fat: Frustration and Feelings of Vulnerability

Participants shared that the psychological and physical side effects they were suffering from were a result of continuing excess fat issues. One women expressed disliking her body and said, "I'm happy with the weight but I'm not happy with the shape it makes me, you know, all these layers on me, that's a hernia there" (5 years post, P9). Another participant highlighted the physical barriers that she now faces as a result of the excess fat:

> The only thing I'm disappointed with was that none of the excess fat was removed, because of my condition with the rest of my health I can't walk far so the exercise to get it off is impossible for me so I'm stuck with it like, it's like having a weight and it is just pulling down on my back which is causing me more problems (woman, 5 years post, P25).

One man told a story which had arisen due to his excess skin and overweightness. He said, "obviously I'm overweight, I've got a belly and what I call an overhang" and he,

> was in a shop in [*place name*] and a little boy with his mother and the little boy must have of only been two, something like that, three. He said look at that fat man there like you know and his mother didn't half rip into him…You know I cringe sometimes when kids do say things like you know. But then I sort of laugh it off with them then, but it is hurtful (man, 5 years post, P5)

Another participant (man, 5 years post, P23) commented on the physical barriers and emotional effects his excess fat and said that he "thinks it's wrong, I've been left with you know excess fat and it's affecting me emotionally" and explained that he is on anti-

depressants now because “I just don’t like my body anymore”. He further described how, “Even before when I was at my heaviest I would go swimming but now I’ve got all this excess fat I just won’t go, it’s really ugly.” Finally, one participant detailed that he had lost fourteen stone however his health could be further improved if body contouring surgery was available by saying:

> I’m down to about twenty four stone something like that now if I had the operation done there could be three or four stone come off there which would take me down to twenty stone which would be healthier for me (man, 1 year post, P5).

Discussion

This study sought to understand individuals’ experiences of weight, physical activity, diet, and general wellbeing pre-surgery, short-term (≤2 years), and long-term (≥3 years post-surgery). Bariatric surgery has previously been described as the beginning of a new and challenging path, and not the end of a journey with obesity (Coulman 2017). With this in mind, throughout this study the process of undergoing bariatric surgery is likened to a journey whereby individuals are prospectively and retrospectively creating meaning and understanding of the journeys they took to arrive at the present day. Pre-surgery individuals were asked to describe their expectations of surgery and post-surgery aspirations, while short- and long-term post-surgery individuals described the decisions and experiences that shaped their current situation.

The start of many individuals’ journey was a critical trigger point, which was followed by spiralling of weight. The triggers for weight gain ranged from life transitions (e.g. moving away from home, starting/ending relationships) to traumatic experiences such as death and abuse, which is consistent with previous literature. For example, one individual described using food as a means to cope in two situations; when she found her baby’s father dead thirteen days after giving birth and as a way to attempt to deal with the abuse she was

654 subjected to from a child up until the age of 41 years old. Ogden and colleagues (2006) also
655 described the pre-surgery weight gain histories, failed attempts at sustained weight loss and
656 yo-yo dieting in patients who had undergone surgery in the previous four years. One case
657 study, assessing the psychosomatic aetiology of a 37 year-old post-surgery woman following
658 hospital admission revealed that the patient had been a victim of rape as a teenager, which
659 resulted in spiralling weight gain and obesity (Faden et al. 2013). This however had not been
660 discovered prior to her surgery. With these findings and those of the current study in mind, it
661 would appear that at the preoperative stage in the bariatric surgery journey, taking time to
662 identify the initial trigger and ensuring patients have received appropriate support and help to
663 address or manage this situation is critical. It is only by understanding the varying triggers
664 associated with weight gain that strategies can be put in place to help people anticipate
665 critical moments/transitions, provide individuals with skills to cope with change, and ensure
666 support is available for individuals during and following challenging times in the bariatric
667 surgery journey.
668 In the weeks and months immediately after surgery, the majority of participants
669 indicated that they were overjoyed with their "massive weight loss". Individuals described
670 losing up to eight stone in the first six months after surgery. In previous investigations
671 participants also voiced their excitement at initial weight loss describing it as "easy" because
672 "surgery does the work" (Lynch 2016) and likening it to a "honeymoon period" (Groven and
673 Glenn 2016b). However, not all participants were as delighted with the substantial weight
674 loss in the early post-surgery period and took steps to slow down the rate of weight loss.
675 Participants described engaging in unhealthy eating practices, such as eating chocolate bars,
676 which indicates that individuals were likely not provided with any, or sufficient, dietary
677 education in the months leading up to and following surgery. Based on participants' stories,
678 Bocchieri, Meana, and Fisher (2002a) referred to bariatric surgery as a positive rebirth and

679 transformation, however not without pressures related to massive changes experienced by the
680 individuals. One recent study assessed patients' expectations and experiences of changes in
681 eating behaviour following bariatric surgery (Opozda, Wittert and Chur-Hansen 2018).
682 Individuals reported both positive (healthy, helpful and desired) and negative (unhealthy,
683 unhelpful, unwanted) eating-related behaviours with the majority of negative experiences
684 described at 18+ months after surgery. These findings, and those from the current study,
685 highlight the need for longer-term multidisciplinary care to prepare individuals for the
686 weight, eating behaviour and psychological changes that occur during this stage in the
687 bariatric surgery journey.

688 As individuals progress through the bariatric surgery journey, initial postoperative
689 weight loss excitement is often dulled by a weight loss plateau and in many cases, weight
690 regain (Groven and Glenn 2016). Participants in both the current study and others have
691 described periods of post-surgical weight regain following initial weight loss (e.g. Benson-
692 Davies, Davies and Kattelmann 2013; Engstrom and Forsberg 2011; Geraci, Brunt, and
693 Marihart 2014). Individuals in the current study described returning to pre-surgery eating
694 habits either as a result of the lessening physical effect of surgery and the ability to eat more,
695 or because the body could only tolerate unhealthy foods. In agreement, another study which
696 drew on focus groups and interviews with 24 post-bariatric surgery patients revealed a return
697 to "old eating habits" as a contributing factor toward the observed 16.2$\pm$12.7kg weight regain
698 from 2 years post-surgery (Benson-Davies et al. 2013).

699 Although our findings add to an already extensive bank of research regarding weight
700 regain in the months and years following surgery, we have offered insights into the factors
701 which may contribute to the observed weight regain. For example, many felt that their weight
702 gain was because of psychological issues surrounding eating behaviours that had not been
703 addressed prior to surgery and consequently food continued to be used to manage emotions.

Clinicans tend to assess disordered eating in pre-bariatric surgery individuals, but some patients who have eating disorders still undergo surgery. These individuals often receive little dietary counselling prior to surgery and are often at a greater risk of disordered eating following surgery (Raves et al. 2016), which emphasises the necessity to include multidisciplinary care at all stages of the bariatric surgery process. Findings have revealed that both group and individual based pre-bariatric surgery nutrition counselling are effective in producing favourable post-surgery clinical outcomes (Lavertue and Salgueiro 2012). Therefore, it seems pertinent to encourage health care practitioners to take the time to fully understand their patient's history prior to bariatric surgery and to ensure that appropriate support is provided to maximise both physical and psychological success following surgery.

In addition to weight regain, many individuals who were further along their bariatric surgery journey experienced psychological and physical side effects because of continuing issues with excess loose skin. Participants described how the excess skin had become a barrier to physical activity, such that the associated embarrassment prevented one man from going swimming despite feeling confident enough to swim before surgery. These experiences are concurrent with previous findings that women, especially, struggle to cope with bodily changes and the increased appearance of loose skin after surgery (Groven, Råheim and Engelsrud 2013). The experience of living with the excess skin and scars after bariatric surgery has been shown to generate ambivalence and discomfort, as individuals are constantly reminded of the inability to completely escape their previously large body (Groven et al. 2013). The majority of research demonstrates great improvements in patients' emotional wellbeing, body image satisfaction, physical function, identity transformation and quality of life following body contouring surgery after massive weight loss (Soldin 2011; Gilmartin, Long, and Soldin 2012; Gilmartin, Long, and Soldin 2013). However, it appears that this is still not being made available to enough people.

After surgery most participants reported improved perceptions of and increased engagement in physical activity, which related to weight loss and increased self-confidence, and aligns with previous literature (Jacobi et al. 2011). Particularly, individuals described their change in mindset towards physical activity, as it was no longer viewed as a chore. Nevertheless, despite participants in the current study generally reporting higher levels of physical activity engagement after surgery, they still identified several barriers to exercise which included physical side effects resulting from the surgery itself, as well as environmental and time barriers. Concurrent with our investigation, a qualitative analysis of post-surgery barriers to exercise has revealed that when barriers are split into motivational and physical barriers, most participants report at least one internal motivational barrier with the most frequent barrier being time (Peacock, Sloan and Cripps 2014). Wouters et al. (2010) found that participants possessed negative cognitions towards exercise, for example the belief that exercise is not useful for health benefits. Other qualitative interview studies assessing barriers to physical activity following bariatric surgery have revealed discomfort associated with excess skin or other weight-related issues, lack of support, lack of motivation and a lack of time from preventing post-surgery exercise engagement (e.g. Lier, Aastrom, and Rortveit, 2016; Dikareva et al. 2016; Stenmark Tullberg et al. 2017; Zabatiero et al. 2017), all of which support the findings fo the current study. Given that individuals consistenly encounter barriers to exercise it seems that providing individuals with information about these barriers prior to surgery, and most importantly, strategies to help them manage or overcome these barriers, is critical if we are to improve the physical activity habits and behaviours of these individuals. This education becomes increasingly important in later years in the bariatric surgery journey when weight loss is slowed and psychological health challenges may begin to arise.

Conclusion, Limitations, and Future Directions

Our study was novel in its design whereby we were able to obtain insights into patients' experiences of weight, diet, physical activity and wellbeing before and at two different time points after bariatric surgery. In this sense, bariatric surgery was viewed as a journey whereby we aimed to obtain an understanding of individuals' stories as they transitioned through the bariatric surgery phases. It was then possible to determine how experiences changed throughout the bariatric surgery journey. By obtaining a long-term picture of these experiences, it is possible to identify the most suitable stages of intervention to encourage healthy long-term outcomes. However, it must be noted that the most necessary point for intervention is likely to differ between individuals and ongoing long-term support is most definitely required to enhance post-surgery outcomes.

The study has demonstrated that the factors leading to weight gain prior to surgery, and the weight loss and regain experiences following surgery are extremely complicated. In the short term after surgery, the emotional wellbeing and quality of life of individuals is improved but such improvements are not always present after three years post-surgery due to poor body image associated with excessive skin. Most participants indicate enhanced engagement in and perceptions of physical activity in the months following surgery however, due to physical side-effects related to the surgery itself, environmental and time constraints, participants often reported experiencing a number of barriers to exercise. Importantly, participants believed that the issues surrounding their eating behaviours were never addressed prior to surgery and therefore they continued to use food to control emotions after surgery and experienced substantial weight regain. Such behaviours were clearly intertwined for these participants and as such must be considered together, rather than separately when seeking to help participants to lose/maintain loss of weight and improve psychological health.

Such findings must be considered within the study limitations, including the range in time since surgery in the two post-surgery groups, the fact that interviews were conducted at

one time only, and the range in interview lengths, which may be an indication that some participants were not fully engaged in the process. Future research should look to engage with participants over an extended time to highlight individual changes in experience. Finally, examining participants' engagement with pre- and post-surgery educational/support programmes would be useful to highlight any areas within such programmes that may help increase efficacy and appropriateness.

Conflict of interest

No potential conflict of interest was reported by the authors.

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