Ami Bylund

“Wait for us to catch up”
Aspects of family functioning after gastric bypass surgery
“Wait for us to catch up”

Aspects of family functioning after gastric bypass surgery
“WAIT FOR US TO CATCH UP” Aspects of family functioning after gastric bypass surgery

AMI BYLUND

LINNAEUS UNIVERSITY PRESS
“WAIT FOR US TO CATCH UP”

Aspects of family functioning after gastric bypass surgery

AMI BYLUND

LINNAEUS UNIVERSITY PRESS
"Wait for us to catch up”. Aspects of family functioning after gastric bypass surgery
Doctoral dissertation, Department of Health and Caring Sciences, Linnaeus University, Växjö, 2017

Omslagsbild: Anja Callius
Published by: Linnaeus University Press, 351 95 Växjö
Printed by: DanagårdLiTHO AB, 2016
Abstract


Aim: To investigate aspects of family functioning when a family member has undergone Gastric Bypass surgery (GBP).

Methods: Study I explored experiences of family functioning three months after GBP, based on nine family interviews, analyzed using Gadamerian hermeneutics. Using Classic grounded theory, Study II focused on how families resolve their primary concerns after GBP, through interviews with 16 families. Study III evaluated the reliability and validity of the General Functioning Scale (GFS) based on 163 self-reported questionnaires, and used psychometric analyses. Study IV explored associations between family functioning, weight loss, sex and Health Related-Quality of Life (HR-QoL), based on self-reported questionnaires from 153 participants and utilized descriptive statistics and binary logistic regression.

Results: Study I revealed a process of three intertwined changes in family functioning three months after GBP: Living in ambiguous relationship, rewriting family patterns and strengthening family cohesion. Study II showed that families shared a main concern of unexpected change after GBP, resulting in the theory Stabilizing family life, explained as a social process to decrease uncertainty and find stability and well-being in family interactions. This resulted in attaining unity, returning to old family patterns or disconnecting. Study III suggested GFS as a promising tool for assessing family functioning in a Swedish bariatric sample, showing satisfactory reliability and validity. Study IV showed associations between family functioning and the mental dimensions of HR-QoL, two years after GBP. Percent weight loss was associated with the physical dimension. Sex showed no associations to HR-QoL.

Conclusion: Families experienced unexpected challenges after GBP affecting family functioning. Mutual remodeling of family life to incorporate changes was seen. Families underwent a social process, indicating that families may represent a resource in bariatric nursing care. A family-system nursing perspective as complement to standard care may be beneficial. As family functioning influence HR-QoL identifying available family resources and giving tailored information to support self-care strategies after GBP, may result in sustainable family functioning and individual health. Studies aimed at identify families that may benefit from family-system nursing interventions are suggested for future inquiry.

Keywords: Family functioning, Family system theory, Obesity, Gastric bypass, Family Interviews, Self-reported questionnaires
INTRODUCTION

Obesity: a chronic disease

Obesity and stigmatization

Bariatric Surgical treatment

Criteria and evaluation for bariatric surgery

Outcomes on an individual level after bariatric surgery

Outcome

s on a family level after bariatric surgery

Significant concepts

The definition of 'family'

Family functioning

RATIONALE FOR THIS THESIS

AIMS

THEORETICAL PERSPECTIVE

Family Systems Nursing

Boss Family stress management model

METHODS

Setting

Study I

Participants

Data collection

Data analysis

Study II

Participants

Data collection

Data analysis

Study III

Participants

Data collection

Data Analysis

Study IV

Participants

Data collection

Data analysis

Ethical considerations

Ethical considerations about family research interviews

RESULTS

Families' perspectives on family functioning (I, II)
Contents

ORIGINAL PAPERS .................................................................................................5

INTRODUCTION .................................................................................................6

BACKGROUND ......................................................................................................7
  Obesity: a chronic disease..................................................................................7
  Obesity and stigmatization..............................................................................8
  Bariatric Surgical treatment ..........................................................................9
  Criteria and evaluation for bariatric surgery ...............................................10
  Outcomes on an individual level after bariatric surgery ..............................10
  Outcomes on a family level after bariatric surgery ......................................11

Significant concepts ..........................................................................................12
  The definition of ‘family’ ..............................................................................12
  Family functioning .......................................................................................13

RATIONALE FOR THIS THESIS .........................................................................15

AIMS .....................................................................................................................15

THEORETICAL PERSPECTIVE ..........................................................................16
  Family Systems Nursing ...............................................................................16
  Boss Family stress management model ......................................................17

METHODS ...........................................................................................................19

Setting .................................................................................................................20
Study I ..................................................................................................................20
  Participants ..................................................................................................20
  Data collection ...........................................................................................21
  Data analysis ..............................................................................................21
Study II ...............................................................................................................22
  Participants ..................................................................................................22
  Data collection ...........................................................................................23
  Data analysis ..............................................................................................24
Study III ..............................................................................................................25
  Participants ..................................................................................................25
  Data collection ...........................................................................................25
  Data Analysis ............................................................................................26
Study IV ..............................................................................................................27
  Participants ..................................................................................................27
  Data collection ...........................................................................................28
  Data analysis ..............................................................................................29
Ethical considerations ......................................................................................30
  Ethical considerations about family research interviews ............................31

RESULTS ............................................................................................................33
  Families’ perspectives on family functioning (I, II) ......................................33
ORIGINAL PAPERS


4. Bylund, A., Benzein, E., Thorell, A., Persson, C. Associations between family functioning, weight loss, sex and Health Related Quality of Life two years after Gastric bypass surgery. In manuscript.

The copyrights to the published studies belong to the journal and the permission have been obtained from each journal for reprint in this thesis.
INTRODUCTION

Apart from having major implications for cardio-metabolic health and Quality of life, obesity is an individual and family health concern. Undergoing gastric bypass (GBP) surgery involves drastic changes in eating habits and lifestyle for the patient, and it is likely that these changes and new behaviors affect the entire family (Woodard et al., 2011). Family functioning has been shown to be a factor that impacts overall health, management of self-care in chronic illness, and maintenance of healthy behaviors (Ross, 1990; Ryan et al., 2005, Årestedt et al., 2013). Family functioning refers to the system of communications and interactions within the family, which forms a dynamic relationship of reshaping values and behaviors (Ryan et al., 2005). Earlier research has suggested that the quality of social support and family environment may influence the outcomes of bariatric surgery (Ferriby, 2015; Lent, 2016). However, an ongoing challenge in clinical practice is the identification of families in need of supportive interventions following GBP. The use of a validated screening instrument in this setting is therefore warranted. Thus, the focus of this thesis is on family functioning following GBP, from the perspectives of the individual and family.
**INTRODUCTION**

Apart from having major implications for cardio-metabolic health and Quality of life, obesity is an individual and family health concern. Undergoing gastric bypass (GBP) surgery involves drastic changes in eating habits and lifestyle for the patient, and it is likely that these changes and new behaviors affect the entire family (Woodward et al., 2011). Family functioning has been shown to be a factor that impacts overall health, management of self-care in chronic illness, and maintenance of healthy behaviors (Ross, 1990; Ryan et al., 2005; Årestedt et al., 2013). Family functioning refers to the system of communications and interactions within the family, which forms a dynamic relationship of reshaping values and behaviors (Ryan et al., 2005). Earlier research has suggested that the quality of social support and family environment may influence the outcomes of bariatric surgery (Ferriby, 2015; Lent, 2016). However, an ongoing challenge in clinical practice is the identification of families in need of supportive interventions following GBP. The use of a validated screening instrument in this setting is therefore warranted. Thus, the focus of this thesis is on family functioning following GBP, from the perspectives of the individual and family.

**BACKGROUND**

**Obesity: a chronic disease**

The World Health Organization (WHO) has deemed obesity, a chronic disease, and as one of the dominating health issues of the 20th century (WHO, 2015). Worldwide, obesity is responsible for approximately 2.8 million deaths per year and is the fifth leading cause of death (WHO, 2013). Earlier research findings have indicated that obesity increases the risk of heart and coronary artery diseases, type 2 diabetes, infertility, and some forms of cancer. (SBU, 2002; WHO, 2015). Additionally, obesity has been shown to have a strong negative impact on health-related quality of life (HR-QoL). Approximately, 500 million adults of the world population are in the obesity weight category, based on the calculations of the body mass index (BMI). The population designated overweight and obesity has increased in Sweden. The frequency of overweight (BMI ("kg/m^2"): 25.00–29.99) is higher among men, 42% than women 29%. The frequency of obesity (BMI > 30) is approximately 14% and equally distributed among men and women (The Public Health Agency of Sweden, 2015; SOReg, 2013). Obesity has a variety of causes. Previous research findings suggest that genetic, metabolic, and lifestyle factors, often in combination, play a role in the cause of obesity. Obesity has a major impact on well-being, HR-QoL, and social relationships (Ryden et al., 2001; SBU, 2002; Groven et al., 2010; Pachucki & Goodman, 2015). Some researchers have reported that obesity is more frequently found among lower socio-economic groups, whereas others have reported that obesity has generally increased and is found in all socio-economic groups (Ljungvall et al., 2012). Concurring with these findings, WHO (2016) has observed a dramatic rise in obesity among low- and middle-income countries, which differed from their previous findings of obesity being associated with high-income countries. Obesity is also associated with different mental health conditions (e.g., depression, anxiety, and eating disorders). Specifically, binge eating is more common among persons seeking bariatric surgery (Dawes et al., 2016; Meule et al., 2014). Mental health conditions and obesity can have a mutual
association that is potentially enhanced by the strong stigmatization of obesity, which may lead to the continuation or worsening of the obesity condition and related mental health conditions (Brewis, 2014; Puhl & Heur, 2009).

**Obesity and stigmatization**

Obesity is associated with social stigma and discrimination (Brewis, 2014; Hansson et al., 2010; Puhl & Heur, 2009; Puhl et al., 2015; Wee et al., 2012). Persons with obesity are often subjected to discrimination in various contexts, including workplace, school, health-care settings, and interpersonal relationships (Hansson et al., 2010). Family members are one of the most common sources of stigma, by making nasty comments or causing embarrassment in social situations (Puhl & Brownell, 2006). Stigmatization often includes both bullying and discriminating treatment. Weight stigmatization is associated with serious health consequences, both mental and physical (e.g., negative impact on HR-QoL, depression, anxiety, low self-confidence, suicidal thoughts, unhealthy eating behavior, and avoidance of medical treatment) (Hansson et al., 2010; Puhl & Heur, 2009). In part, people seek a long-term and substantial loss of weight to reduce this stigma (Fardouly & Vartanian, 2012). From a theoretical perspective, achieving a normal weight per BMI is a possible solution to reduce the stigma of obesity. However, previous research has indicated that stigma does not diminish with weight loss (Vartanian & Fardouly, 2013). Somewhat surprising, some evidence indicates that persons who have undergone bariatric surgery are more negatively valued than persons who have undergone behavioral treatment for weight loss. Persons who have undergone bariatric treatment are perceived as less competent and not taking responsibility for their weight loss. This perception is often based on the belief that bariatric surgery is an easy solution that does not require any effort from the individual (Vartanian & Fardouly, 2013). However, bariatric surgery treatment requires strict and lifelong demands on diet and lifestyle changes (e.g., increased physical activity to maintain weight loss).

To reduce the stigma surrounding excess weight and change society norms, a movement was started by the association for Size Diversity and Health in 2000, called *Health at Every Size* (HAES). HAES started with an aim for social justice to create a more respectful community, no matter the size (weight) of the person. The aim has shifted its focus from weight to health; for example, HAES advocates for the adoption of body acceptance and healthy lifestyle habits (e.g., mindful eating and exercise to improve HR-QoL) (Penney et al., 2015). HAES works through preventing work of information to the public and lifestyle interventions in different countries (e.g., United States, Great Britain, Australia, and Sweden). While HAES has generally received a
positive response on combating anti-obesity bias, there have also been criticisms from researchers on the risk of normalizing ill health that is caused by obesity (Katz, 2012).

**Bariatric Surgical treatment**

Bariatric surgery is a term used for various surgical procedures in treatment for obesity. The first type of bariatric procedure was the jejunoileal bypass, which was used before the 1970s until the early 1980s (Buchwald, 2014). The procedure was an absorptive bariatric surgery, which led to substantial long-term weight loss. However, it was also connected with high rates of adverse events such as serious nutrient deficiencies, liver failure, and fatal electrolyte imbalance. The gastric bypass, ROUX-en-Y (GBP) was developed as an alternative procedure. GBP is a mix of both restriction and malabsorption techniques. By creating a small pouch in the proximal part of the stomach, which is connected to the middle part of jejunum, it thereby bypasses the rest of the stomach and duodenum. In the 1990s, the procedure changed from an open surgical procedure to a laparoscopic procedure, which has a rather low relative risk for complications. A Swedish study from the Scandinavian Obesity Surgery Register reported a risk of 3.4% for serious postoperative complications within 30 days of surgery after bariatric surgery (Stenberg et al., 2014). However, some common complications associated with GBP include leakage, bleeding, and small bowel obstructions (Fernandez et al., 2004; SOReg, 2015). Nutrient deficiencies of iron and vitamin B12 are also common, and patients are strongly recommended to use supplements to offset these deficiencies for the rest of their life (Concors et al., 2016). Since GBP represents most of the bariatric procedures performed to date (Ansgrisani et al, 2015; SOReg, 2015), this kind of surgery was chosen for inclusion of participants in this thesis.

Since 2011 approximately 7,000 bariatric operations per year have been performed in Sweden (SOReg, 2012; 2014). According to national indicators and recommendations for bariatric surgery, the future use of bariatric surgery will increase to an estimated 15,000–20,000 people per year in Sweden (NIOK, 2009). More women than men are choosing to undergo bariatric treatment, 75% and 25%, respectively (SOReg, 2014). Although, bariatric surgery is a tool, not an universal solution to gain increased health (SBU, 2002). Surgical treatments, including GBP for obesity, require lifelong changes in diet and lifestyle (Lindroos & Rössner, 2007).
Criteria and evaluation for bariatric surgery

To be eligible for GBP, the patient is required to have a history of several serious attempts to lose weight by using conventional dietary reduction treatments and be willing to accept lifelong changes in diet and exercise. The national medical indication for bariatric surgery in Sweden and Europe is a BMI >35 kg/m² (Swedish Association of Local Authorities and Regions, 2011; Fried et al., 2013). Internationally defined criteria have been suggested by the International Federation for the Surgery of Obesity–European Chapter and European Association for the Study of Obesity (Fried et al., 2013).

If the criteria for GBP are fulfilled, a comprehensive assessment prior to surgery should be conducted, which includes the following: weight history, weight loss attempts, a physical examination with cardiovascular and sleep apnea evaluation, and a blood test to check for nutritional deficiencies. In addition, a history of mental health is evaluated to identify any severe psychiatric illness or eating disorders. The perceptions and expectations of the patient with regards to the weight loss treatment are also investigated. About two weeks before surgery, it is generally recommended that patients follow a very low calorie diet. This is recommended mainly to improve the conditions for laparoscopy surgery by reducing liver size and abdominal fat, which in turn reduces postoperative complications (Anderin et al., 2015; Van Niewenhove, 2011). Most bariatric clinics offer group informational meetings with nurses and dieticians who specialize in obesity care regarding the effect of bariatric surgery and advise about self-care for the patient such as nutrition, activity, potential side effects of surgery (e.g., dumping syndrome connected with nausea, fatigue, dizziness, fainting, rapid heartbeat, and abdominal pain).

Outcomes on an individual level after bariatric surgery

Substantial evidence indicates that bariatric surgery treatment has a long-lasting effect on obesity and its comorbidity and mortality (Colquitt et al., 2014; Sjöström et al., 2013). These results have led to an increased number of bariatric procedures during the last decade (SBU, 2002).

Previous research has examined the effects of bariatric surgery; for example, a substantial loss of weight represents a significant change, both physical and mentally, and has an impact on daily life and social relationships (Harrington, 2006). Studies have shown that the first two years after surgical treatment is associated with positive changes in eating behavior, body perception, social functioning, and HR-QoL (Rydén et al., 2001; Livhits et al., 2010; Sarwer et al., 2010). Persons with obesity report lower HR-QoL than the general population and persons with other chronic illness such as diabetes or laryngeal cancer (Wee et al. 2012). Persons who seek bariatric surgery have lower HR-
QoL than persons with obesity who do not seeking bariatric treatment (Wee et al., 2012). Many studies report improvements after GBP both in the short- and long-term perspectives (Karlsson et al., 2007; Strain et al., 2014; Raoof et al., 2015). Raoof et al. (2015) measured HR-QoL 12 years after GBP and found that HR-QoL was improved but not as high as for the general population and better weight loss outcomes were associated with higher HR-QoL. However, previous research also indicates a big variation with unsatisfying result for some persons (Groven et al., 2010; Rydén et al., 2001). Some researchers have reported that approximately 20% of the patients do not achieve significant weight loss or experience weight regain (Abilès et al., 2010; Greenberg et al., 2009). Some patients develop or relapse into an eating disorder and experience decreased psychosocial- and HR-QoL. The ability to implement and maintain lifestyle changes and develop management strategies is important to obtain sustainable health effects (van Hout & van Heck, 2009; Sarwer et al., 2008).

Outcomes on a family level after bariatric surgery

The involvement and engagement of family and health care is of utmost importance to obtain successful long-term health outcomes. To prepare families for both lifestyle and psychosocial changes associated with bariatric treatment, health-care professionals need to develop health-promoting strategies (Harrington, 2006). Earlier research has mainly focused on evaluating different surgical techniques, amount of weight loss, self-reported HR-QoL, and patients' experience of daily life after bariatric surgery (van Hout et al., 2006; Bond, 2008; Wadden, 2009; Engström & Forsberg, 2011; Magdaleno et al., 2011). There are limited studies that focus on the impact on families and how they handle and adjust to lifestyle and psychosocial change after GBP (Livhits et al., 2011; Zeller et al., 2011; Ferriby, 2015). Ferriby et al. (2015) reviewed 385 articles published between 1990 and 2014 that reported on relationship factors and relationship quality and bariatric surgery among married couples. Four studies reported on a negative association between being married and postoperative weight loss, whereas other studies found no evidence for this association. Ferriby et al. concluded that limited research exists in this area, which requires further investigation of social factors such as relationship status to explore the dynamic change from pre- to post-surgery (Ferriby, 2015). Findings from earlier studies indicated that patients who had undergone bariatric surgery are influenced by their family environment (Woodard et al., 2011). When social support is available from family after bariatric surgery, improved results regarding weight loss are noticeable (Engström & Forsberg, 2011, Libel et al., 2016; Livhits et al., 2011). Others have reported of unintended consequence and inconsistent support (Moore, 2016). Even though there is a higher degree of closeness in
the relationship, especially within the first year after GBP (Poiries et al., 2016). Some persons report that their intimate partner start to feel insecure within the relationship due to surgery and weight loss, expressed as feelings of intimidation, jealousy leading to a higher degree of insecurity in the relationship (Andrews, 1998; Romo & Dailey, 2014; Moore, 2016). Romo & Dailey’s study indicated that couples weigh loss communication had an impact on health and the relationship. Other studies have investigated what effect bariatric surgery have on family members the so called “rippled effect” whereby change in om family member influence others. Some have reported a decrease in obese adult family members (Woodard, et al., 2011, Willmer et al., 2015). Others has reported that partners gained weight (Madan, 2005). Family plays an important role regarding the well-being and health of the individual. Family attitudes and routines have an impact on how family members take care of their health (Paavilainen et al., 2006).

**Significant concepts**

This thesis focus on family functioning after GBP. In the following section two significant concepts, family and family functioning will be described.

**The definition of ‘family’**

Family as a concept is multifaceted and has as many definitions as there are different arrangements of families. From a traditional perspective, family is defined by marriage, blood relationships, or shared household; and it does not always include the entire definition of family as reflected in today’s society (Stuart, 2001). The emphasis in a traditional family definition is on the construct of the family. Family may be viewed as connected by structure, function, or emotional ties (Kirkevold, 2003). Using a holistic starting point family can be defined as connected to each other by strong emotional ties or a feeling of belonging or devotion for each other (Wright & Leahey, 2013). This entails that the focus is on feelings of belonging and closeness for the constellation of persons that call each other family. Wright & Leahey (2013) have an open and inclusive definition of family that is the starting point for this thesis: "Family is who they say they are" (Wright & Leahey, 2013, p. 60). This means that the individual defines who they think is a part of the family. The choice to use this definition of family is to remain open to an individual's choice of their definition of family (Wright & Leahey, 2013). Using this self-definition of family opens the possibility to different structures of family (e.g., single-parents, same sex families and other significant persons such as friends) (Benzein, Hagberg, Saveman, 2012). A self-defined family can also consist of a couple. This family definition is based on emotional closeness and interactions that is not limited to blood ties or a legal agreement. This also
means that traditional family members can be excluded. Reasons for exclusion can be disagreements or lack of trust related to earlier conflicts (Benzein et al., 2012).

**Family functioning**

Family functioning and well-being are concepts that create the overarching concept of family health (Friedman, 2003). In this thesis, to describe the factors that may contribute to family health, the aspects of family functioning are studied, instead of family health, since it is a comprehensive and complex concept.

Family functioning can be defined as the ability of family members to interact, react, and respond to each other (Ryan, 2005). Communication, interaction, problem-solving, affective responsiveness, flexibility, and adaptability are different dimensions of family functioning (Epstein et al., 1983; Ryan, 2005). Family functioning is of major importance in maintaining the well-being of the family and describes how family members engage and support each other in different life situations (Denham, 2003; Ryan, 2005, Dai et al, 2015). When families encounter challenges, family functioning becomes an important factor in the handling of the situation and can contribute to a sense of belonging and identity (Cigoli & Scabini, 2006; Kaakinen et al., 2015). Family functioning aims to organize the relationships and positions of members in the family system to develop and manage changes (Epstein et al., 1983; Ryan et al. 2005; Lundsbye, 2010). Changes around or within the family system places demands on the family (e.g., family members, relatives, neighbors, and society). How families handle and face change depends, to some degree, on how clear family functioning is to each member of the family. Every family has their own special functioning that places specific expectations on each member (Lundsbye et al., 2010).

Views on lifestyle, diet, and psychological well-being are an inherent part of the nurturing aspects of family function, and despite this fact, families can fail to connect this with illness and health. Within most families, there exist different beliefs on what contributes to illness and health, which in many cases first get discussed when a problem arises (Kaakinen et al., 2015). Healthy family functioning is not defined by the lack of conflicts, instead it is defined by the ways families interact and handle conflicts and challenges (Kaakinen et al., 2015; Lundsbye et al., 2010; Ryan et al., 2008). By describing family functioning, the significance of the resources and beliefs of the family about illness and health became visible (Ryan et al., 2005; Cigoli & Scabini, 2006). Through increased awareness about the factors that have a supportive and encouraging function on family members, families can contribute to and create their own family health (Ryan et al., 2009; Wiliamson & Carr, 2009; Wright & Leahey, 2013).
RATIONALE FOR THIS THESIS

From the introduction of this thesis it can be concluded that there is a limited amount of studies that addressed a family perspective after GBP. When a family member goes through changes requiring new life conditions (e.g., after GBP), these changes may affect the whole family. The new situation may put demands on both the individual who had surgery and the family as a unit. By creating an understanding about how families perceive their new situation, and how the family will function after a member undergoes GBP, we can describe how families can influence change. Increased knowledge about the effects of family functioning and caring within families can contribute to increased well-being both in a short- and long-term perspective. Through this knowledge we can develop caring strategies to identify family’s needs and resources for those families that are in need of support.

AIMS

The overall aim of this thesis was to investigate aspects of family functioning after a family member had undergone GBP surgery. The specific aims of the studies are the following:

I. To explore families’ experiences of family functioning in relation to GBP.

II. To develop a grounded theory to explain the behavioral pattern of families with a member who had undergone GBP, as a measure against obesity.

III. To evaluate the aspects of reliability and validity in the General Functioning Scale in a Swedish bariatric sample, focusing on factor structure.

IV. To explore how general family functioning, percent weight loss, and sex are associated with health-related quality of life (HR-QoL), two years after GBP surgery.
RATIONALE FOR THIS THESIS

From the introduction of this thesis it can be concluded that there is a limited amount of studies that addressed a family perspective after GBP. When a family member goes through changes requiring new life conditions (e.g., after GBP), these changes may affect the whole family. The new situation may put demands on both the individual who had surgery and the family as a unit. By creating an understanding about how families perceive their new situation, and how the family will function after a member undergone GBP, we can describe how families can influence change. Increased knowledge about the effects of family functioning and caring within families can contribute to increased well-being both in a short- and long term perspective. Through this knowledge we can develop caring strategies to identify family’s needs and resources for those families that are in need of support.

AIMS

The overall aim of this thesis was to investigate aspects of family functioning after a family member had undergone GBP surgery.

The specific aims of the studies are the following:

I. To explore families’ experiences of family functioning in relation to GBP.

II. To develop a grounded theory to explain the behavioral pattern of families with a member who had undergone GBP, as a measure against obesity.

III. To evaluate the aspects of reliability and validity in the General Functioning Scale in a Swedish bariatric sample, focusing on factor structure.

IV. To explore how general family functioning, percent weight loss, and sex are associated with health-related quality of life (HR-QoL), two years after GBP surgery.
THEORETICAL PERSPECTIVE

This thesis has been developed from a caring science in combination with a family system nursing perspective in which the world is viewed and understood from wholeness and relations (Bateson, 1998; Öqvist, 2008; Wright & Leahey, 2013). These perspectives have influenced the planning and performance of the studies. Boss Family stress management model has been used to enrich the understanding of the results, especially in studies I and II.

Family Systems Nursing

Family nursing care can be defined as a system that views families as integral members of the health-care team and conceptualizes the family as the unit of care or as part of the social support system with the incorporation of the care from individuals (Bell, 2013). Family nursing care adds value by identifying the strengths of the individual and family to allay illness and support the recovery process (Bell, 2013). Family nursing care entails use of the nursing process applied to the family in both healthy and illness contexts (Friedman, 2003). This means that the nurse and the family can collectively decide the level of family involvement based on the needs expressed by the families. Even though nursing care is individually focused, the family is often the most important group and resource for the individual. In some cases, family is viewed as a stressor (Friedman, 2003).

In Sweden, the following two views on family nursing care have developed: family-related care and family-centered care (Benzein, Hagberg & Saveman, 2012). In family-related care, the focus is on the patient, and family is regarded as the context around the patient or the other way around focusing on the family members with the patient as context (Benzein, Hagberg & Saveman, 2012). A family-centered perspective focuses on the family as a unit. Family is regarded as a system that has mutual impact on each other, and the interactions, relationships, and reciprocity is of significance (Benzein, Hagberg & Saveman, 2012). This is referred in the literature as Family Systems Nursing.

Family systems nursing has roots in system theory and based on the Aristotelian view that “The whole is greater than the sum of its parts” (Bertalanffy, 1973), which represents the idea of nonsummativity. In essence, this abstract principle directs the attention to searching for patterns that exist between individuals rather than within individuals (Hanson in Kaakinen, 2015; Lundsbye, 2010). The relation between the parts highlights the whole and gives it a new meaning/dimension. A family can be regarded as the whole,
where all those included are connected through individual relationships that have an influence on each other. Through these relationships, the reality we live in is co-created (Lundbye, 2010). Thus, reality is created through interactions with our environment and surroundings (Maturana, 1987; Bateson, 1998; Öqvist, 2008). Using a system theoretical perspective embraces acceptance for a diversity of perceptions (Wright & Leahey, 2009). Today, our society is characterized by an individual-centered approach of the human being that is influenced by Western ideas of man as special and unique. In systems theory, these ideas are developed and contextualized; every individual is included in a whole that are connected as links in a cycle (Öqvist, 2008). The emphasis is on the interactions between the individual and its environment. Illness and health can thus be viewed as an ecological system (Bateson 1998). By focusing on the whole situation, both problems and possibilities are accounted for and the parts cannot be discarded from the whole (Öqvist, 2008). As relationships are defined through communication and interaction, the challenges and difficulties of one member of the family cannot be understood as isolated from this context, since all parts are interconnected (Benzein, 2010; Lundbye et al., 2010; Ryan, 2005; Wright & Leahey, 2013). Through this view, a healthy family system can better promote the health of each of its members.

**Boss Family stress management model**

Boss (2002) family stress management model is a reconceptualization of Ruben Hill (1949) family stress theory (Boss, 2002). Boss (2002) define family stress as change, thus interchangeable concepts. Stress or change in itself is neutral, neither good or bad. The effect of stress is dependent on how the system, family, reacts on the situation. Family stress is thus the result from a situation or experience that has the potential to cause change within the system. The perception of change depends on families perception of the situation. Families external an internal context influences stress for example, the times in their lives, under which condition they live e.g. culture, economics, development, class, gender and age influence. Internal; structural aspects how families function tighter, role assignment, rules and clarity in communication, families perception and appraisal of change. How families perceive what they experience. The model focus on the internal context because it is within the families control. Boss (2002) view families from a dialectical perspective; both family as a unit (unified perception) and the individual perspective because they may vary. Adding these perspectives together will provide a deeper understanding of how change is experienced. Families deal with stress according to what life circumstances they live in (life cycle, economics) and perception and beliefs about the change/stress. Family stress, crisis and strain are considered as different concepts. Family stress is a
state of disturbed equilibrium, family crisis is an acute point of disequilibrium, either the family is in crisis or not, strain refers to a mismatch between pressure and support, meaning that the family system has resources and strengths, but do not know where they are most needed. In strain families still function but in crisis (caused by severe stress) they cannot function. Perception and family context is important keys to understand family stress (Boss, 2002).
METHODS

Table 1. Overview of the specific studies (n = 367 participants)

<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Participants</th>
<th>Data collection</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Qualitative</td>
<td>9 families (n = 19) with a family member who underwent GBP 3 months earlier</td>
<td>Family interviews</td>
<td>Hermeneutic analysis inspired by Gadamer</td>
</tr>
<tr>
<td></td>
<td>Explorative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>Qualitative</td>
<td>16 families (n = 36) with a family member who underwent GBP</td>
<td>Family interviews</td>
<td>Classic grounded theory</td>
</tr>
<tr>
<td></td>
<td>Theory generating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>Quantitative</td>
<td>163 participants who underwent, GBP 3 months earlier</td>
<td>Self-reported questionnaires</td>
<td>Item analyses</td>
</tr>
<tr>
<td></td>
<td>Evaluative</td>
<td></td>
<td></td>
<td>Factor analysis</td>
</tr>
<tr>
<td>IV</td>
<td>Quantitative</td>
<td>153 participants with a family member, who underwent GBP 2 years earlier</td>
<td>Self-reported questionnaires</td>
<td>Binary logistic regression analyses</td>
</tr>
<tr>
<td></td>
<td>Explorative</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This thesis was influence by the system theory assumption that mutual systems are linked together, and that change in one part of the system will affect the whole system (Öquist 2008). Another assumption following the stance of system theory is the constructivist assumption that reality can be viewed differently by different people. Humans create meaning of reality and the context shapes the reality he/she shares with others (Maturana & Varela 1987). In other words, reality is multiverse (Maturana, 1987), and each person’s view should be regarded as equally true (Benzein et al., 2010). These perspectives can be used to be able to describe and understand a phenomenon from different angels, different research questions may be posed that require different research methods (Polit & Beck, 2012). Therefore, the studies in this thesis have different designs and different data collection and analyses approaches to explore the significance of family functioning for patients that undergone GBP as a treatment against obesity and their family
members (Table 1). The results from the first study provided background knowledge about family functioning which laid the foundation for development of the designs in the following studies.

Setting

Families and individual participants (I-IV) were recruited from a university-affiliated bariatric center in an urban area in the central of Sweden.

Study I

Participants

Participants were recruited from September 2011 to February 2012. Inclusion criteria comprised of a family member who underwent GBP within the last 3 months and at least one additional family member that was willing to participate in the family research interview. Exclusion criteria comprised difficulties speaking Swedish and families that had another member who had bariatric surgery. Potential participants were approached at a 6-week follow-up visit at the bariatric center. Nurses, specialized in obesity care, provided oral and written information about the study. After providing oral consent, the researcher called potential participants to give additional information and answer questions regarding the study. The definition of “family is who they say they are” was explained, and the participants who had undergone GBP, decided whom they would like to participate in the interview. The consenting participants were contacted and a time and place for the interview was scheduled. The characteristics of the families are shown in Table 2.

Table 2. Characteristic of included families.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>26-64</td>
</tr>
<tr>
<td>Person undergone GBP (n)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>7</td>
</tr>
<tr>
<td>Male</td>
<td>2</td>
</tr>
<tr>
<td>Marital status (n)</td>
<td></td>
</tr>
<tr>
<td>Married/ Cohabiting</td>
<td>8</td>
</tr>
<tr>
<td>Single</td>
<td>1</td>
</tr>
<tr>
<td>Length of relationship (years)</td>
<td>7-45</td>
</tr>
<tr>
<td>Interviewed family members (n); person who undergone GBP and</td>
<td></td>
</tr>
<tr>
<td>Partner</td>
<td>7</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
</tr>
</tbody>
</table>
Data collection

Family interviews as method for data collection was chosen to collect rich narratives about families’ experiences of family functioning after GBP and to emphasize the family’s interactional process (Donalek, 2009). The majority of the interviews were conducted in a secluded room at a university research department. One of the family interviews was held in an office room at the participant’s working place. The interviews were conducted by the author of this thesis and were held at two different occasions with a 1-2-week interval. The first interview included a description of the study’s aim, time frame, and an explanation that participation was voluntary and that participants could choose not to answer questions that were perceived intrusive.

An interview guide with study topics was used (Appendix 1). The guide comprised questions about participants’ current and past situation, perceptions of family interactions, lifestyle, and routines. Open questions were used, for example, “Can you tell me about your present situation?” and “Can you tell me more about these situations or give me an example of this?” Questions were directed to all family members to gain access to different perspectives and highlight the familial interaction, for example, “What do you think about what ‘Lisa’ said?” The second interview began by summarizing the first interview and the family were asked if they had reflected over something since the last occasion. The purpose was to get rich data. Interviews lasted between 40–90 minutes and were mp3-recorded.

Before data collection, the interviewer wrote down her own thoughts and feelings about the topic to increase awareness of pre-understanding. Notes were written before and after the interviews and included observations about the interactions and conversation. As the interviewer’s understanding developed during the study, critical reflections were continuously performed. This was in line with Gadamer’s assumption to be as conscious as possible about one’s prejudice and try not to let prejudice dominate the analysis process. Gadamer refer to prejudice not in a negative way but as: ”A judgement that is rendered before all elements that determine a situation have been finally examined (Gadamer, 2004).

Data analysis

Data were transcribed verbatim and analyzed by a Gadamer-inspired hermeneutic method (Flemming et al., 2003), based on Gadamer’s philosophy about the process of understanding (Gadamer, 1960/2004). According to Gadamer, understanding is formed through a dialectic process of questions and answers, language, and interpretation and is based on our prejudice (Gadamer et al., 1960/2004). The analysis was characterized by searching for meaning in emerging interaction patterns, key issues, and recurrent experiences. Through shifting perspective between parts and whole, defined as
the hermeneutical circle, a new understanding was expanded. An interpretative approach was achieved through reading the interviews and questioning the text (e.g., Could this be an expression for something else? Can there be alternative meanings/interpretations?) Through these questions, an interpretation of families’ experiences was formulated. The analysis was performed per the following steps:

Step 1: All transcripts were read several times to get a sense of the whole and to search for the essential meaning of the text. Throughout the analysis, every attempt was made to keep questioning open and challenge the meaning and interpretations.

Step 2: Each interview was then reread to identify and gain an understanding of recurrent experiences and patterns. Similar experiences were clustered into themes. One overall theme emerged through this process.

Step 3: The next interpretative step was to search for meanings within this theme and explore the families’ experiences in depth. The research team re-examined the interviews with the identified theme in mind, focusing on the families’ interrelationships and questioning their own prior understandings. To gain an increased understanding, the research team moved back and forth between looking at sections of the text and relating them to the meaning of the whole text, resulting in the emergence of a family functioning pattern. The analysis was reviewed, discussed, and refined by the research team to ensure credibility.

Study II

Participants

The study was conducted from September 2014 to June 2015. The inclusion criterion for patients was having undergone GBP surgery for obesity-related reasons. The exclusion criteria were having a previous weight loss surgery and the inability to communicate in Swedish. With the support of two nurses who specialized in obesity care, patients at their two-year follow-up visit were asked to participate in the study and asked to invite at least one family member. For this study, a family member is defined as a person identified by the patient as family member, including biological relatives or those regarded as significant in patients’ lives. Inclusion criteria for family member was that they did not have any previous bariatric treatment. The characteristics of the families are shown in Table 3.
the hermeneutical circle, a new understanding was expanded. An interpretative approach was achieved through reading the interviews and questioning the text (e.g., Could this be an expression for something else? Can there be alternative meanings/interpretations?) Through these questions, an interpretation of families' experiences was formulated. The analysis was performed per the following steps:

Step 1: All transcripts were read several times to get a sense of the whole and to search for the essential meaning of the text. Throughout the analysis, every attempt was made to keep questioning open and challenge the meaning and interpretations.

Step 2: Each interview was then reread to identify and gain an understanding of recurrent experiences and patterns. Similar experiences were clustered into themes. One overall theme emerged through this process.

Step 3: The next interpretative step was to search for meanings within this theme and explore the families' experiences in depth. The research team re-examined the interviews with the identified theme in mind, focusing on the families' interrelationships and questioning their own prior understandings. To gain an increased understanding, the research team moved back and forth between looking at sections of the text and relating them to the meaning of the whole text, resulting in the emergence of a family functioning pattern. The analysis was reviewed, discussed, and refined by the research team to ensure credibility.

Data collection

The interview commenced the same way as in Study I regarding study information and the participants’ ethical rights. Family interviews was conducted with each of twelve patients, together with 1–3 additional family members (11 men and 17 women). Four of the twelve interviews were conducted individually because of timing difficulties. Most interviews were conducted at the families’ homes. Four interviews were, by the participants’ request, conducted in a secluded room at the clinic. Before the data collection the researcher wrote down her preconceptions. This included thought about how families handled everyday life and expectations of result. This self-interview was analyzed accordingly. Secondary analysis was conducted on data based on four family interviews (four men and four women) from study 1, in line with the grounded-theory concept of “all is data” (Glaser, 1978). The interviews began with an open question, with family members asked to talk about their present situation. This allowed family members’ experiences to unfold without being steered by preconceived questions. The interviews could be characterized as open conversations, as opposed to formal interviews. During the interviews, new questions and ideas emerged in relation to the study that were explored in later interviews, for example, “Can you give me an example of an unexpected situation? How do you deal with that?” Later, more specific questions were asked to ensure saturation of the categories and concepts in the emerging theory (Glaser, 1998). This procedure formed part of theoretical sampling (Glaser, 1998). The interviews took 45–110 minutes and were mp3-recorded and subsequently transcribed. Field notes were taken, consisting of content and observational data (e.g., social interactions) from the interview situation.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>18-67</td>
</tr>
<tr>
<td>Person undergone GBP (n)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>8</td>
</tr>
<tr>
<td>Male</td>
<td>8</td>
</tr>
<tr>
<td>Marital status (n)</td>
<td></td>
</tr>
<tr>
<td>Married/Cohabiting</td>
<td>11</td>
</tr>
<tr>
<td>Single</td>
<td>3</td>
</tr>
<tr>
<td>In a romantic relationship</td>
<td>2</td>
</tr>
<tr>
<td>Length of relationship (years)</td>
<td>7-lifelong</td>
</tr>
<tr>
<td>Interviewed family members (n); person who undergone GBP and</td>
<td></td>
</tr>
<tr>
<td>Partner</td>
<td>9</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 3. Characteristics of families.
Data analysis

Data were collected and analyzed simultaneously, using constant comparative analysis, with theoretical sampling guiding what data would be collected next (Glaser, 1998). After each interview, the transcribed interview and field notes were analyzed and coded line-by-line, as the first part of the open coding phase. Incidents were identified, compared and grouped into open codes and concepts. New codes and concepts from the last interviews were compared with previous coding. In the analysis, the emphasis was on similarities, differences, and variations within the data, to detect repeating family patterns of behavior. Questions were asked to the data, “What is this study on?” “What is happening in the data?” “What do the incidents indicate?” “What is the families’ main concern and how do they try to resolve it?” These questions enable the researcher to be theoretically sensitive (open and susceptible to concepts that emerge from data) and to conceptualize, as opposed to being stuck at a descriptive level (Glaser, 1998; Glaser, 2010). The questions also aided the researcher in questioning her preunderstanding during the analysis. Memos were written throughout the analysis, to capture ideas and clarifying hypotheses relating to the concepts and their interconnection to each other (Glaser, 1998; Glaser & Holton, 2007). Through constant comparison, a core concept started to emerge. A core concept is associated with the majority of the other concepts and explains how participants resolve their main concern (Glaser, 1998; Glaser, 2010). After identifying the core concept, the analysis went into a selective coding phase, which means that coding is limited to concepts that are related to the core concept. Further data collection and coding, focused only on concepts related to the core concept. To saturate data, secondary analyses from study I were conducted, which led to further concept clarification. Coding proceeded until theoretical saturation was achieved, meaning that no new concepts could be identified, and there was no additional variation within existing concepts (Glaser, 1998).

In the theoretical coding phase, the relationships between the concepts and the core concept emerged through sorting the memos (Glaser, 1998). To increase the level of abstraction, constant comparison of data and concepts was conducted through writing memos on memos. The types of theoretical codes that is generated may vary (e.g., processes, causes, contexts, and conditions) (Glaser, 1978). Through the constant comparative analysis, the substantive theory was generated. After formulation of the substantive theory, a literature review was conducted focusing on the emerging theory as recommended by classic grounded theory (Glaser, 1998). Since all constitute data (Glaser, 1998), the literature was used as data in the constant comparative process. The literature review enriched the concept meaning and the generated theory.

Study III

Participants

Participants were recruited from June 2012 to May 2013. Inclusion criteria was that the participant had undergone GBP. Exclusion criteria comprised having an earlier bariatric surgery, a severe psychiatric disease, or an inability to speak or understand Swedish. Participants were approached by healthcare staff and informed at their 6–8 week follow-up visit at the bariatric center. Of 430 patients, 330 were eligible, and 234 (70.9 %) were included. The characteristics of the participants are shown in Table 4.

Table 4. Characteristics of participants (n=148–163)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>% (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Female</td>
<td>76.7(125)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>23.3(38)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>44.3</td>
<td>12.0</td>
<td></td>
</tr>
<tr>
<td>Weight status</td>
<td>BMI (kg/m2)</td>
<td>35.1</td>
<td>4.9</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Sweden</td>
<td>81.6(133)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>18.4(30)</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Not finished</td>
<td>1.8(3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elementary school</td>
<td>12.3(20)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>University</td>
<td>57.1(93)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>28.8(47)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income/month</td>
<td>26 858</td>
<td>12 093</td>
<td></td>
</tr>
<tr>
<td>Family status</td>
<td>Married and cohabiting</td>
<td>68.8(110)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Romantic relationship (living separately)</td>
<td>5.6(9)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>25.6(41)</td>
<td></td>
</tr>
</tbody>
</table>
Data analysis

Data were collected and analyzed simultaneously, using constant comparative analysis, with theoretical sampling guiding what data would be collected next (Glaser, 1998). After each interview, the transcribed interview and field notes were analyzed and coded line-by-line, as the first part of the open coding phase. Incidents were identified, compared and grouped into open codes and concepts. New codes and concepts from the last interviews were compared with previous coding. In the analysis, the emphasis was on similarities, differences, and variations within the data, to detect repeating family patterns of behavior. Questions were asked to the data, “What is this study on?” “What is happening in the data?” “What do the incidents indicate?” “What is the families’ main concern and how do they try to resolve it?” These questions enable the researcher to be theoretically sensitive (open and susceptible to concepts that emerge from data) and to conceptualize, as opposed to being stuck at a descriptive level (Glaser, 1998; Glaser, 2010). The questions also aided the researcher in questioning her preunderstanding during the analysis. Memos were written throughout the analysis, to capture ideas and clarifying hypotheses relating to the concepts and their interconnection to each other (Glaser, 1998; Glaser & Holton, 2007). Through constant comparison, a core concept started to emerge. A core concept is associated with the majority of other concepts and explains how participants resolve their main concern (Glaser, 1998; Glaser, 2010). After identifying the core concept, the analysis went into a selective coding phase, which means that coding is limited to concepts that are related to the core concept. Further data collection and coding, focused only on concepts related to the core concept. To saturate data, secondary analyses from study I were conducted, which led to further concept clarification. Coding proceeded until theoretical saturation was achieved, meaning that no new concepts could be identified, and there was no additional variation within existing concepts (Glaser, 1998).

In the theoretical coding phase, the relationships between the concepts and the core concept emerged through sorting the memos (Glaser, 1998). To increase the level of abstraction, constant comparison of data and concepts was conducted through writing memos on memos. The types of theoretical codes that is generated may vary (e.g., processes, causes, contexts, and conditions) (Glaser, 1978). Through the constant comparative analysis, the substantive theory was generated. After formulation of the substantive theory, a literature review was conducted focusing on the emerging theory as recommended by classic grounded theory (Glaser, 1998). Since all constitute data (Glaser, 1998), the literature was used as data in the constant comparative process. The literature review enriched the concept meaning and the generated theory.

Study III

Participants

Participants were recruited from June 2012 to May 2013. Inclusion criteria was that the participant had undergone GBP. Exclusion criteria comprised having an earlier bariatric surgery, a severe psychiatric disease, or an inability to speak or understand Swedish. Participants were approached by healthcare staff and informed at their 6–8 week follow-up visit at the bariatric center. Of 430 patients, 330 were eligible, and 234 (70.9 %) were included. The characteristics of the participants are shown in Table 4.

Table 4. Characteristics of participants (n=148-163)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>% (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Female</td>
<td>76.7(125)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>23.3(38)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>44.3</td>
<td>12.0</td>
<td></td>
</tr>
<tr>
<td>Weight status</td>
<td>BMI (kg/m²)</td>
<td>35.1</td>
<td>4.9</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Sweden</td>
<td>81.6(133)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>18.4(30)</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Not finished</td>
<td>1.8(3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elementary school</td>
<td>12.3(20)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upper secondary school</td>
<td>57.1(93)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>University</td>
<td>28.8(47)</td>
<td></td>
</tr>
<tr>
<td>Income/month¹</td>
<td>26 858</td>
<td>12 093</td>
<td></td>
</tr>
<tr>
<td>Family status</td>
<td>Married and cohabiting</td>
<td>68.8(110)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Romantic relationship (living separately)</td>
<td>5.6(9)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>25.6(41)</td>
<td></td>
</tr>
</tbody>
</table>

¹Swedish Krona

Data collection

The Swedish version of the McMasters General Functioning scale (S-GFS) (Appendix III, IV) was administered twice within a 2-week interval. The questionnaires were marked with an individual study code and distributed with a pre-addressed envelope. Up to three reminders were sent if necessary. The questionnaire comprised two parts: 1) demographic questions (e.g., sex, age, education, income, marital status, and ethnicity) and 2) the self-reported S-GFS that measure overall family functioning. The original GFS was constructed from a system-theoretical perspective of family by Epstein et al.
(1983) and was translated by Linköping University in 1993 (Appendix 3,4). The GFS is an independent scale of the McMasters Family Assessment Device. The GFS comprises 12 statements reflecting six dimensions considered as important aspects of family functioning: communication, problem solving, roles, affective responsiveness, affective involvement, and behavior control. Six items are positive statements (e.g., “we are able to make decisions on how to solve problems”) and six items are negative statements (e.g., “we avoid discussing our concerns and fears”). There are four possible responses: strongly agree, agree, disagree, and strongly disagree (Epstein et al., 1983; Ryan et al., 2005). The sum is calculated as the mean of the 12 items (range: 1–4). A cut-off value below 2.0 indicates high family functioning and a value above 2.0 indicates low family functioning (Epstein et al., 1983; Ryan et al., 2005). The instrument has been translated into over 30 languages and has been used in different contexts: psychiatric diagnosis, medical conditions, and surgical treatments (Epstein et al., 1983; Juliusdottir & Olafsdottir, 2014; Keitner et al., 1991; Mansfield et al., 2014; Ryan et al., 2006). The GFS discriminates between the general population and families with a member who has a medical or psychiatric illness (Ryan et al., 2005; Speranza et al., 2012). It has shown adequate reliability (α = .72–.92) (Baroilhet et al., 2007; Keitner et al., 1991; Miller et al., 1985; Ridenour et al., 1999; Speranza et al., 2012). Before study III started, a pilot study was conducted with a convenience sample of non-clinical participants (n = 30, university and healthcare employees), to ensure perceived readability and understanding. The analysis indicated satisfying face validity.

Data Analysis
Parametric and nonparametric tests were performed using SPSS version 20 (IBM SPSS Statistics for Windows, Armonk, NY, USA); M-plus 7.2 (Muthén & Muthén, Los Angeles, CA, USA); and R3.1.2 (R-Foundation for Statistical Computation, Vienna, Austria). The significance level was set at ≤ .05. Descriptive statistics were used for analyzing participants’ demographics: sex, age, education, income, marital status, and ethnicity. Negative-worded item scores of the GFS were transformed per guidelines (Epstein et al., 1983, Ryan et al., 2006). The score distribution was evaluated by using descriptive statistics, and the Kolmogorov-Smirnov test determined whether item scores deviated significantly from the normal distribution (Field, 2013; Kaiser, 1970). Internal consistency was evaluated using inter-item correlations, item-total correlations, and ordinal alpha (equivalent to Cronbach’s alpha) (Nunnally & Bernstein, 1994; Gadermann et al., 2012; Zumbo et al., 2007). Weighted kappa statistics were used to compare agreement between test-retest
results at item level (McHugh, 2012). At scale level, intraclass correlations for paired measurements (two-way mixed-effects model) were used. Confirmatory factor analysis (CFA) with four models was performed to evaluate whether S-GFS could be interpreted as a one-dimensional measure. The first model was a simple one-factor model, the second was slightly modified such that measurement errors were allowed to correlate. In the third model, the four response alternatives were reduced to three, where disagree and strongly disagree were merged to represent one negative response alternative. This was done because few respondents endorsed these two response alternatives, and the Swedish response alternatives differed slightly in meaning from the original English version. The adjustment was closer to the original in meaning (disagree was translated into Swedish as agree somewhat and strongly disagree was translated as disagree). The fourth model was similar to the third; however, measurement errors were allowed to correlate. Different fit indices were used to determine the models’ adequacy (Gadermann, 2012). Chi-square was calculated to determine whether data were consistent with the hypothesized distribution models (Brown, 2006). Statistical tests and fit indices were used to evaluate the model fit between the hypothesized one-factor models and data in terms of absolute fit and comparative fit. The following measurements were used: the root mean square error of approximation (RMSEA), Tucker–Lewis index (TLI), comparative fit index (CFI) and weighted root mean square residual (WRMR). Since data were categorical (e.g., ordinal data), a CFA was conducted using weighted least square with mean and variance adjusted as an estimator (Brown, 2006).

**Study IV**

**Participants**

Participants were recruited from December 2014 to March 2016. Patients who had undergone primary GBP were recruited by trained obesity nurses during the standard open clinic visit two years after surgery. Patients with difficulties reading Swedish or who lived alone were excluded. Two-hundred thirty-seven participants were included; the answering rate was 65.4%. The characteristics of the participants are shown in Table 5.
Table 5. Characteristics of participants.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>% (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td>77.8(119)</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td>22.2(34)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td>46.54</td>
</tr>
<tr>
<td>Weight status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body weight (kg)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preop./2yrs</td>
<td></td>
<td></td>
<td>113.99/79.68</td>
</tr>
<tr>
<td>BMI (kg/m²) Preop./2yrs.</td>
<td></td>
<td></td>
<td>40.13/28.06</td>
</tr>
<tr>
<td>%WL/%EWL at 2 yrs.</td>
<td></td>
<td></td>
<td>29.81/82.01</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td></td>
<td></td>
<td>77.8(119)</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td>22.2(34)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not finished Elementary school</td>
<td></td>
<td></td>
<td>2.0(3)</td>
</tr>
<tr>
<td>Upper secondary school</td>
<td></td>
<td></td>
<td>13.7(21)</td>
</tr>
<tr>
<td>University</td>
<td></td>
<td></td>
<td>52.3(80)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>32.0(49)</td>
</tr>
<tr>
<td>Income/month¹</td>
<td></td>
<td></td>
<td>29 389</td>
</tr>
<tr>
<td>Family status</td>
<td></td>
<td></td>
<td>10 633</td>
</tr>
<tr>
<td>Married and cohabiting</td>
<td></td>
<td></td>
<td>92.2(141)</td>
</tr>
<tr>
<td>with children</td>
<td></td>
<td></td>
<td>58.2(89)</td>
</tr>
<tr>
<td>Missing</td>
<td></td>
<td></td>
<td>1.3(2)</td>
</tr>
<tr>
<td>Length of relationship</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-5 yrs.</td>
<td></td>
<td></td>
<td>13.1(20)</td>
</tr>
<tr>
<td>6-10 yrs.</td>
<td></td>
<td></td>
<td>18.3(28)</td>
</tr>
<tr>
<td>&gt;10 yrs.</td>
<td></td>
<td></td>
<td>66.0(101)</td>
</tr>
<tr>
<td>Missing</td>
<td></td>
<td></td>
<td>2.6(4)</td>
</tr>
</tbody>
</table>

¹ Swedish Krona

Data collection

The administration of questionnaires to participants commenced in a similar way as in study III. The including nurses handed out the questionnaire after given consent. However, unlike study III the data collection of questionnaires were only collected at one time point. Up to three reminders were sent by mail, if necessary.

*Descriptive and anthropometric data*

Age, socioeconomic status (SES), and ethnicity were assessed by a self-report questionnaire. Data on weight in kilograms, Body mass index (BMI), and depression were collected from the Scandinavian Obesity Surgery Registry (SOReg). Body weight loss percentage was calculated as weight change/preoperative weight × 100 (Hatoum & Kaplan, 2013). BMI was calculated as weight (kg)/height (m)² (Hatoum & Kaplan, 2013). Depression was defined as taking antidepressants.

**Family functioning**

Overall family functioning was measured by the McMaster General functioning scale (GFS), Swedish version (S-GFS). The scale consists of 12 items with a 4-point scale ranging from 1 (strongly disagree) to 4 (strongly agree) (Epstein et al., 1983; Ryan et al., 2005). The GFS measures structural and interactional family patterns and includes the following dimensions: problem solving, roles, communication, affective responsiveness, affective involvement, and behavioral control (Epstein et al., 1983; Ryan et al., 2005). Scores of reversed items are converted before they are summarized and a mean value is calculated. The cut off score for low family functioning is ≥2. Scores below 2 indicate high family functioning (Epstein, 1983; Ryan et al., 2005). Previous research has shown high validity for the GFS (r = .92) and acceptable test-retest reliability (r = .71) with ethnical and socioeconomically diverse populations (Barroilhet et al., 2009; Mansfield et al., 2014). The S-GFS showed satisfactory internal consistency α = .89 and construct validity in a Swedish bariatric sample (Bylund et al., 2015).

**Self-reported health**

Perceived health was assessed with RAND-36 Health Survey (RAND-36) which is the most frequently used generic instrument for measuring HR-QoL after bariatric surgery (Lindgren et al., 2016). The measure relies upon patients’ self-reporting of health and is designed for use in clinical practice, research, and general population surveys (Ware & Sherburne, 1992). The RAND-36 consists of eight health domains: physical functioning (10 items), role limitations caused by physical health problems (4 items), role limitations caused by emotional problems (3 items), vitality/fatigue (4 items), emotional wellbeing (5 items), social functioning (2 items), pain (2 items), and general health perceptions (5 items). The RAND-36 consists of the same items as the Medical Outcome Study 36-item Short Form Health Survey (SF-36), however, its scoring system differs slightly (Lindgren et al., 2016). All scale scores range from 0 to 100 with higher scores indicating better health status. The RAND-36 has been validated in Sweden with different patient samples and normative data for the general population is available (Lindgren et al., 2016).

Data analysis

Analyses were performed with SPSS for Windows 23 (SPSS, Chicago, IL., USA). Statistical significance was considered when p ≤ .05. Sample size was calculated a priori to ensure generalizability (p ≤ .05) using the power analysis program G* Power (Erdfelder, Faul, & Buchner, Behavior Research Methods, Instruments, & Computers, 1996) as recommended by Tabachnick & Fidell (2011). Descriptive analyses on sociodemographic data,
calculated as weight (kg)/height (m)$^2$ (Hatoum & Kaplan, 2013). Depression was defined as taking antidepressants.

**Family functioning**

Overall family functioning was measured by the McMaster General functioning scale (GFS), Swedish version (S-GFS). The scale consists of 12 items with a 4-point scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*) (Epstein et al., 1983; Ryan et al., 2005). The GFS measures structural and interactional family patterns and includes the following dimensions: problem solving, roles, communication, affective responsiveness, affective involvement, and behavioral control (Epstein et al., 1983; Ryan et al., 2005). Scores of reversed items are converted before they are summarized and a mean value is calculated. The cut off score for low family functioning is $\geq 2$. Scores below 2 indicate high family functioning (Epstein, 1983; Ryan et al., 2005). Previous research has shown high validity for the GFS ($r = .92$) and acceptable test-retest reliability ($r = .71$) with ethnical and socioeconomically diverse populations (Barroilhet et al., 2009; Mansfield et al., 2014). The S-GFS showed satisfactory internal consistency $\alpha = .89$ and construct validity in a Swedish bariatric sample (Bylund et al., 2015).

**Self-reported health**

Perceived health was assessed with RAND-36 Health Survey (RAND-36) which is the most frequently used generic instrument for measuring HR-QoL after bariatric surgery (Lindgren et al., 2016). The measure relies upon patients’ self-reporting of health and is designed for use in clinical practice, research, and general population surveys (Ware & Sherburne, 1992). The RAND-36 consists of eight health domains: physical functioning (10 items), role limitations caused by physical health problems (4 items), role limitations caused by emotional problems (3 items), vitality/fatigue (4 items), emotional wellbeing (5 items), social functioning (2 items), pain (2 items), and general health perceptions (5 items). The RAND-36 consists of the same items as the Medical Outcome Study 36-item Short Form Health Survey (SF-36), however, its scoring system differs slightly (Lindgren et al., 2016). All scale scores range from 0 to 100 with higher scores indicating better health status. The RAND-36 has been validated in Sweden with different patient samples and normative data for the general population is available (Lindgren et al., 2016).

**Data analysis**

Analyses were performed with SPSS for Windows 23 (SPSS, Chicago, IL., USA). Statistical significance was considered when $p \leq .05$. Sample size was calculated a priori to ensure generalizability ($p \leq .05$) using the power analysis program G* Power® (Erdfelder, Faul, & Buchner, Behavior Research Methods, Instruments, & Computers, 1996) as recommended by Tabachnick & Fidell (2011). Descriptive analyses on sociodemographic data,
anthropometric data, and questionnaire scores were performed. Second, normality of the distributions of questionnaire scores were assessed and because of non-normal distributions of dependent variables, binary logistic regression analysis were chosen as method (Tabachnick & Fidell, 2014). Before the logistic regression analyses were performed, multicollinearity of the independent variables was examined, showing small to modest correlations. Additionally, the dependent variables were modelled into dichotomous variables, using cut off scores at the 25th percentile (Field, 2013). Forced entry method was used in the binary logistic analyses. This method is appropriate when dealing with a small set of independent variables and when the researcher do not know what independent variables would create the best prediction (Tabachnick & Fidell, 2014). In all regression analyses the same set of independent variables were used. The overall models were evaluated by \( \chi^2 \) tests of the -2 log likelihoods, to see if there was a significant difference in comparison to the null model. The significance of individual predictors was assessed by their regression coefficients (\( \beta \))s using Wald statistic. Goodness of fit (GoF) statistics were used to assess the fit of the logistic model against actual outcomes using Hosmer and Lemeshow (\( R^2_L \)) and two descriptive GoF measures: Cox and Snell \( R^2 \) (\( R^2_{CS} \)) and Nagelkerke \( R^2 \) (\( R^2_N \)) (Steyerberg et al., 2010; Tabachnick & Fidell, 2014). Odds Ratio (OR) and 95% Confidence Interval (CI) were calculated. If OR was < 1, the inverted value was calculated to aid interpretation (Pallant, 2010).

**Ethical considerations**

All studies were conducted in accordance with the Helsinki Declaration (World Medical Association, 2008) and Swedish legislation (SFS, 2003:460). Ethical approval was gained from the Regional Board of Ethics committee in Linköping Dnr: 2011/157-31 (Studies I and III) and Dnr: 2014/ 167-31 (Studies II and IV). All studies were approved by the local hospital research committee and the hospital department head. All participants were informed about the study’s purpose, told that participation was voluntary, and that the provided information would be confidential. The research process was guided by the principles of information, informed consent, confidentiality, non-malfeasance, and beneficence (WMA, 2008, Gustafson, Hermeren, & Pettersson, 2005). In Studies I and II, written informed consent was obtained after written and verbal information about the study was provided to participants before the interview started. In Studies III and IV, verbal and written information was provided and oral informed consent was gained at the follow-up visit through dieticians and nurses who specialized in obesity. A completed and returned questionnaire with signed consent was considered as
informed consent to participate. In all studies, interview transcripts, field notes, and questionnaires were marked only with the family or participants’ study code to ensure confidentiality. The researcher also clarified that the results could not be traced back to specific families or participants.

During interviews, participants may have experienced unpleasant feelings due to the sensitive nature of some questions. This was managed by informing participants at the beginning of every interview that they could decide what experiences they wanted to share and that there was an opportunity to get in contact with a psychologist if needed. The researcher was also available for support and to answer questions.

**Ethical considerations about family research interviews**

The primary aim with conducting family research interviews (Studies I and II) was to explore families’ shared experiences, interactions, values, and beliefs. As Voltelen (2016) reported in a literature review there are ethical challenges to consider interviewing more than one person when they are closely related. However, there are also advantages. Family interviews can contribute to better insight into families interaction and increased understanding how the health situation affect family process and patterns. Family interviews focus and gives voice to the shared family experience and meaning of the health situation and brings awareness of the multiple voices within the family that are autonomous and related (Reczek, 2014). In a family interview the families are regarded as specialists of their own life (Beitin, 2008; Reczek, 2014). In study I an interview guide containing topic areas was used and in study II an open question started the interview with additional follow up questions. In other words, the families and researcher did not know in advance what direction the interview would take. During interviews, there is a risk that participants may say things that they would later regret (Kvale & Brinkman, 2009; Hahr, Norlyk, & Hal, 2014). In some interviews, issues were discussed for the first time that revealed thoughts and feelings the family members had not discussed before. Therefore, the researcher tried to be attentive to family member’s reactions and not to press them to elaborate if certain issues made them look uneasy. Moreover, the power structure and tensions in family relationships may emerge during the interview, which the researcher needed to manage (Allmark et al., 2009). Therefore, the researcher avoided letting one participant dominate the interview and did not take sides between participants (Eggenberger & Nelms, 2007). Further, this was managed by posing neutral questions and allowing everyone the opportunity to provide their opinions on the subject. Nevertheless, there can also be a “therapeutic effect” if participation helps interviewees to air and discuss issues. However, the primary aim of research interview is to gather insight to the studied phenomenon, unlike therapeutic conversations that aims to facilitate participants in a particular challenge.
(Beitin, 2008). Conducting a family interview demands a sensitivity towards ethics (Eggenberger & Nelms, 2007) and the researcher has a duty to avoid conflict, since the development of conflicts is known to have a negative impact on health and wellbeing of the participants (Eggenberger & Nelms, 2007; Mellor et al., 2013).
RESULTS

Families’ perspectives on family functioning (I, II)
In the following section the result from study I and II is presented as a process; Transition: Adjusting to changes in family life (I) and as a theory; Stabilizing family life, which explains a social process of how families shared main concern related to how unexpected change is resolved.

Family Functioning in relation to GBP Surgery (I)
Family functioning and daily living is affected in different ways 3 months after a family member has undergone GBP. Analysis of family interviews identified an ongoing process of alteration related to family functioning, Transition: Adjusting to changes in family life, consisting of three different but interrelated aspects:

1) Living in ambiguous family relationships was experienced in everyday life before the surgery. Families experienced living with obesity as a complex life situation that contained contradictions. Being at home with the family was a place of acceptance for its members. In contrast to these experiences, families also experienced the opposite, namely, unsafe interrelationships characterized by detachment and decreased interaction (e.g., keeping quiet about obesity concerns). Reasons for this include the limitations imposed by obesity in combination with lacking the energy required to participate in family life (e.g., partaking in daily activities, playing with the children, and visiting extended family). Alliances developed between the family members who were active and engaged in family life and in social life outside whereas the family member limited by their obesity withdraw. The alliances created an imbalance within the family system, in which the person with obesity had been sidelined. Strained familial interrelationships could be characterized by members living parallel lives. In summary, challenges to family interaction seemed to develop into limited patterns of engagement that decreased the sense of belonging within the family. 2) Rewriting family patterns
demonstrated a profound change for the family after GBP, that entailed family members’ repositioning and changes in interaction, creating a period of uncertainty for the whole family. The physical and psychological changes (e.g., increased energy and improved self-esteem in the individual having undergone GBP) had an impact on family dynamics. New ways of communicating and interacting could sometimes collide with established ways of interacting, leading to tension within the family. Mutual beliefs that affected interrelationships were revealed, such as the belief that GBP should be kept secret as it was a way of “cheating,” or the belief that in order to change one’s status within the family from being sidelined one had to first search for confirmation outside the family as a means of acquiring a stronger sense of self or in strengthening their own identity in relation to the family. These changes resulted in a period of tension and insecurity after GBP, affecting the interrelationships within the family. Rewriting family patterns entailed greater family engagement by all members, which was expressed through being more attentive, sharing everyday family issues together, and introducing communal meals, all of which lead to a positive reorganization.

3). Strengthening cohesion. Families experienced increased involvement by all members in everyday life. This was achieved through co-creating family patterns by increasing communication and interaction between all family members. Families that previously felt divided developed a more active, joint family life under more equal conditions. A changed family dynamic encouraged more flexibility in conflict resolution and the ways in which challenges were faced. Moreover, alterations towards more equalized family positions reduced both frustrations and strains in interrelations, with increased shared responsibility for the household and children. Strengthen cohesion seemed to increase family wellness and contribute to a more positive outlook on life (e.g., renewed attraction between partners and strengthened bonds between parents-children). Families developed higher expectations and hopes for their future life. Increasing the involvement of family members within and outside the familial unit provided positive reinforcement, and provided a new sense of we-ness to the family as a unit.

Stabilizing family life after gastric bypass surgery (II)
Families’ main concern after GBP was unexpected changes to family life. Family life situations became less predictable because of unexpected physical and psychosocial changes, such as changes in behavioral patterns and physical demands related to new limitations and lifestyle modifications. “If we knew the consequences of the change, we would not have taken the decision regarding GBP so lightly.” Unexpected changes introduce new disturbances to
family dynamics. The theory, stabilizing family life, explains a process of how concerns related to unexpected change was resolved, which is a social process of decreasing uncertainty and unpredictability, in order to find stability and wellbeing in interaction and routines. The theory consists of the following stages, namely waiting out (waiting for the effects of the unexpected change to subside) and figuring out (learning how to recognize and predict situations and intrapersonal changes). Figuring out is accomplished through attentive comparing, decoding, and mapping. Attentive comparing includes linking unexpected change to previous experiences, by comparing current developments with previous, well-known situations, to identify differences. Attentive comparing also helps in decoding unexpected change — to try to understand when and why unexpected change happens. This is done through experiencing and observing unexpected change. Decoding is learned through the experience of things that no longer work. Mapping begins after decoding, and involves incorporating intrapersonal changes and changes in routine into a family context, to orientate the family around the new developments. Mapping is a way of becoming aware of the possibilities and limitations brought about by change. Figuring out unexpected change is a prerequisite for effective maneuvering of unexpected changes and moving on to the next stage, remodeling family patterns.

Remodeling family patterns: refers to how families incorporate change into family life, and occurs over a long period, enabling families to find new ways of cooperating. Remodeling occurs through negotiating, prioritizing, planning, and mimicking new behavior. Negotiating is used to seek agreement about altered needs, to become more active and involved as, for example, a parent, partner, or a friend. This leads to a need to negotiate new agreements regarding roles, routines, and interactions. Negotiating occurs either verbally or in writing, entailing indications of how to resolve challenging family situations. Reaching agreements leads to reorganized prioritizing through mutual reflection on choices that support interaction and wellbeing. Examples include prioritizing family needs first by focusing on achieving wellness through eating together, increasing awareness regarding healthy eating habits by children, and paying attention to familial habits that might have a negative impact on health. With prioritizing there follows a need for planning; this enables the breaking down of activities into foreseen, manageable challenges. After planning comes mimicking new behavior; this works as a way of accommodating change. Families use mimicking to make lifestyle modification a natural part of everyday life. Mimicking equalizes relationships within families, aiding cooperation regarding habits such as family members trying to alter their lifestyles together. Mimicking lead to refiguring families changed condition regarding altered more equalized family positions, dynamic and problem solving.

Refiguring: is used to identify which strategy is best employed to handle unexpected change. This leads into shifting the focus of unexpected change as
an individual issue and into a family concern. Refiguring is accomplished through attentive comparing, mapping, and acknowledging. Acknowledging means accepting unexpected changes as part of family life, which leads to shifting the focus of unexpected change from individual issue and into a family concern. In this stage, unlike in figuring out, there is a mutual awareness of the character of the change such as, mood swings, development of new roles, and new family communication patterns.

Protective shielding: is used in different ways throughout the whole process. It is done to attain control and to protect oneself and/or the family from situations that may cause suffering and disturbance. The intensity of protective shielding depends on the extent to which unexpected change triggers disruption. Protective shielding is done by preventing the consequences of change and by opposing change. Preventing the consequences of change is used to reduce the number of perceived challenging situations, such as monitoring behavior or ensuring that lifestyle modifications are adhered to (e.g., eating correctly and in a timely manner). In interactions, preventing the consequences of change occurs through holding back, not speaking one’s mind about perceived unacceptable habits and emotions, or withdrawing. Opposing provokes a reaction seeking to bring a challenging situation out into the open. This appears when interrelations become tense after a person changes both psychologically (e.g., being short tempered, energetic, and outgoing). Opposing may serve as a way of holding on to old ways, to regain a sense of belonging together. It can work as a strategy to constrain behavior perceived as unhealthy or to challenge interrelations.

The social process explained in the theory, Stabilizing family life, is done differently, depending on discrepancies in expectations and knowledge, described as integrating or disintegrating loops, which entail three different family outcomes: attaining unity involves getting all family members involved in co-creating stability and wellbeing together; returning to old patterns indicates an inability to stabilize family life and accommodate the changes together. It is a return to status quo, despite this not contributing toward the family’s wellbeing and interaction patterns in the new situation; disconnecting refers to detachment from relationships, as a solution, which is done by distancing oneself or resigning. This could occur when the changes are too different from life before surgery. The process of stabilizing family life is affected by the overall life situation, life stage, and relationship quality. The theory highlights unexpected change as a potential challenge for the family dynamic (family functioning), as well as how they resolve this. Hence, the theory can be applied in care strategies for families. The identification of families needing support to stabilize family life after GBP requires further research.
Family functioning and associations with individual health after GBP (III, IV)

To ensure that a valid family measurement was used, study III aimed to evaluate the reliability and validity of the S-GFS in a Swedish bariatric sample. Evaluating the factorial structure of the S-GFS within this sample was a particular concern. Study IV explored associations between family functioning, percentage of weight loss, sex, and health-related quality of life, two years after GBP.

Evaluation of the McMasters General Functioning Scale in a Swedish bariatric sample (III)

The sample was representative of the Swedish bariatric population in terms of sex and age distributions (SOReg, 2014). The results showed that the 12-item S-GFS had satisfactory reliability and acceptable validity.

Item analyses was based on data from the first test occasion and showed satisfactory internal consistency. Means for inter-item correlations were satisfactory, with values between 0.48 and 0.52. Item-total correlations for all S-GFS items were between ‘fair’ to ‘good’ (0.54-0.80) (Table 6). The alpha value was good (ordinal alpha=0.92), indicating that internal consistency would not improve following the removal of items from the scale.

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean IIC¹</th>
<th>ITC²</th>
<th>α³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning family activities is difficult because we misunderstand each other.</td>
<td>0.52</td>
<td>0.54</td>
<td>0.88</td>
</tr>
<tr>
<td>In times of crisis we can turn to each other for support.</td>
<td>0.49</td>
<td>0.74</td>
<td>0.86</td>
</tr>
<tr>
<td>We cannot talk to each other about the sadness we feel.</td>
<td>0.50</td>
<td>0.65</td>
<td>0.87</td>
</tr>
<tr>
<td>Individuals are accepted for what they are.</td>
<td>0.50</td>
<td>0.71</td>
<td>0.87</td>
</tr>
<tr>
<td>We avoid discussing our fears and concerns.</td>
<td>0.49</td>
<td>0.72</td>
<td>0.86</td>
</tr>
<tr>
<td>We can express feelings to each other.</td>
<td>0.49</td>
<td>0.74</td>
<td>0.86</td>
</tr>
<tr>
<td>There are lots of bad feelings in the family.</td>
<td>0.50</td>
<td>0.66</td>
<td>0.87</td>
</tr>
<tr>
<td>We feel accepted for what we are.</td>
<td>0.49</td>
<td>0.74</td>
<td>0.87</td>
</tr>
<tr>
<td>Making decisions is a problem in our family.</td>
<td>0.49</td>
<td>0.72</td>
<td>0.87</td>
</tr>
<tr>
<td>We are able to make decisions on how to solve problems.</td>
<td>0.48</td>
<td>0.80</td>
<td>0.86</td>
</tr>
<tr>
<td>We don’t get along well together.</td>
<td>0.49</td>
<td>0.74</td>
<td>0.87</td>
</tr>
<tr>
<td>We confide in each other.</td>
<td>0.49</td>
<td>0.79</td>
<td>0.86</td>
</tr>
</tbody>
</table>

¹ Mean inter-item correlations. ² Corrected item-total correlations. ³ Cronbach’s alpha if item deleted.

37
The test-retest indicated satisfactory temporal stability both on a scale and item level. Intra-class correlations for single measures were 0.83 (95% CI, 0.80-0.87). The average measure was 0.91 (95% CI 0.88-0.93). Weighted kappa statistics for all items demonstrated moderate agreement, except for item 3, which showed fair agreement (0.367).

To assess construct validity, confirmatory factor analyses (CFA) were performed. Four models were tested and goodness-of-fit indices were used for the evaluation of best model fit. The model that showed the best fit was an adjusted model in which response alternatives 3 and 4 were collapsed, and measurement errors were allowed to correlate. All goodness-of-fit indices supported this model in comparison with the other models that were evaluated. No Haywood cases were detected, indicating a proper model solution. All factor loadings in this model were significantly associated with the construct (p ≤ 0.05). (Table 7).

Table 7. Factor analysis of the S-GFS. Model with collapsed response alternative allowing for measurement error correlations (n=163).

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor loading</th>
<th>Measurement error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning family activities is difficult because we misunderstand each other.</td>
<td>0.518</td>
<td>0.268</td>
</tr>
<tr>
<td>In times of crisis we can turn to each other for support.</td>
<td>0.756</td>
<td>0.571</td>
</tr>
<tr>
<td>We cannot talk to each other about the sadness we feel.</td>
<td>0.687</td>
<td>0.472</td>
</tr>
<tr>
<td>Individuals are accepted for what they are.</td>
<td>0.714</td>
<td>0.509</td>
</tr>
<tr>
<td>We avoid discussing our fears and concerns.</td>
<td>0.729</td>
<td>0.532</td>
</tr>
<tr>
<td>We can express feelings to each other.</td>
<td>0.793</td>
<td>0.628</td>
</tr>
<tr>
<td>There are lots of bad feelings in the family.</td>
<td>0.680</td>
<td>0.463</td>
</tr>
<tr>
<td>We feel accepted for what we are.</td>
<td>0.769</td>
<td>0.591</td>
</tr>
<tr>
<td>Making decisions is a problem in our family.</td>
<td>0.753</td>
<td>0.568</td>
</tr>
<tr>
<td>We are able to make decisions on how to solve problems.</td>
<td>0.816</td>
<td>0.666</td>
</tr>
<tr>
<td>We don’t get along well together.</td>
<td>0.743</td>
<td>0.552</td>
</tr>
<tr>
<td>We confide in each other.</td>
<td>0.808</td>
<td>0.654</td>
</tr>
</tbody>
</table>

RMSEA: RMSEA<0.05 indicates adequate fit, RMSEA<0.05 indicates good fit. WRMR: WRMR<1.0 indicates good fit. CFI and TLI: CFI and TLI>0.95 indicate good fit.
Associations between family functioning, percentage of weight loss, sex, and HR-QoL (IV)

Results showed high family functioning (GF) and high scores for the mental dimensions of HR-QoL, two years after GBP. Low family functioning was reported by 15.7%, and the frequency of depression for the whole sample was 11.7%. Binary Logistic regression analyses were conducted to explore associations between independent variables: Family Functioning (GF), Percentage of Weight Loss, and Sex with the dependent variables: General Health, Mental Health, Energy, and Physical functioning. Family functioning showed significant associations with the dependent variables, except for Physical functioning. Higher Percentage Weight Loss was associated with improved Physical functioning, and sex showed no significant associations with any of the HR-QoL dimensions (shown in appendix 1). In more detail, the binary logistic regression analyses showed the following results:

Analysis of General Health Perception: The model including all independent variables was statistically significant, thus indicating a better fit to the data compared to the null model. Out of the independent variables in the model, Family Functioning (GF) was the only variable showing statistical significance (p≤ 0.01). The analysis showed no significant associations between the Percentage of Weight Loss, Sex, and General Health Perception. Fit against actual outcome $R^2_L$ yielded $\chi^2(8)$ of 9.564 with a non-significant p-value (0.297), indicating that the model fitted the data. The whole model explained between 9.0% ($R^2_{CS}$) to 13.1% ($R^2_N$) of the variability, and classified 77.1% of the cases correctly in comparison to the null model, which classified 72.5% correctly. The inversed OR was 2.64, indicating that higher Family Functioning was associated with improved General Health.

Analysis of Emotional wellbeing: The whole model, with all the independent variables, was significant and provided better fit to the data than the null model. Family Functioning (GF) was significantly associated (p<0.01) with improved Emotional Wellbeing. The independent variables (Percentage of Weight Loss and Sex) showed no significant associations. Fit against actual outcomes indicated a good model fit, $R^2_L$ yielded $\chi^2(8)$ of 3.310 with a non-significant level of p=0.913. The whole model explained between 11.1% ($R^2_{CS}$) and 16.3% ($R^2_N$) of the variability, and classified 79.7 of the cases correctly, compared to the null model classifying 74.5% correctly. The inverted OR was 3.71, indicating that higher Family Functioning was associated with improved Emotional Wellbeing.
Analysis for Vitality: The whole model with all independent variables was statistically significant and suggested a better fit to the data than the null model. Family Functioning (GF) was significantly associated (p \leq 0.01) with increased Vitality. The independent variables percentage of Weight Loss and Sex showed no significant associations. Fit against actual outcome indicated a good model fit, $R^2_L$ yielded $\chi^2(8)$ of 12.932, with a non-significant level of $p=0.114$. The whole model explained between 10.8% ($R^2_{CS}$) and 15.0% ($R^2_N$) of the variability and classified 75.2% of the cases correctly, compared to 69.3% correctly classified by the null model. The inverted OR was 4.347, indicating associations between higher Family Functioning and Vitality.

Analysis of Physical functioning: The full model, including all independent variables, was statically significant and provided a better fit to the data than the null model. Percentage of Weight Loss was associated with Physical functioning ($p<0.01$). Family Functioning (GF) and Sex showed no significant associations. Fit against actual outcome suggested a good model fit, $R^2_L$ yielded $\chi^2(8)$ of 7.663, with a non-significant level 0.467. The whole model explained 11.8% ($R^2_{CS}$) to 19.4 % ($R^2_N$) of the variability classifying 84.2% of the cases correctly, compared to the 82.25% of cases classified correctly by the null model. The inverted OR was 1.097, suggesting that a higher Percentage of Weight Loss is associated with improved Physical functioning.

Discussion: Overall Findings

The overall aim of this thesis was to investigate aspects of family functioning after a family member had undergone gastric bypass surgery. The findings showed that families experienced both positive and negative effects on family functioning. This was explained as a social process in which changes brought about by GBP, such as unexpected changes in interpersonal interactions and the family’s self-care, were managed (I, II). This social process was observed in the period between 3 months and 2 years postoperatively. Using a validated family measurement tool in a Swedish bariatric sample (III), family functioning was measured 2 years postoperatively, with results showing that high family functioning was associated with improvements in the mental aspects of health-related quality of life (IV). The results will be discussed in subsequent sections, first in relation to the family perspective and then followed by a discussion of the individual’s perspective on family functioning.

Findings from family experiences of change (I, II)

The results in this thesis indicate that families experienced the changes related to GBP as challenging, which affected the family dynamics. From the perspective of system theory, changes originating in the individual induced an alteration in the family system (Ryan et al., 2005) (I, II). The majority of families experienced their daily life as being considerably improved at both 3 months and 2 years after GBP. Sharing family responsibilities, increased engagement, and prioritizing spending time together (strengthened family cohesion) led to improved and "rediscovered" relationships. This was seen in different subgroups of the family, both between spouses and parents–children. Before surgery, family relationships were characterized by tension and resignation, with members feeling as if they were living parallel lives (I). Earlier studies from the perspectives of both patients and couples have presented similar findings, indicating that change from a previously restricted
DISCUSSION

Overall Findings
The overall aim of this thesis was to investigate aspects of family functioning after a family member had undergone gastric bypass surgery. The findings showed that families experienced both positive and negative effects on family functioning. This was explained as a social process in which changes brought about by GBP, such as unexpected changes in interpersonal interactions and the family’s self-care, were managed (I, II). This social process was observed in the period between 3 months and 2 years postoperatively. Using a validated family measurement tool in a Swedish bariatric sample (III), family functioning was measured 2 years postoperatively, with results showing that high family functioning was associated with improvements in the mental aspects of health-related quality of life (IV). The results will be discussed in subsequent sections, first in relation to the family perspective and then followed by a discussion of the individual’s perspective on family functioning.

Findings from family experiences of change (I, II)
The results in this thesis indicate that families experienced the changes related to GBP as challenging, which affected the family dynamics. From the perspective of system theory, changes originating in the individual induced an alteration in the family system (Ryan et al., 2005) (I, II). The majority of families experienced their daily life as being considerably improved at both 3 months and 2 years after GBP. Sharing family responsibilities, increased engagement, and prioritizing spending time together (strengthened family cohesion) led to improved and “rediscovered” relationships. This was seen in different subgroups of the family, both between spouses and parents–children. Before surgery, family relationships were characterized by tension and resignation, with members feeling as if they were living parallel lives (I). Earlier studies from the perspectives of both patients and couples have presented similar findings, indicating that change from a previously restricted
and isolated life with little active participation in family or society, emerges postoperatively with weight loss, with individuals becoming an equally engaged family member (Engström & Forsberg; 2011, Mamplekou et al., 2005; Moore & Cooper, 2016). Most families reported that it was the family member with obesity that had made the decision to undergo GBP on their own (I). This is consistent with a previous study of couples, in which 70% of partners reported that the patient had taken the decision without their involvement (Kinzl et al., 2003). Undergoing bariatric surgery seems to be regarded in families as an individual matter. An explanation could be that families do not talk about concerns associated with obesity out of consideration for the patient, as they are well aware of the prejudices surrounding obesity (I). The stigma and unequal task-sharing in families might be a factor that decreases family functioning (unclear communication and interaction) pre-surgically.

The findings, on a family level, are suggestive of experiences of uncertainty during the process before and after GBP (I), with a shared main concern of unexpected changes (III) associated with the GBP. This was resolved through the process of stabilizing family life. In study I, family tension and feelings of insecurity started to appear after GBP, these feelings accompanied changes associated with weight loss, intrapersonal changes (becoming more assertive, active, and outgoing), and the individual responses to such changes in the family member having undergone GBP. This combination of responses to change instigated the repositioning and rewriting of family patterns (I). Research on family relationships is scarce, with studies of romantic couples being in a romantic relationship being the most common focus for research. However, the relationships of couples within the bariatric field have been studied over a long period with various results, with some studies reporting that bariatric patients experience a greater level of relationship instability post-surgery, and that some partners point out negative changes in their significant other following surgery (e.g., egoism, dominating behavior, and instability) (Andrews, 1997; Kinzl, 2003). Other studies have reported improvements in relationship quality associated with fewer depressive symptoms, less emotional eating, and hostility (Applegate & Friedman, 2008; Libel et al., 2016; Macias et al., 2004; Mamplekou et al., 2005). Reviewing the results of study I and II illuminated the differences in expectations and beliefs within families relating to what change connected to GBP would entail, and seemed to contribute to the tension and dissonance in the family dynamics. The lack of communication and the differing degrees of knowledge within the family about obesity and GBP related changes may have enhanced family dissonance. Earlier research has suggested that issues arising in connection to weight loss surgery may depend on expectations from the patient and their partner, in combination with increased energy, higher confidence, and changes in appearances (Applegate & Friedman, 2008; Clark et al., 2014). A recent studies showed that relationship maintenance activities (e.g., openness, joint
activities, and meals as shared tasks) following bariatric surgery contributed to developing new norms between partners (Aramburu, Alegria & Larsen, 2016; Poires et al., 2016; Vidot et al., 2015). Moreover, results suggested that the perception of a couple’s relationship as being satisfactory before surgery makes it more likely that these couples will have a smoother positive adaptation to change, while those whose stability was compromised prior to surgery were at risk and more likely to experience negative outcomes (Aramburu, Alegria & Larsen, 2016). This relates back to the system theory principles of family systems, namely that relationship is recursive and interdependent and can lead to specific patterns (Friedman, et al., 2003). After reviewing earlier research and the results from this thesis, the conclusion is that changes after GBP are impacted by both the quality of family functioning and by the expectations family have about change.

**Family functioning after GBP and Boss family stress management model (I, II)**

In studies I and II, the majority of families reported unequal task-sharing before surgery. Some families indicated if changes after GBP had not happened the relationship would have been at risk of being dissolved, or that the main caregiver, often the partner, was at the point of exhaustion. Families viewed GBP as an individual concern and had often not reflected over the potential impacts of self-management and interpersonal changes on the family. This suggests that the quality of family functioning pre-surgery may have an impact on the family process of adapting to change after GBP. The findings from studies I and II suggest that aspects of family functioning (communication, problem-solving, and interaction) were challenged to different degrees depending on the quality of relationships previously and the amount of strain placed on family functioning. The indication of challenges to family functioning (I, II) can be viewed in relation to Boss’ family stress management model (2002). Families’ degree of stress results from situations that have the potential to cause change (Boss, 2002). Stress is synonyms with change, neither good or bad. It depends on how the family system perceives and reacts to it (Boss, 2002). Lack of knowledge and preparation for change can be regarded as family stress, a disturbance in the steady state of the family and may require management (Boss, 2002). Perception, how a situation is viewed by the family system and the individual family members, affects the level of stress the family experiences (Boss, 2002). Reviewing the process identified in studies I and II in relation to this model, suggests that families experiencing decreased communication and interaction (strained family functioning) before GBP may perceive a higher degree of stress. Families perceiving unexpected changes in relation to GBP (II) may be sensing a higher degree of stress and thereby reduced family functioning and wellbeing. The
integrative and disintegrative loops (II) may be an expression about whether families perceive the incorporation of changes as stressful or not. Families with clear communication and equal knowledge may manage the incorporation more easily. This result raises the question of whether the lack of preparation and knowledge about GBP associated changes within the family system may affect wellbeing in the family relationship, and the possibility of maintain lifestyle changes. The results of unexpected changes and the process of stabilizing family life (II) can also be viewed in light of Boss’ (2002) concept of “boundary ambiguity.”

Boundary ambiguity may occur when facts regarding an event are unclear, or when a fact is clear but the family ignores it (Boss, 2002). Regarding family functioning from the perspective of boundary ambiguity, the latter option of a family ignoring facts may be applied to family situations where there is evidence of low family functioning. Using this perspective may serve as an explanation of families’ way of initially waiting out change (II) and may be seen as a family concern of unexpected change that is unclearly expressed in the family (II). Boundary ambiguity concerns processes and relationships based on who is being present and involved in the family. Using the concept of boundary ambiguity (e.g., facts about the side effects of GBP being unclear), new ways of interacting after GBP and new lifestyle changes modify the family’s experiences of uncertainty and unexpected change. This may be an explanation as to why some families experience changes associated with GBP as more challenging. In families where interactional patterns where unclear uncertainty seem to have a higher risk of difficulties maneuvering family life. In families where they found their internal resources to meet change and similar expectations and knowledge the sense of unexpected change was more a temporary phase. If families have similar knowledge of what to expect and can prepare together for changes related to GBP, one may consider that the main concern of unexpected change and uncertainty would diminish. Moreover, the process of stabilizing family life would perhaps have a higher possibility to develop into an integrative loop. The results of families’ perspective on family functioning can be viewed as different expressions of families’ management of stress. This view of the result is based on Boss (2002) explanation model of families’ ability for management of change, which is related to their view of how the family perceive change and in what amount the change is perceived as too stressful to the family system.

Stabilizing family life may be viewed as a family’s ability to take care of change and to reach wellbeing and health. According to Boss (2002), to be adaptable to change is sometimes used as a term representing to uphold the status quo of family interaction even if it is straining for the family system. The term ‘managing’ often means to make routines and family interaction work in family life in face of change that have a negative impact of the family
(e.g. eating disorders, depression). Managing change can be expressed by having a stoic attitude of acceptance instead of opposing change and can develop into a family way of problem-solving to avoid conflict and decrease distress for the moment (Boss, 2002). Boss (2002) suggests that sudden fluctuations and changes in these family systems might be beneficial, and could lead to higher functioning than before. However, this requires new rules and boundaries within the family. To see stability as the avoidance of conflict and orderliness may not be in the best interest of the family. Family stability is healthier when it works as a moving equilibrium (Boss, 2002). The perspective of adjusting to and “fitting in” change within a system is therefore not always positive (Boss, 2002). It may entail adapting to a pattern that is negative rather than actually changing the pattern that decreases health and wellbeing (Boss, 2002). The result of ambiguous relationships (I) could thus be seen as the family systems way of adaptability to change by the imposed and increasing limitations of obesity. Seeking GBP as a treatment can be interpreted as a family member’s way to opposing change instead of continuing to adapt to limitations of obesity. In most families, the member with obesity had an awareness of that the limitations of obesity were straining for the whole family (I). Using Boss (2002) concepts the decision for GBP could be seen as a way of opposing change with change (GBP) to reduce family strain and leading to an renewed stability.

In light of this family stability, the results of adjusting to changes in family life (I) and stabilizing family life (II) can be viewed as a process of struggling with change, reflecting a moving equilibrium in the family dynamic. The initial period of uncertainty (I), waiting out (II), and figuring out (II) can be seen as a family’s attempt to maintain an established stability, the status quo that consisted of ambiguous relationship (I). The results of studies I and II show that changes associated with GBP always seem to shake the stability of family interactions and the status quo. Yet, most families that experienced a change in interactions and routines expressed as rewriting patterns (I) and remodeling (II) which suggest that the change in the individual often lead to a change in the whole family system, a renewed family stability expressed as strengthening cohesion (I) or attaining unity (II). However, for some families’ change was perceived as overwhelming stressful in family life and lead to either a solution of using established ways of family functioning (returning to old family patterns) or of disconnecting to increase well-being for the family (II). The processes described in these two studies can thus be seen as family stress management when both physical and interactional changes are introduced in the family after GBP. While most families had the ability to manage this independently, others may need some support in this process after GBP.
Psychometric evaluation of McMasters General functioning Scale (III)

In study III data was collected on an individual level to assess aspects of reliability and validity in a bariatric sample of the Swedish version of the General Functioning Scale (S-GFS). The overall results show that S-GFS is a promising tool with satisfactory reliability and acceptable validity for the assessed setting. Reliability regarding internal consistency was comparable to earlier studies of GFS (Epstein et al., 1983, Ryan, 2005, Speranza et al, 2012, Juliusdottir & Olafsdottir, 2015) thus adding evidence to the scale’s reliability in various contexts. Since data was non-normally distributed polychoric correlations was performed to get a more unbiased estimate of the sample correlations (Gadermann et al., 2012, Garrido et al, 2013). To allow comparisons Cronbach’s alpha was also calculated and was as predicted lower than ordinal alpha for non-normally distributed data (Gadermann et al., 2012, Garrido et al, 2013). Cronbach’s alpha (0.89) was within the same range (0.85-0.89) as previous studies with community and medical participants (Barroilhet et al, 2009, Kabacoff et al., 1990). Based on the theoretical underpinnings and the construction of the GFS a CFA with a one factor solution was chosen. The GFS was formed of items from the other sub-scales in the McMaster Family Assessment Device and assess overall family functioning with strong correlations to the other sub-scales (Epstein et., 1983 Ryan 2005, Mansfield, 2014). The evidence for the factor structure based on our data was not entirely convincing as best fit was achieved after collapsing two of the response alternatives in the Swedish version. Since there could be other relevant explanations for the result, further studies need to confirm the one-dimensionality of the GFS.

Our response distribution showed a positive skewness and this is in contrast to previous research (Ryan, 2005; Juliusdottir & Olafsdottir, 2015). The high perception of family functioning, causing the skewness, could have been an accurate reflection since the assessment was performed under what was assumed to be a positive stable period, 3 months after GBP. Another possible explanation to the positive skewness is the translation in where the Swedish version with three positive response options instead of two might have led to increased sensitivity to social desirability. This is an unfavorable translation effect compared to the original GFS which has shown low social desirability (Stacchini et al, 2014, Epstein et al, 1983). This discrepancy in the translated response alternatives may cause a central tendency bias, referring to that some people are reluctant to use the extreme responses (Streiner & Norman, 2008). This discrepancy may result in reduced variance and sensitivity between groups and in responsivity between groups over time (Streiner & Norman, 2008). As a result, it could be harder to distinguish changes between different time point measures. However, the response alternative, agree somewhat, may have contributed to the possibility to answer slightly negative to the negative
items thereby increase the variance of the score. Further research is warranted to investigate this further.

The sample was considered representative based on the participants mean age and gender distribution when compared to the national Swedish bariatric population (SOReg, 2014). This strengthens that the scale scores can be interpreted as intended when used in other Swedish bariatric samples.

**Findings from family functioning and associations with HR-QoL (IV)**

**Associations between family functioning and HR-QoL**

The main result in study IV showed that family functioning was associated with three out of four of the included HR-QoL dimensions. This finding is in line with studies by Driscoll et al., (2016) and Ferriby et al., (2015) that proposed that factors other than weight loss may reflect changes in HR-QoL after GBP. Some studies have reported that being in a relationship (cohabitation or marriage) improved results on the mental dimensions of HR-QoL (which include GHP, EWB, and VT) after GBP, compared to non-married participants (Huang, 2011, Sawer, 2010). Reviewing research within other areas, for example diabetes, that require similar self-care management practices (e.g., diet and physical activity), also indicate that family functioning and social support from family or friends improved patient’s HR-QoL (Göz et al., 2005, Azmoude et al., 2016). Our result showed that family functioning is associated with the mental dimensions of HR-QoL when assessed 2 years after GBP. Since we did not measure family functioning preoperatively we cannot draw any conclusions about the predictive value of family functioning. A research question to explore further is whether the presence of high family functioning preoperatively will be followed by a greater improvement in HR-QoL, when compared with individuals with low family functioning.

**Associations between weight loss and HR-QoL**

Our results showed that weight loss was only associated with Physical functioning. Raoof et al., (2015) showed a similar finding with associations between higher weight loss and improvement in the physical dimensions of HR-QoL. A way of explaining these result is to consider the amount of weight loss. Earlier research has indicated that a weight loss of 20% or higher was required to be maintained for over two years in order to achieve significant improvements in HR-QoL (Warkentin et al., 2014). In our sample, the mean percentage of weight loss was 29.81%. Our results showed no associations in relation to General health perceptions, Emotional well-being, and Vitality.
This may be understood in the light of previous research that showed no differences in response despite variation in weight loss ranging from 33-86% after bariatric surgery (Strain et al., 2014). In our sample mean the percentage of excess weight loss was 82.01%. The diverse associations that we found in the study are perhaps best understood in the light of earlier studies reporting that weight loss improves the physical dimensions, but does not improve the mental dimensions to the same degree (Malone, et al., 2011, Warkentin et al., 2014, Raoof et al., 2015).

**Associations between sex and HR-QoL**

Sex as an independent variable was not associated with any of the HR-QoL dimensions in this study. Our data did not match previous results reporting that men have higher HR-QoL scores than women after GBP (SOReg, 2014, Raoof et al., 2015). The most likely reason for this difference is the uneven distribution of women and men in our study (77.8 vs 22.2%), which most probably had an impact on the statistical power in our analyses. Considering this, we cannot draw any conclusions about the associations between sex and HR-QoL. Further research about sex differences and HR-QoL is warranted.

**Multidimensionality of HR-QoL**

Our results can be interpreted as supporting the conceptualization of HR-QoL as a multidimensional construct. Various dimensions might be associated with diverse individual (e.g., percentage of weight loss) and interpersonal aspects (e.g., family functioning). This interpretation is consistent with the theoretical model underpinning RAND-36 (Hayes & Morales, 1993) as well as findings that report that HR-QoL is influenced by a number of sociodemographic, biomedical, and psychosocial factors (Hays et al., 1993, Hays & Morales, 2001). The eight dimensions in RAND-36 HR-QoL are grouped into two summary scores: a physical summary component consisting of Physical functioning, Role physical, and Body pain in addition to a mental summary component comprising the dimensions of Emotional well-being, Role emotional, and Social functioning. The dimensions of General health perception and Vitality are said to belong to both components. Our results indicate a stronger connection of General health perception and Vitality with the mental dimension of HR-QoL. Further research is needed to confirm this indication.
Methodological Considerations

Overall design
The combination of different methods in this thesis contributes to both a general and detailed picture of family functioning after GBP. This can be seen in how family functioning can be viewed both as a shared experience of a family system (I, II) and as a measurable variable from an individual perspective (III, IV). The research processes were guided by system theory to view both the family system and how the family system influenced the health of the individual.

Study sample and sampling
The inclusion of families and participants in all studies was conducted by health care staff at the follow-up visit after GBP, three month and two years postoperatively. Consecutive sampling was used in three studies from one clinic (study I, III, IV). Reflections were made on which deviations could be connected. Since the clinic is a high-volume center of bariatric surgery, various demographic characteristics are represented in terms of age, gender and education. However, families and participants from rural areas are not represented. In study II theoretical sampling was used, which directed what data to collect next. The basic question is what groups one turn next to in data collection (Glaser, 1978). For example, the researcher collected data to include families based on what the analysis indicated (e.g., based on family constellations, length of relationship, age). In addition, there may be a risk that families and participants with high family functioning or satisfying family relationships were included, which would indicate a bias and underrepresentation of families and participants with low family functioning in the study samples. Also, the length of the relationships between participating family members (seven years to lifelong, study I-IV), and the fact that they carry a great amount of shared experiences and a mutual history, may also be a possible bias in favor of families and participants with well-established family functioning. Another consideration are the sample characteristics regarding age and sex, which were comparable to the Swedish bariatric population (p=0.05) and earlier studies (Driscoll et al., 2016, Raoof et al., 2015, SOReg, 2015). The mean ages were 41 years (study I), 44.3 years (study III), and 46.54 years (study IV). The total sample distribution for this thesis consisted of a majority of women 76.7-77.8 % (III, IV). Moreover, it should also be emphasized that the study sample does not represent those persons suffering from severe postoperative GBP complications. However, the
Family interviews

In study I and II, the data collections were done through family interviews. Joint interviews are connected with some methodological challenges, because of the personal relationship between the participants (Taylor & Voght, 2011, Bjornhall & Farstad, 2014). While there are researchers who claim that joint interviews contribute to comprehensive data and that family members help each other to remember (Kendall et al., 2010), there are others who claim that participants might feel restrained to talk openly, contradict or defer on topics and give answers that are acceptable to the others (Haar et al., 2015, Taylor & Voght, 2011) and to the researcher. However, as the thesis applied a systemic perspective that views families as an interconnected system, it was considered appropriate to interview families together in order to collect narrative data of mutual experiences and get insights into the family dynamics. The family definition of “family is who they say they are” facilitated an open climate since the participating family members were chosen by the patient, indicating they felt comfortable talking to each other. In a few cases a single-family member was interviewed, with a focus on family function, but being aware of the lack of collective narrative data and family dynamics. Gathering data from several perspectives, both from the family unit and from individuals, is recommended to obtain the most comprehensive picture of a family (Eggenberger & Nelms, 2007; Åstedt-Kurki, 2001).

Trustworthiness of a Hermeneutical study (I)

Gadamerian hermeneutics is a well-established research method in nursing for gaining understanding through interpretation (Fleming et al., 2003, Austgard, 2012). In Study I, a hermeneutical research method by Fleming et al. (2003) was used based on Gadamer’s philosophy and key concepts. One consideration when using this approach is the researcher’s preunderstanding of the studied subject (Austgard, 2012). According to Gadamer (2004), one can never renounce one’s preunderstanding, which reflects our history and prejudice. By recognizing one’s preunderstandings, understanding is made possible (Gadamer, 2004). However, we can never be fully aware of our preunderstanding. During the whole research process, the researcher tried to make herself aware and attentive of her preunderstanding by writing down thoughts, expectations, and reflections of experiences working in the bariatric field with patients who had undergone GBP. In the analyses, the researcher constantly questioned the abstractions and interpretations of the text/data. Gadamer states that preunderstanding has to be provoked to be
realizable (Gadamer, 2004), this was done by discussing data and interpretations in the research group. None of the other researchers were involved in surgical treatment of obesity. This contributed to different perspectives, which created an open climate for discussion and stimulated the development of the analysis.

Trustworthiness was also addressed by interviewing the families at two occasions based on Gadamer’s assumption that the understanding of participants and researchers change over time (Fleming et al., 2003). This was a part of the dialectical movement, a movement shifting between the whole to the parts in order to facilitate understanding (hermeneutical circle). Through feedback and discussion an understanding of the studied subject could be developed. This was done in the second interview by discussing the key points from the previous interview with the families and in the analysis questions were asked relating to the text in order to reach an understanding of the relation between the whole text and the parts. Understanding is reached when there is a consensus between the whole and the parts of the text offering a standard for trustworthiness (Fleming et al., 2003; Gadamer, 2004). Credibility was addressed through a detailed description of the research process. The same researcher conducted all interviews, and the same main questions guided the interviews, which strengthens the dependability of the study.

Criteria for assessing grounded theory (II)

Glaser (1998) emphasizes that a grounded theory is to be viewed as a set of conceptual hypotheses based on arguments from data, with different degrees of probability. A grounded theory is never right or wrong, it just has more or less fit, workability, relevance, and modifiability (Glaser, 1998). The four assessment criteria for a grounded theory are comparable to credibility and sustainability (Glaser, 1978).

(1) Fit; refers to the fact that categories must fit the data, i.e. data should not be selected to fit preconceived or preexistent concepts. According to Glaser, fit is an expression of validity (Glaser, 1998). To obtain good fit in this study, constant comparisons of codes and concepts were made with newly generated codes and concepts. Conceptual memos were written throughout the research process to seek connections between incidents and concepts and between concepts and the core concept.

(2) Workability; refers to that the theory explains how the main concern is resolved. The literature review in combination with presenting and discussion the theory in the research team contributed to the workability in this study.

(3) Relevance; refers to the fact that the emerged concepts must be connected and relevant to the main concern for the participants. To obtain relevance, data
collection continued until saturation was considered reached (when new data no longer brought additional insights and variation of data in the analyses). Relevance was also assessed through presenting and discussing the theory in the research group.

(4) Modifiability; this is a criteria concerned with ensuring the theory’s relevance and generalizability (and involves comparing new data with the existing data, and facilitating modification of the theory (Glaser, 1978). The literature review contributed to the theory’s relevance, workability, and modifiability (Glaser, 1978; Glaser, 2010).

A grounded theory is considered to be abstract to time, place, and persons (Glaser, 1998). The theory “Stabilizing family life” may contribute to understanding how families maneuver unexpected changes after GBP. Further research with new data is required to make the theory applicable to other contexts of treatment of chronic illness.

In addition, a deviation from the GT method was made by recording and transcribing the interviews. Glaser (1998) recommends avoiding recording the interview, because there is a risk of accumulating too much data and thereby getting stuck on a descriptive level, instead of a conceptual level that focuses on a mutual concern and reoccurring patterns (Glaser, 1978, 1998). However, when conducting family interviews, recording is a practical option when several persons talk and enabled me as a researcher to be a present listener and follow their story and ask follow up question, which would have been harder without recording. Recording could also be regarded as a way to follow the ethical principles of transparency. On the other hand, transcripts, filed notes, and memos accumulated a lot of data and thereby prolonged the analysis. Although, the advantage was that the recorded interviews also allowed nuances and variations to emerge within the concepts.

Validity and reliability of quantitative data (III, IV)

Study III

Study III evaluated the S-GFS for reliability and validity. Initially, S-GFS was tested in a pilot study on a non-clinical convenience sample to determine face validity. Face validity can be assessed in relation to how the respondents perceive the questionnaire (Streiner and Norman, 2008). The advantage of a pilot study is that it provides the researcher with a pre-testing of the design, in this case the choice of data collection instrument. A pilot study gives the researcher an opportunity to discover and reduce unforeseen difficulties (Polit & Beck, 2012; van Teijlingen et al., 2001). A limitation was the small sample size (n=30).
A confirmatory factor analysis (CFA) was done to assess construct validity for S-GFS data. Since the focus was to evaluate whether S-GFS could be used as a one-dimensional measure, CFA was considered appropriate. CFA was selected since GFS is an established instrument with a defined theoretical construct (Epstein et al. 1983). The purpose of CFA is to identify latent factors that account for the variation and covariation in a set of items (Brown, 2006). CFA is used to test an a priori hypothesis and to test the equality of the factor correlations. Using CFA makes it possible to specify the number of factors required in the data and to detect which measured variable is related to which latent construct. A test is considered biased when some of the items do not measure the underlying construct (Brown, 2006). Exploratory factor analysis (EFA) was disregarded since it is often used when an instrument is under development and has a more explorative purpose to gather information about the interrelationships among a set of variables (Brown, 2006). An alternative to CFA is Rasch analysis, a model within Item Response Theory. However, for shorter tests (under 20 item) classic test theory is better for detecting change and also when model fit is questionable or inadequately demonstrated (Jabrayilov et al., 2016). Since GFS is a 12-item scale theoretically based on the notion of one-dimensionality, previous research has most often excluded GFS from factor analysis (Ryan et al., 2006). Previous research has although indicated that GFS is one-dimensional (Ridenour et al., 1999). Based on these premises, CFA is considered to be an adequate choice. In our study, a one-factor model explained the theorized factor structure of the S-GFS, as hypothesized. However, the evidence was not entirely convincing and the results should be considered with this in mind: the best fit was achieved after collapsing two of the response alternatives. Since there could be other relevant explanations (e.g. translation effect of response options) for these results, further studies are needed to confirm the assumptions of one-dimensionality.

The sample size was moderate (n=163) and based on a priori power calculation. However, weighted least square with mean and variance adjusted (WLSMV) has proven to generate reliable parameters in smaller samples and a sample size of 150–200 has been found to be sufficient (Brown, 2006). Moreover, data quality was good, with no missing answers for items included in the analyses. The conclusion is therefore that the sample had an adequate size for our evaluation. The evaluation was based on data from patients and considering the unequal distribution of men and women, the findings may be more representative for female patients. The result from this study contributes with new evidence concerning reliability and validity for the S-GFS. Further research is needed both on a family level and for potential differences between men and women regarding the measurement of family functioning.
Study IV

Statistical conclusion validity refers to the degree to which conclusions about relationships and variances from the statistical analysis exist in reality (Polit & Beck, 2012). Logistic regression is used to support inferences that associations between the independent and depend variables exist (Field, 2013, Polit & Beck, 2012). Considerations of validity for logistic regression were made regarding sample size and statistical power. Validity can be ensured with larger sample sizes and statistical power to decrease the risk of Type I and Type II errors. Power refers to the degree to which a difference can be detected, when a difference actually exists (Tabachnick & Fidell, 2014). In study IV, a priori power analysis was performed to minimize the risk of a type II error. Power was set at 0.9 and effect size at 0.3 and a prior sample size was calculated to 130. However, an a priori sample calculation is based on a normal distribution. More cases are needed if the depended variable is skewed (Tabachnick & Fidell, 2014). Since study IV had a positively skewed distribution of both the independent and dependent variables, a larger sample size would have been beneficial. Stevens (1996) recommend 15 participants per predictor. To detect small effect size, approximately 30 participants per independent variable are recommended. With a small sample, you may obtain a result that cannot be repeated in other samples (Tabachnick & Fidell, 2014). Following the recommendations for the sample size, the sample size of 153 was moderate, but adequate, according to recommendations for the analyses method (53 participants per independent variable), and indicated that the analyses provided reliable equations (Field, 2013; Tabachnick & Fidell, 2014; Van Vooohirs, 2007). However, a larger sample size could have helped draw valid conclusion about the associations between sex and HR-QoL domains as our sample consisted mainly of women. Sample size also concerns generalizability, which is referred to as external validity, and refers to whether the result can be generalized to other situations and other people. Generalizability was also examined by comparing the sample descriptive statistics to the Swedish bariatric sample and previous studies (SOReg, 2015; Raoof et al., 2015). These data were comparable. However, threats to the external validity of this study can be related to lack of data on comorbidities, and on refusal to participate, thus limiting the external validity in the study. Our sample consisted mainly of participants from urban areas. The results could therefore mainly be generalized to Swedish women in urban areas.

Reliability was also evaluated in relation to logistic regression analyses and examined through multicollinearity, which refers to a strong correlation between the independent variables, and poses a threat when assessing the individual importance of each independent variable. In the study, independent variables showed satisfying VIF- values.

Additionally, validity in relation to questionnaires is the degree to which the instrument measures what it intends to measure, in relation to the studied
population, aim and dimensions of the instrument (Streiner & Norman, 2008). Reliability refers to the degree of consistency with which an instrument measures the concept in focus (Streiner & Norman, 2008). Both instruments, S-GFS and RAND-36 were selected since the questionnaires were validated in individuals with obesity (Hays & Morales, 2001; Ryan et al., 2005; Bylund et al., 2015). Reliability for RAND-36 and S-GFS was assessed in the study sample with Cronbach’s alpha as a measure for internal consistency (Streiner & Norman, 2008; Tavakol, Dennick, 2011). Cronbach’s alpha was satisfying for both questionnaires in this sample.

**Conclusion**

An overall conclusion from the results in this thesis is that family functioning were affected after GBP from a family perspective. The result indicated that diverging expectations and different degrees of knowledge enhanced families’ experiences of changes as unexpected and stressful, leading to tensions and disturbances in family functioning, which thereby had a negative impact on the overall family well-being. Families and individuals adapted to changes after GBP and remodeled family patterns easier when there were similar levels of knowledge and expectations on change, in combination with a clear family communication, giving the family a possibility to on more equal terms change together. High family functioning was assessed and showed associations with improved HR-QoL within the mental dimensions, for the individual undergone GBP. The GFS showed to be a promising tool to assesses family functioning in a bariatric sample. As individuals undergone GBP continue to increase, the effect of changes on family functioning will be increasingly important. The results in this thesis in combination with previous body of evidence contributes to show that changes after GBP influences family functioning and that family functioning has an effect on the individual’s mental dimensions of HR-QoL. Understanding family functioning may be helpful in understanding the process of how GBP-associated changes effect daily family life and HR-QoL for the individual having undergone GBP.

**Clinical implications**

This thesis yields information that may be helpful to health-care personnel whom working within the bariatric field. While realizing that outcomes are
generally positive following GBP for the individual and the family, it is important to consider the familial environments that consist of different preconditions and resources for individuals undergoing GBP. The results indicated that a shared knowledge within the family of what to expect in terms of physical and interpersonal change seems to minimize challenges and stress when adapting to changes after GBP. It is suggested to extend information about associated changes after GBP to include not only the individual but also the families. Additionally, psychosocial questions should be incorporated into ordinary pre-surgical assessment, with questions focusing on family relationships and family functioning. Inquiries could also be made regarding satisfaction in relationships and the presence of any concerns. Questions could also be asked about attitudes around bariatric surgery and the required lifestyle changes. The use of the General Functioning Scale as a screening tool to assess family functioning pre- and post-surgery should also be considered. Responses to the questions could be used to alert health care personnel of potential difficulties, and strategies to prevent these difficulties could be discussed between health care personnel and families.

**Future research**

In order to develop nursing care for bariatric patients and their families further investigations is required. Prospective longitudinal studies comparing family nursing interventions with standard clinical care is needed to evaluate the effect of family system care. Potential outcomes to evaluate might include family functioning, HR-QoL, both on a patient and a family level as well as assessing health economic variables. Additional, evaluating whether the General Functioning Scale can be used as a screening tool to identify which families might benefit from family interventions should be further considered.
SUMMARY IN SWEDISH

“Vänta vi måste hänga med.”
Aspekter av familjefunktion efter GBP.

Bakgrund

Syfte
Det övergripande syftet var att undersöka aspekter av familjefunktion när en familjemedlem genomgått GBP mot fetma ur ett individ- och familjeperspektiv.
Metod


Resultat

Syftet i delstudie I var att utforska familjers upplevelser av familjefunktion i förhållande till GBP. Resultatet är baserat på nio familjeintervjuer som genomfördes vid två tillfällen, tre månader efter GBP. Medelåldern i urvalet var 41 år. Den hermeneutiska analysen i delstudie I påvisade att familjerna erfor en process av förändringar i familjefunktionen som bestod av tre interrelaterade aspekter: 1) att leva i otydliga familjers relationer, 2) att förstärka familjelivet och öka närhet i familjen och 3) att finna en ny sammanhållning. Detta innebar att familjernas huvudangelägenhet, framträdde som ett beteendemönster genom vilket familjerna hanterade beskyddande åtgärder och att omvärdera eller omformulering av familjemönster. Initialt upplevde familjerna en period av svårigheter i interaktionen i förhållande till införande av livsstil och fysiska förändringar (t.ex. måltidsordning och reaktioner på viktnedgång). I samband med förändringar efter GBP förändrades de etablerade familjepositionerna, där individernas generell hälsa och fysiska förändringar (t.ex. tillsammans med GBP, nu hade deras energi och engagerade sig aktivt och ansvariga i familjen). Nämnda förändringar påverkade familjen och ledde till förstärkning av familjesammanhällningen och bidrog till en positiv atmosfär med ökad närhet i familjepositionen och ökad social interaktion för familjen med övriga vänner, tre månader efter GBP.

Syftet i delstudie III vara att utvärdera den svenska versionen av familjefunktions Instrumentet McMasters familjefunktion med fokus på faktorstrukturen. Resultatet baserades i huvudsak på de 234 deltagare som besvarat enkäten vid ett första av två tillfällen. Borfallsfrekvensen var 30.3% och inkluderade deltagare som inte svarade alls, besvarade enkäten endast vid ett tillfälle eller besvarade andra utskicket för sent. Urvalet bestod av 76.7 % kvinnor, medelåldern var 44.3 år. Majoriteten hade svenskt ursprung (81.6%) med en gymnasiutbildning (57.1%). Resultatet visade att distributionen av svarsfrekvenser var positivt skev. Reliabilitetsanalyserna visade på god reliability både på item- och skal-nivå. Den konfirmatoriska faktoranalysen visade att GFS fungerade som en endimensionell skala efter sammanslagning av två svarsalternativ. Resultatet kan bero på den svenska översättningen av svarsalternativen alternativt på den positivt skeva distributionen. Vidare forskning krävs för att fastställa detta. GFS visade sig vara ett lovande screening och forskningsinstrument för en bariatrisk population.

Slutligen delstudie IV, där syftet var att utforska associationer mellan familjefunktion (GF), procentuell viktnedgång och kön i relation till utvalda dimensioner av hälsorelaterad livskvalitet; generell hälsa, emotionellt välbefinnande, vitalitet och fysisk funktion. Resultatet grundar sig på binära
logistiska regressionsanalyser av 153 deltagare som genomgått GBP två år tidigare. Dessa besvarade enkäterna om familjefunktion samt RAND-36 (hälsorelaterad livskvalitet) vid ett tillfälle. Urvalet bestod av 77,8 % kvinnor, medelålder 46,4 år. Den procentuella medelviktnedgången var 29.81% (sd 8.90). Resultatet från de binära logistiska regressionsanalyserna visade signifikanta associationer enligt följande:

**Generell hälsa (GH):** GF var den enda oberoende variabeln som visade statistiskt signifikant samband med GH. Det fanns inga signifikanta samband mellan % viktnedgång, kön och GH. Modellen som helhet förklarade variansen mellan 9,0% och 13,1% och klassificerade 77,1% av fallen korrekt, i jämförelse med 72,5% i nollmodellen. Inverterad OR var 2,64.

**Emotionellt välbefinnande (EV):** GF var den enda variabel som visade statistiskt signifikant samband med EV. Det fanns inga signifikanta samband mellan % viktnedgång, kön och EV. Modellen som helhet förklarade variansen mellan 11,1% och 16,3% och klassificerade 79,7% av fallen korrekt, i jämförelse med 74,5% i nollmodellen. Inverterad OR var 3,71.

**Vitalitet (V):** GF var den enda variabel som visade statistiskt signifikant samband med V. Det fanns inga signifikanta samband mellan % viktnedgång, kön och V. Modellen som helhet förklarade variansen mellan 11,8% och 15,0% och klassificerade 75,2% av fallen korrekt, i jämförelse med 69,3% i nollmodellen. Inverterad OR var 4,35. Slutligen, logistiska regressionsanalysen för fysisk funktion (FF) visade att procentuell viktnedgång var den enda variabel som visade statistiskt signifikant samband med FF. Det fanns inga signifikanta samband mellan GF, kön och FF. Modellen som helhet förklarade variansen mellan 11,8% och 19,4% och klassificerade 84,2% av fallen korrekt, i jämförelse med 82,25% i nollmodellen. Inverterad OR var 1,097.

**Slutsats**

Familjer erfar oväntade utmaningar efter GBP som påverkar familjefunktionen. En gemensam omstrukturering av familjelivet krävdes för att införliva förändringar associerade med GBP. Familjerna genomgick en social process, där de bearbetade hur de som familj skulle införliva och förhålla sig till de associerade förändringarna. Resultatet visar att familjens egna resurser bör tillvaratas i bariatrisk omvårdnad. Utvärderingen av screeninginstrumentet McMaster familjens funktion för att mäta familjevikt visade att S-GFS är ett lovande instrument som kan användas både kliniskt och inom forskning i ett bariatriskt sammanhang. Familjefunktion visade sig vara associerad med aspekter av mentala dimensionerna av hälsorelaterad livskvalitet för personen som genomgått GBP två år tidigare.
Implikationer


Förslag till fortsatt forskning

ACKNOWLEDGEMENTS

These past six years being a doctoral student has been a journey, challenging, at times confusing, but most of all fun and exciting. As with many things in life, this work is the effort, patience and creativity of many persons whom I deeply appreciate and respect.

First of all, I would like to thank the families and participants that shared their time and experiences with me. Without you this project would not have been possible.

To my excellent supervisors: who has walked by my side and provided wisdom, support, laughter and occasionally put up with some frustrated tears.

Eva Benzein-thank you for believing in me as a doctoral student, for sharing your outstanding knowledge in family nursing and academic work, for your words of wisdom. It has been a privilege.

Carina Persson- We have been discussing research approaches, statistical methods over iron board in Nykvarn to revising paper at NY Library. Thank you for being the best supervisor I could have ever wanted and a friend when I needed it. You make people grow!

Anders Thorell- Mr. Hawkeye, Thanks for your support, advice and sharp and witty insights and comments on the papers.

Anna Sandgren- Thank you for your supervision and sharing your excellent knowledge in classic grounded theory in study II.

Kristoffer Årestedt- for your contributions in study III. Your excellent and inspiring statistical explanations making it interesting and comprehensible. Who knew!

Thanks also to the Institutions of Health and Caring Sciences at Linnaeus University for accepting me to the PhD-program and for all the support along the way.

Birgitta Marklund- for introducing me in the ways of the University Jennifer Bullington, Anna Forsberg, Ulrika Hörberg, Mio Mölleberg: special thanks for your valuable advice and comments on my projects at the doctoral halftime and kappa seminars.

Catarina Gaunitz and Kristina Julin: You two have been invaluable support for endless questions about the PhD-program.

Thanks to Family-focused research group, especially Mio Möllerberg, Josefin Linnarsson-Ramqvist, Liselott Årestedt for being great companions in this
adventure. Thanks for great discussions about family nursing, input on the manuscripts and great fun.

To my all my colleagues in the doctoral group: thanks for all creative, challenging, curious and fun discussions. Sofia Backåberg: Thanks for good teamwork as representatives in the PhD- program board.

Sia Jonsdottir, my roommate, it has been a pleasure sharing late nights at the office with you. I am going to miss our walks and late night discussions in Kalmar.

Rosita Brolin: thanks you for very good discussion about statistics, grounded theory and the unpredictability of life.

Ann-Sofie Andersson: Thanks for believing in me and support all these years, especially in hard times.

Staffan Gröndal and Stefan Carléns for supporting this research project.

Sabina Johansson, Eva Popowich, Caroline Starck, Moa Magnusson, Gunnel Hagström for excellent assistance in recruitments in the studies, much appreciated!

Nina Blommé, Charlotte Norberg-Jönsson, Katarina Olsson: you’re your encouragement and patience with a somewhat distracted and absent colleague.

Annette Bratt and Monica Johansson: for assistance in my article hunting and help with statically data.

Cecilia Häkanson: Thanks for encouraging me to dare to try the academic path and practical advice and being a good friend.

Britt-Marie Ternestedt: For planting the seed and encouraging me to try.

Petter Thorell, thanks for assistance with registering data in study IV.

Andrew Hart; thanks for last minute editing on the abstract. I owe you one!

My colleagues at Ersta Hospital: thanks for support and encouraging word along the way.

Anja Callius -for the beautiful cover photo.

To my family and friends, no names you know who you are, for not forgetting me and your encouragement along the way.

Lolan and Jan Bylund- mum and dad, thank you for your unconditional love and support throughout life.

Sofia Stewart: the best sister in the world, thanks for love and support.

My dearest niece and nephew, Molly and Clete Jr Stewart: Thanks for reminding me of what is really important in life; I love you to the moon and back, always!

Göran, thank you for your support and putting up with a distracted partner and piles of articles and memos in peculiar places.

Finally my deepest gratitude to contributing funders of this project:

Ersta diakoni: Erling Perssons Foundation; and The Swedish Association of Health Professionals.

REFERENCES


Bond, DS., Phelan, S., Wolfe, LG., Evans, RR.... & Wing, RR. (2008). Becoming Physically Active after Bariatric Surgery is Associated with Improved Weight Loss and Health-related Quality of Life. *Obesity*, 17, 78-83.


68


References


WHO, Classification of overweight and Obesity


Appendix 1. Binary logistic regression analyses (n=153).  

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Outcome</th>
<th>Overall model evaluation</th>
<th>Tests of individual predictors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>General health</td>
<td>Likelihood ratio test $\chi^2$</td>
<td>$95%$ C.I.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>165.340</td>
<td>-1.157 [.314,.150]</td>
</tr>
<tr>
<td>2</td>
<td>Emotional wellbeing</td>
<td>155.731</td>
<td>-1.312 [.269,.125]</td>
</tr>
<tr>
<td>3</td>
<td>Energy</td>
<td>171.530</td>
<td>-1.471 [.230,.107]</td>
</tr>
<tr>
<td>4</td>
<td>Physical functioning</td>
<td>123.120</td>
<td>-0.796 [.451,.192]</td>
</tr>
</tbody>
</table>
### Appendix 1. Binary logistic regression analyses (n=153).

#### Analysis 1: Outcome General health

<table>
<thead>
<tr>
<th>Overall model evaluation</th>
<th>Likelihood ratio test</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Tests of individual predictors</th>
<th>( \beta )</th>
<th>S.E</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>WL%</td>
<td>.034</td>
<td>.021</td>
<td>2.511</td>
<td>1</td>
<td>1.034</td>
</tr>
<tr>
<td>Sex</td>
<td>-.037</td>
<td>.444</td>
<td>.482</td>
<td>1</td>
<td>.487</td>
</tr>
<tr>
<td>Constant</td>
<td>2.129</td>
<td>1.065</td>
<td>3.998</td>
<td>1</td>
<td>.046</td>
</tr>
</tbody>
</table>

#### Analysis 2: Outcome Emotional wellbeing

<table>
<thead>
<tr>
<th>Overall model evaluation</th>
<th>Likelihood ratio test</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>155.731</td>
<td>17.972</td>
<td>3</td>
<td>.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tests of individual predictors</th>
<th>( \beta )</th>
<th>S.E</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>GF</td>
<td>-1.312</td>
<td>.390</td>
<td>11.332</td>
<td>1</td>
<td>.001</td>
</tr>
<tr>
<td>WL%</td>
<td>.037</td>
<td>.022</td>
<td>2.737</td>
<td>1</td>
<td>.098</td>
</tr>
<tr>
<td>Sex</td>
<td>-.446</td>
<td>.451</td>
<td>.978</td>
<td>1</td>
<td>.323</td>
</tr>
<tr>
<td>Constant</td>
<td>2.584</td>
<td>1.105</td>
<td>5.474</td>
<td>1</td>
<td>.019</td>
</tr>
</tbody>
</table>

#### Analysis 3: Outcome Energy

<table>
<thead>
<tr>
<th>Overall model evaluation</th>
<th>Likelihood ratio test</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>171.530</td>
<td>17.221</td>
<td>3</td>
<td>.001</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tests of individual predictors</th>
<th>( \beta )</th>
<th>S.E</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>GF</td>
<td>-1.471</td>
<td>.390</td>
<td>14.258</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>WL%</td>
<td>.012</td>
<td>.021</td>
<td>.307</td>
<td>1</td>
<td>.579</td>
</tr>
<tr>
<td>Sex</td>
<td>-.117</td>
<td>.445</td>
<td>.069</td>
<td>1</td>
<td>.793</td>
</tr>
<tr>
<td>Constant</td>
<td>2.851</td>
<td>1.086</td>
<td>6.893</td>
<td>1</td>
<td>.009</td>
</tr>
</tbody>
</table>

#### Analysis 4: Outcome Physical functioning

<table>
<thead>
<tr>
<th>Overall model evaluation</th>
<th>Likelihood ratio test</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>123.120</td>
<td>19.086</td>
<td>3</td>
<td>.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tests of individual predictors</th>
<th>( \beta )</th>
<th>S.E</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>GF</td>
<td>-0.796</td>
<td>.437</td>
<td>3.310</td>
<td>1</td>
<td>.069</td>
</tr>
<tr>
<td>WL%</td>
<td>.093</td>
<td>.026</td>
<td>12.740</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Sex</td>
<td>.345</td>
<td>.551</td>
<td>.391</td>
<td>1</td>
<td>.532</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.248</td>
<td>1.215</td>
<td>.042</td>
<td>1</td>
<td>.838</td>
</tr>
</tbody>
</table>
Appendix 2

Intervjuguide till delstudie 1
Intervjuerna präglas av att utgå från familjens berättelser, ställa så öppna frågor som möjligt, låta familjemedlemmarna reflektera över varandras utsagor och att ställa uppföljningsfrågor.

Följande frågeområden kommer att belysas:

Hälsotillstånd (Välbefinnande, familjefunktion, känsla av sammanhang, tillit inom familjen, familjefunktion, symtom, begränsningar, möjligheter, matvanor, identitetsupplevelse, glädje/lycka).

Effekter/påverkan av gastric bypass på det dagliga livet/förväntat utfall. (arbete, fritid, livsstil, familj/vänner, sociala relationer mm.)

Föreställningar i relation till familjens tidigare, nuvarande och framtida situation

Upplevelser av vården utifrån ett familjeperspektiv

Erfarenheter och stöd som familj av hälso- och sjukvården

Råd till andra familjer i likartad situation
### famíliafungtion


1 McMaster Family Assessment Device (FAD), Epstein et al., 1983.

<table>
<thead>
<tr>
<th></th>
<th>Förståndet av om familjen därför att vi missuppfattar varandra</th>
<th>Stämmer helt</th>
<th>Stämmer för det mesta</th>
<th>Stämmer ibland</th>
<th>Stämmer inte alls</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Det är svårt att planera aktiviteter i familjen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>När det blir kris, kan vi söka stöd hos varandra</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Vi kan inte prata med varandra om den sorgsenhet vi känner</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Enskilda familjemedlemmar accepteras var och en som de är</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Vi undviker att prata om våra rädslor och våra bekymmer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Vi kan visa våra känslor för varandra</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Det finns mycket spänningar inom familjen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Vi känner oss accepterade som den familj vi är</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Att fatta beslut är ett problem i vår familj</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Vi kan fatta beslut om hur vi ska lösa problem</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Vi kommer inte bra överens</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Vi litar på varandra</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix 4

### McMaster General Functioning

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Planning family activities is difficult because we misunderstand each other.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2</td>
<td>In time of crisis we can turn to each other for support.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3</td>
<td>We cannot talk to each other about sadness we feel.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4</td>
<td>Individuals are accepted for what they are.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5</td>
<td>We avoid discussing our fears and concerns.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6</td>
<td>We can express feelings to each other.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7</td>
<td>There are lots of bad feelings in the family.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>8</td>
<td>We feel accepted for what we are.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>9</td>
<td>Making decisions is a problem for our family.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>10</td>
<td>We are able to make decisions about how to solve problem</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>11</td>
<td>We don't get along well</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>12</td>
<td>We confide in each other</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>