

Bariatric surgery: beliefs, perceptions, preferences, and values of patients

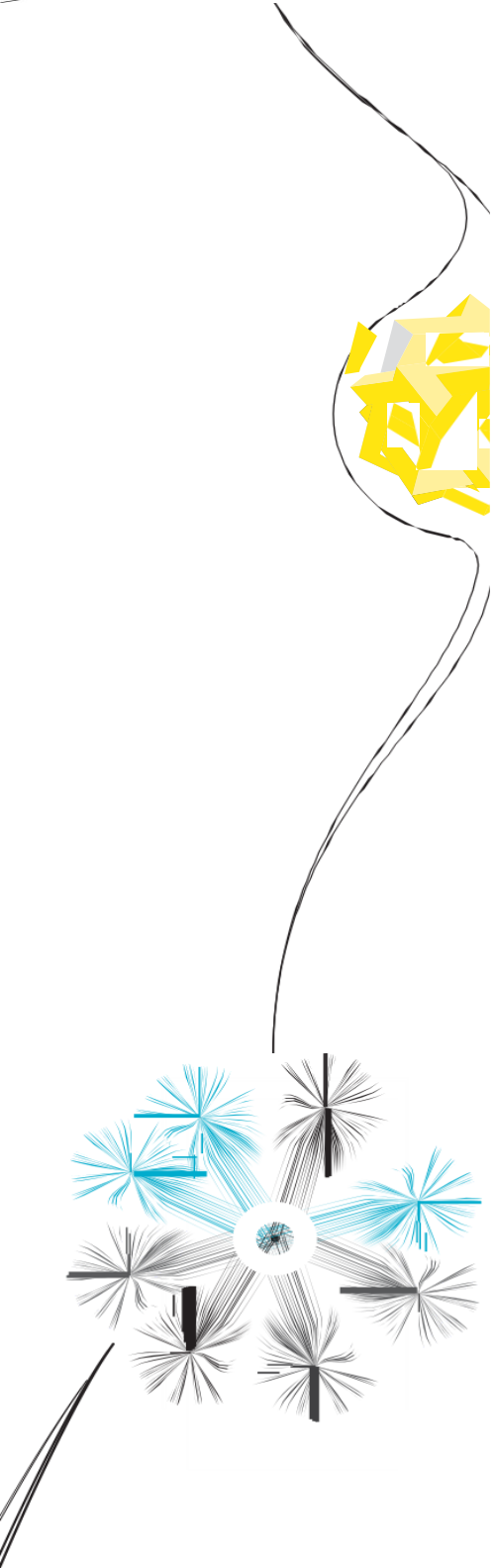
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Abstract

Introduction In order to manage weight loss, bariatric surgery is generally recommended for patients that suffer from morbid obesity. Since there is no clear guideline about which bariatric surgery (the laparoscopic Roux-en-Y gastric bypass (LRYGB), the laparoscopic Sleeve gastrectomy (LSG) or the laparoscopic mini-gastric bypass (LMGB)) fits which patient, and little is known about why clinicians and patients might choose one procedure over another, this study aims to find out how the decision-making process for a bariatric surgery for patients with morbid obesity is established and whether the internal factors of patients (beliefs, perceptions, preferences, and values) correspond to the decision that is made. In addition, to explore whether the patient's decision is influenced by external factors, the views of others that are involved and the information that is given to patients will be assessed.

Method This study uses a mixed method design, consisting of a patient survey and an observational study. Patients who visited a preoperative group meeting at the obesity centre of ZiekenhuisGroep Twente (ZGT) were asked to fill out a questionnaire twice. The questionnaire was handed over during a preoperative group meeting, and after the decision for a type of bariatric surgery was made patients were asked to fill in the questionnaire once again. The framework for the survey design was based on the information processing approach, where the internal- and external factors, as well as the decision-process, are considered as central elements. The observational study was carried out to observe both the preoperative group meetings and the consultations with the surgeon to gain more insight in the decision-making process.

Results Before the consultation with the surgeon, 46% of the patients preferred the mini-gastric bypass and the majority of these patients believed that this surgery would provide them the most weight loss (65.7%). After the consultation with the surgeon, 75% (n=30) of the included patients underwent the mini-gastric bypass and 25% (n=10) had the Roux-en-Y gastric bypass. Based on the recommendation of the surgeon, the Roux-en-Y gastric bypass was chosen by 6 out of 10 patients because of medical issues such as reflux or a failing gastric band. Patients perceived the Roux-en-Y gastric bypass as surgery with the highest risk of complications and it was perceived as the most permanent, and the most invasive surgery. The Sleeve gastrectomy was judged to be the least invasive and the least permanent surgery, and was preferred by two patients, but none of the patients underwent this surgical procedure. The majority of the patients indicated their preference on the information that was given by the surgeon and not so much on the views of family or friends. With regard to the decision-making process, most patients mentioned that the decision was made in consultation with the surgeon, which was also supported by the observational study.

Conclusion The mini-gastric bypass was the most preferred and the most performed bariatric surgery. Most of the perceptions by patients are in line with their choice for a bariatric surgery and correspond to the actual outcomes as communicated by the surgeons. In the obesity centre of ZGT, decisions were made in consultation with the patient and most respondents preferred this way of decision-making for a surgery type.

Keywords Obesity, morbid obesity, bariatric surgery, laparoscopic Roux-en-Y gastric bypass, laparoscopic Sleeve gastrectomy, laparoscopic mini-gastric bypass, patient preferences, beliefs, perceptions, values, information, others' views, (shared) decision-making.

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1. Introduction

Worldwide, the prevalence of obesity is rising. Obesity is becoming one of the most important health issues (1) with approximately 650 million obese adults worldwide in 2016 (2). In 2016, in the Netherlands, 14.2% of the adult population was obese (3). Obesity is a metabolic disorder (4) which is defined as a serious form of overweight where accumulations of fat negatively influence health (5). This weight gain is caused by a long-term imbalance between energy intake and energy expenditure (4). In order to classify obesity, the Body Mass Index (BMI) is frequently used. The formula to calculate the BMI divides body weight in kilograms by body length in meters squared (1). Obesity is defined by a BMI equal or greater than 30 (1,6), whereas morbid or severe obesity is characterized by a BMI greater than 40 (7). Risk factors for developing obesity are eating disorders, little physical exercise, and diets that consist of high energy density food (4). Obesity is associated with a higher risk of comorbidity, especially for illnesses such as diabetes type 2, cardiovascular diseases, and sleep apnoea. These illnesses may affect the quality of life and life expectancy of people (8).

Obesity can be managed by weight loss interventions, such as life-style modification, pharmacotherapy, and bariatric surgery. For patients that suffer from morbid obesity, bariatric surgery is generally recommended (1). Bariatric (weight loss) surgery tends to reduce comorbidity and mortality of morbid obese patients (9). In 2011, approximately 340,000 bariatric surgeries were performed worldwide (10). A common metric to measure the outcome of bariatric surgery is the percentage of excess weight loss (%EWL). This metric represents the amount of excess weight (EW) that is lost as a percentage of the total EW (11).

Nowadays, three types of bariatric surgeries are most frequently performed: 1) the laparoscopic Roux-en-Y gastric bypass (LRYGB), 2) the laparoscopic Sleeve gastrectomy (LSG), and 3) the laparoscopic mini-gastric bypass (LMGB).

LRYGB

The Roux-en-Y gastric bypass is the most common procedure and it is known as the gold standard for bariatric surgery (12). This procedure provides long-term excess weight loss results of approximately 60-70% (13). Complications of the Roux-en-Y gastric bypass are enteric leaks, bleedings, gastrointestinal obstruction, deep vein thrombosis, and pulmonary embolus (14).

LSG

For the Sleeve gastrectomy, long-term excess weight loss results are approximately >50% (15). The type and frequency of complications of the Sleeve gastrectomy are similar to those of the Roux-en-Y gastric bypass, however the Sleeve gastrectomy has some unique complications: nausea and vomiting may arise in the early postoperative stages, caused by obstruction of the sleeve (14). However, the Sleeve gastrectomy is a more simple surgery compared to the gastric bypass procedures, because it does not concern reconnecting or rerouting of the intestines (16).

LMGB

The mini-gastric bypass is the alternative to the Roux-en-Y gastric bypass (17) and provides excess weight loss results of approximately 80% (18). The mini-gastric bypass is a more simple procedure compared the Roux-en-Y gastric bypass (19) and is easily revisable (20). However, there is no obvious benefit of the mini-gastric bypass compared to Roux-en-Y gastric bypass in terms of reduced risk of

complications, and the long-term complications of the mini-bypass are unknown. Some concerns have been reported about an increased risk of gastric- or oesophageal cancer due to chronic biliary reflux (17). Despite the unknown long-term results, use of the mini-gastric bypass has increased significantly in the last decade (21).

Since each bariatric procedure has its own advantages and disadvantages, the choice for a procedure for an individual patient is difficult (12). There is no clear guideline on which bariatric surgery fits a specific patient and little is known about why clinicians and patients might choose one procedure over another.

One model to explain decision-making processes of individuals is the information processing approach, which was built upon the work of Herbert A. Simon (23). This approach describes that patients make decisions about treatment options just like they make other everyday choices. According to the model, as described by Bekker et al. in 2010, the way patients make decisions is influenced by several factors. Internal factors include the beliefs and perceptions of the alternative treatment options and preferences for both the outcome and the process of treatment, whereas external factors include the views of others and the information that is given about treatment options. The internal- and external factors influence the way people assimilate and judge information to reach a decision, this is also known as the decision-process (see figure 1) (23).

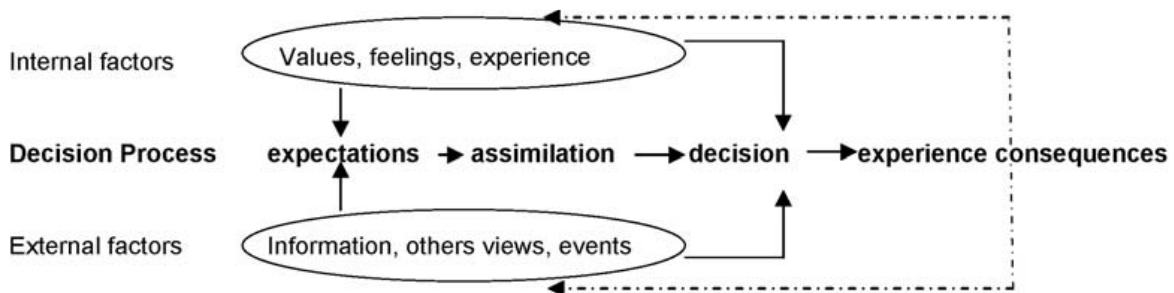


Figure 1 Patient decision-making by Bekker, H.L. (2010)

Possible beliefs, perceptions, and values of morbidly obese patients regarding bariatric surgery are described in table 1 (definitions of the factors are described in table 11, Appendix 1). For most of the factors that are displayed in table 1, it is unknown whether and to what extent these factors influence the preferences for a surgery type in patients, physicians, and other stakeholders involved in this process. In addition, it is unknown to what extent the preferences of patients are taken into consideration by the surgeon and whether the decision for a bariatric surgery is made in consultation with the patient. Furthermore, to explore whether the patient's decision is influenced by external factors, the views of others that are involved and the information that is given to patients will be assessed.

Table 1 Internal factors that influence the choice for a type of bariatric surgery

Beliefs	Perceptions	Values
Diabetes improvement (24)	Invasive procedure (25)	Diabetes remission (25)
Beliefs regarding effectiveness of bariatric surgery for obesity treatment (24)	Permanent procedure (25)	Major weight loss (26)
Beliefs about safety regarding bariatric surgery for weight loss (24)		Short operative times (26)
		Easily reversed/revised (26)
		Low failure rate (26)
		Short recovery time (26)
		Lasting weight loss (26)
		Procedure performed by an experienced surgeon (26)
		Low risk of complications (26)

Therefore, the aim of this study is to get more insight in the decision-making process for a bariatric surgery for patients with morbid obesity, and whether the internal- and external factors correspond to the decision that is made. The corresponding main research question is:

“Does the decision for a type of bariatric surgery for patients undergoing bariatric surgery in the hospital ZiekenhuisGroep Twente correspond to their beliefs, perceptions, preferences, and/or values?”

In order to answer the main research question, the following sub questions are formulated:

1. *What are the beliefs, perceptions, preferences, and values regarding bariatric surgery of patients with morbid obesity undergoing bariatric surgery in ZiekenhuisGroep Twente?*
2. *What are the views of involved others and which information regarding bariatric surgery is taken into account by morbid obese patients undergoing bariatric surgery in ZiekenhuisGroep Twente?*
3. *To what extent are patients with morbid obesity who are undergoing bariatric surgery in ZiekenhuisGroep Twente involved in the decision-making process?*

2. Method

This study uses a mixed method design to answer the research question. These study designs are presented in section 2.1 (observational study) and section 2.2 (patient survey).

2.1 Observational study

Observations were performed during two different types of meetings: the preoperative group meeting and the preoperative consultation with the surgeon. The aim of the observational study was to gain more insight in the type of and extent to which information is provided to patients during the two meetings, and to study how the decision for the type of surgery is made in the contact between health professionals and patients within the obesity centre of ZGT.

The observational study consisted of a participant observation, because the researcher participated during both the preoperative group meeting and the preoperative consultation with the surgeon. Beforehand it was mentioned that the researcher would observe during both meetings, so the involved professionals and patients were informed about the presence of the researcher.

2.1.1 Data collection

During the meetings, the researcher focused on which advantages and disadvantages of each type of bariatric surgery were mentioned and whether the surgeons gave any recommendations with regard to these surgeries. The researcher attended three preoperative group meetings and 5 to 10 consultations of four different bariatric surgeons employed at ZGT. Observational lists were used, and additional notes were taken during and after these meetings. The observational lists can be found in Appendix 2.

2.1.2 Data analysis

The notes were structured and categorized per bariatric surgery and per value (see values of table 1 in the introduction). Afterwards the observed data was qualitatively described and the information that was given by surgeons was summarized per surgery type. The results with regard to how the patients were involved in the decision-process were also qualitatively described.

2.2 Patient survey

This section will outline the questionnaire that was presented to patients. The study population, sample size, data collection, the design of the survey, and the analysis of the data will be discussed.

2.2.1 Study population

Patients aged between 18 and 65 with morbid obesity who were invited for a preoperative group meeting in ZGT in June (1 June or 22 June, 2018) were asked to participate in this study. Male and female respondents were both included in this study. Respondents that are not familiar with the Dutch language were excluded, because the survey was written in Dutch.

2.2.2 Sample size

The researcher attended both preoperative group meetings to ask patients for informed consent. During the first preoperative group meeting, 49 patients were invited and 22 patients were invited for the second preoperative group meeting. Therefore, a total of 71 patients were approached to participate in this study.

2.2.3 Data collection

The entire process that patients follow prior to bariatric surgery is displayed in figure 4, Appendix 3. This flowchart also displays the phases where the informed consent was asked and the specific times where the patients were approached to fill out the questionnaire (t1 and t2 in figure 4, Appendix 3). During the preoperative group meeting, patients were asked to fill in the questionnaire (t1). The patients that filled in the questionnaire at t1 received the questionnaire for the second time after they attended the preoperative consultation with the surgeon (t2). The process of informed consent, t1, and t2 are described in more detail below.

Informed consent and t1

During the preoperative group meetings, patients were informed by a nurse and a surgeon employed at the obesity centre about the types of surgeries that are offered in ZGT. Additionally, the researcher informed the patients about this study and handed over the patient information letter, the informed consent form, and the questionnaire. Patients then could decide for themselves whether to fill out these forms directly, or to fill it in at home and send it to the secretary of the obesity centre. The patient information letter and informed consent form can be found in Appendix 4.

T2:

Patients who responded during phase 1 were approached to fill out the questionnaire once again. The questionnaire was now sent digitally with the program Qualtrics to the patients after they attended the meeting with the surgeon. To find out if, and when the patients have attended the consultation with the surgeon, the researcher used a trial list. In that way, the researcher could only get access to the data of patients who signed the informed consent form. The patients that agreed to participate were put in this trial list by a nurse employed at the obesity centre of ZGT, this nurse has legal access to the data of those patients.

2.2.4 Survey design

The questionnaire was designed to gain more insight in the internal- and external factors, specifically whether these factors correspond to the decision of patients for a bariatric surgery. In addition, to find out if the responses of patients towards the internal- and external factors changed after they attended the consultation with the surgeon, the questionnaire was designed for two different timeframes: before the meeting with the surgeon and after the meeting with the surgeon.

The questionnaire included closed questions and consisted of four parts: 1) general questions regarding patient characteristics, 2) questions towards the beliefs of patients with regard to the types of bariatric surgeries performed in ZGT, 3) questions regarding patient perceptions of the bariatric surgeries, and 4) questions about patient preferences concerning the bariatric surgeries. The questionnaire that was sent to patients after they had their meeting with the surgeon contained additional questions regarding preferences and experiences with respect to the decision-making process. The questionnaire that was given to patients before they attended the meeting with the surgeon can be found in Appendix 5 and the questionnaire that was sent after the consultation with the surgeon is displayed in Appendix 6.

The constructs of the information processing approach were used to develop a framework for the design of the questionnaire. In this study, the following aspects of the framework were included: internal factors (beliefs, perceptions, preferences, and values), external factors (information and the views of others), and the decision-process. The literature search and the definitions of the aspects of the framework are explained in more detail below.

To identify the internal- and external factors, and to gain more insight in the aspects of the decision-process, the following search terms were used in Pubmed, ScienceDirect, FindUT, and Google Scholar: 'internal', 'external', 'factors', 'attributes', 'determinants', 'beliefs', 'perceptions', 'preferences', 'values', 'others views', 'information', 'obesity', 'morbid obesity', 'bariatric surgery', 'laparoscopic', 'gastric bypass', 'Roux-en-Y gastric bypass', 'mini-gastric bypass', 'Sleeve gastrectomy', 'decision', 'decision-process', and '(shared) decision-making'. With regard to the internal factors, several factors were found but only the factors that are related to the beliefs, perceptions, preferences, and values of patients regarding bariatric surgery were taken into account. Finally, fourteen factors were included (see also table 1 in section 1). For the external factors, the views of family members, friends, and the involved professionals were included in the design of the questionnaire. With regard to the decision-process, a validated 9-item shared decision-making questionnaire (SDM-Q-9) as described by Kriston et al. in 2009, was included in the questionnaire that was sent after the patients attended the meeting with the surgeon (27).

Internal factors

Preferences

Preferences are seen when an alternative is liked over another alternative (28). In this study, patients were asked which type of bariatric surgery they prefer.

Beliefs

In this study, a belief is defined as the acceptance of something being true or the acceptance that something exists (29). Three questions were presented to patients through a 5-point Likert Scale to find out what their beliefs regarding bariatric surgery are. Specifically, whether bariatric surgery would help to lose weight, whether bariatric surgery would reduce diabetes, and whether bariatric surgery gives a low risk of complications.

Values

To understand the preferences of patients, it is important to find out what the underlying values of those preferences are. The definition of a value is 'the extent to which something is considered as (un)desirable' (28). In this study, a ranking question was added to find out how patients value potentially favourable or unfavourable outcomes of bariatric surgery. With this value elicitation exercise, patients had to rank outcomes from most important to least important.

Perceptions

A perception is considered as the way in which something is interpreted or understood (30). In the questionnaire, patients were asked which surgery type corresponds with their perceptions of the surgery that would give the most weight loss, the least weight loss, the most effect at diabetes, the least effect at diabetes, the most complications, and the least complications. Also, the perception of which surgery type is perceived as the most invasive, the least invasive, the most permanent, and the least permanent surgery was assessed. The perceptions were set up as 'most' versus 'least', to find out which surgery is perceived by patients as surgery that provides the best or the worst results. Furthermore, the term 'invasive' refers to the involvement of instruments or objects in the human body during a medical procedure (31). The term 'permanent' indicates an irreversible procedure (25).

External factors

Information

To get more insight in the choices of patients, patients were asked which source(s) of information they take into account while choosing a specific bariatric surgery. Also, patients were questioned about which information they are interested in when consulting sources of information.

Views of others

To find out if the decision for a bariatric surgery was influenced by the recommendation of significant others, the views of friends and family members were included in the questionnaire. Furthermore, before the consultation with the surgeon, patients were also asked whether the surgeon and nurse gave a preference during the preoperative group meeting. After the meeting with the surgeon, patients were asked whether the surgeon mentioned his or her preference during the preoperative consultation.

Decision process

In the questionnaire that was presented to patients after they attended the meeting with the surgeon, extra questions were added about how the decision for a bariatric surgery in ZGT was established and whether the decision for a bariatric surgery was made in consultation with the surgeon. Also, the 9-item shared decision-making question (SDM-Q-9) with a six-point scale was included (question 21 in Appendix 6) to find out if patients were satisfied with the decision-making process in ZGT.

2.2.5 Data-analysis

In this study, the results were mainly presented using frequencies and percentages. For the patient characteristics, the age of respondents was presented by means and standard deviations (SD). The program IBM SPSS Statistics version 25.0 was used for all statistical analyses in this study.

Internal factors

Preferences

In the analyzation, preferences were analysed per surgery type. Next to that, it was studied whether the preferences of patients differed from their decision for a bariatric surgery. The surgery type that was chosen was found in the personal health records of the patients.

Beliefs

To find out if the beliefs of patients before the consultation with the surgeon were different from their beliefs after the surgical meeting, the results of both questionnaires were presented. Next to that, it was studied whether the beliefs of the patients changed if their preference changed after the consultation with the surgeon.

Values

To analyse the ranking exercise, weights were used to determine which item was valued most by respondents. An approach to calculate rank weights is the Rank Sum Method (32) and the corresponding equation is:

Equation 1 Rank Sum Method

$$W_j = \frac{n - r_j + 1}{\sum(n - r_k + 1)}$$

In this equation, w_j represents the normalized weight for the j th criterion, n is the total number of criteria, and r_j is the rank position of the criterion (32). After calculating the rank weights, the results of the ranking exercise were multiplied with the corresponding rank weights. The results of all patients were summed in order to present scores to verify how the items were valued by respondents. Afterwards, the overall results of the ranking exercise at t1 were presented per preferred surgery type. The reason for this comparison was to find out whether the results of the ranking differed per preference. The results of the ranking exercise at t2 were compared with the surgery that was chosen during the consultation with the surgeon.

Perceptions

To study whether the perceptions of patients differed after the patients attended the meeting with the surgeon, the perceptions given before the meeting with the surgeon and after the meeting with the surgeon were both presented. Besides that, it was studied whether the perceptions of patients aligned with their preferences and whether the perceptions of the patients changed if their preference changed after the consultation with the surgeon.

External factors

Information and views of others

The results on the questions regarding information and the views of others were presented for both t1 and t2 to find out if the answers of patients changed after the meeting with the surgeon.

Decision process

To assess the SDM-Q-9, a total score was calculated by multiplying the score per individual by 20 and dividing it by 9. The outcomes range from zero to hundred, which means that a score of 0 is characterized by the lowest level of shared decision-making and a score of 100 indicates the highest level of shared decision-making (27).

3. Results

3.1 Observational study

The observations of the preoperative group meetings are described in paragraph 3.1.1 and the observed data of the preoperative consultations with the surgeons are mentioned in paragraph 3.1.2.

3.1.1 Preoperative group meeting

In the period between April and June, three preoperative group meetings were observed. During each meeting, a bariatric surgeon informed the patients about the bariatric surgeries offered in ZGT. During these meetings, the same surgeon was present. The main advantages and disadvantages of each surgery, which were mentioned during the group meeting, are described in table 2.

Table 2 Advantages and disadvantages mentioned by the surgeon during the preoperative group meeting in ZGT

	Roux-en-Y gastric bypass	Mini-gastric bypass	Sleeve gastrectomy
Operating time	45-70 minutes	30-45 minutes	30-45 minutes
Excess weight loss	70%	80%	60%
Experience	>20 years	5 years	10 years
	Most performed in the Netherlands	Most performed in ZGT	Most performed worldwide
Revision possibilities	+/-	+	+
	No revision possibilities, but after re-do of the gastric band, the Roux-en-Y gastric bypass is recommended	Revision possibility: Roux-en-Y gastric bypass	Revision possibilities: Roux-en-Y gastric bypass and mini-gastric bypass
Birth control pill	Less reliable	Less reliable	Reliable
Complications	Twisting of the intestines	Long-term complications are unknown	Stenosis
Diabetes remission	++	++	+
Recommended when suffering from	Diabetes, severe reflux	Diabetes	Crohn's disease
Lasting weight loss			In the long term: weight gain

3.1.2 Preoperative consultation with the surgeon

Between 10 April and 12 June, the researcher attended 5 to 10 preoperative consultations per bariatric surgeon. In total, the consultations of four surgeons were attended.

During the consultations, each surgeon asked the patient about his or her preference for the type of surgery. Despite patients having a preference for a treatment, two out of the four surgeons explained the advantages, the disadvantages, and the surgical aspects of each surgery. According to these surgeons, they did this to verify if the patient actually understands the pros and cons of each surgery. Two surgeons did not routinely explain the surgeries a second time, but only when a patient did not have preference yet, or if a patient did not want to make the decision by themselves. Table 3 displays the advantages and disadvantages that were explained by those surgeons.

In ZGT, the patient preferences are leading in the decision on which type of bariatric surgery will be performed. However, if the surgeon feels that, based on certain patient characteristics, a patient is not the best candidate for that type of surgery, the surgeon will recommend another type of surgery. Also, if the patient does not want to make the decision, the surgeon chooses the type of surgery to be performed.

Table 3 Advantages and disadvantages mentioned by the surgeons during the preoperative consultations in ZGT

	Roux-en-Y gastric bypass	Mini-gastric bypass	Sleeve gastrectomy
Diabetes remission	Yes	Yes	Not recommended when suffering from diabetes
Weight loss effectiveness (Excess Weight Loss)	70%	80%	60%
Lasting weight loss	Effective	Effective	Least effective (risk of regaining weight)
Revision possibilities	None	One	Two
Possible complications	Internal hernia	Reflux	
Recommended when suffering from Crohn's disease	No	No	Yes
Clinical experience	Most experience (40 years)	Least experience (15 years)	

In case a patient did not know which surgery to choose and when there were no restraining patient characteristics, the mini-gastric bypass was recommended by most surgeons. Three out of four surgeons explained that this recommendation was based on the fact that the mini-gastric bypass currently is the most performed bariatric surgery in ZGT. These surgeons named the mini-gastric

bypass more favourable compared to the Roux-en-Y gastric bypass, because the mini-gastric bypass is most effective regarding excess weight loss and the mini-gastric bypass is easier to perform because it only has one bypass. However, the surgeons also indicated that all offered surgeries in ZGT are safe and effective. Only one of the surgeons had a strong preference against the Sleeve gastrectomy, based on the negative long-term weight loss effects of the Sleeve gastrectomy. Therefore, this surgeon would not recommend the Sleeve gastrectomy to any patient, unless the patient uses specific drugs or the patient suffers from Crohn's disease.

3.2 Patient survey

During the preoperative group meetings at 1 June and 22 June 2018, the questionnaire was handed over to a total of 71 patients. The number of patients that filled out the questionnaire was 41. One questionnaire was excluded from the analysis due to a missing informed consent form. Therefore, 40 patients received the questionnaire again after they attended the consultation with the surgeon. The number of patients who filled out this online questionnaire was 32.

3.2.1 Patient characteristics

The characteristics of the study population are presented in table 4. Of the respondents (n=40), the majority was female (72.5%), the mean age of the population was 47.3 years, and all respondents had the Dutch nationality. The majority of the respondents (52.5%) had completed secondary vocational education (MBO) and approximately 20% of the respondents completed higher vocational education (HBO). Seven (17.5%) patients indicated to suffer from diabetes.

Table 4 Patient characteristics

Characteristics of respondents	
<i>Demographic characteristics</i>	
Age (in years)	47.3 (SD=10.2)
Gender	
- Female	29 (72.5%)
- Male	11 (27.5%)
Nationality	Dutch 100%
Level of education	
- Secondary vocational education	21 (52.5%)
- Higher vocational education	8 (20%)
<i>Health characteristic</i>	
Diabetes	
- Yes	7 (17.5%)
- No	33 (82.5%)

3.2.2 Internal factors

Preferences

After the group information meeting, the mini-gastric bypass was preferred by 17 patients (45.9%) and the Roux-en-Y gastric bypass was preferred by 13 patients (35.1%). Furthermore, 2 patients preferred the Sleeve gastrectomy (5.4%), 5 patients did not yet have a preference (13.5%), and there were 3 missing items. After the consultation with the surgeon, 30 patients decided on the mini-gastric bypass and 10 patients decided on the Roux-en-Y gastric bypass. None of the patients in this study chose the Sleeve gastrectomy. Overall, 27 out of 37 patients (73%) underwent their preferred surgery and 10 patients changed their initial preference to the mini-gastric bypass (table 5).

Table 5 Preference of patients versus decision for a bariatric surgery

Decision \ Preference	LRYGB	LMGB	LSG	Total
LRYGB	10	3	0	13
LMGB	0	17	0	17
LSG	0	2	0	2
Don't know	0	5	0	5
Total	10	27	0	37

Beliefs

The beliefs of patients regarding bariatric surgery in general, are displayed in table 6. This table shows that the majority of the patients agreed, or strongly agreed that bariatric surgery would help them lose weight (95% for t1, 100% for t2). Most respondents also (strongly) agreed that bariatric surgery would lead to a decrease in the severity of diabetes (85.8% for t1, 81.3% for t2). In terms of the risks of bariatric surgery, most patients believed that the risk of complications during and after bariatric surgery is low.

Table 6 Beliefs of patients regarding bariatric surgery

Statement		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
'Bariatric surgery will help me lose weight'	T1 (n=40)	22 (55)	16 (40)	1 (2.5)	-	1 (2.5)
	T2 (n=32)	21 (65.6)	11 (34.4)	-	-	-
'Bariatric surgery will lead to a decrease in the severity of my diabetes'	T1 (n=35)	15 (42.9)	15 (42.9)	5 (14.3)	-	-
	T2 (n=32)	16 (50)	10 (31.3)	5 (15.6)	-	1 (2.5)
'The risk of complications during and after bariatric surgery is low'	T1 (n=39)	2 (5.1)	19 (48.7)	14 (35.9)	3 (7.7)	1 (2.6)
	T2 (n=32)	2 (6.3)	15 (46.9)	11 (34.4)	4 (12.5)	-

Data presented as N(%) unless stated otherwise.

Compared to the overall beliefs, the beliefs of the patients who preferred the Roux-en-Y gastric bypass, the mini-gastric bypass, or the Sleeve gastrectomy remained almost equal for both questionnaires. However, of the patients who preferred the mini-gastric bypass, 7 out of 17 patients (41.2%) strongly agreed that the risk of complications for bariatric surgery is low. After the consultation with the surgeon, one out of 13 patients (7.7%) strongly agreed to this statement.

Values

The answers of 31 patients were used for the analysis due to missing items or incorrect ranking from 9 of the 40 respondents (table 7). Before the meeting with the surgeon took place, the most valued surgery outcome by patients is the most weight loss in the short term. The shortest surgery duration was valued as least important outcome.

A comparison between the overall values of patients and their preferred surgery was also assessed and displayed in table 7 (column 3, 4, and 5). When comparing the answers per surgery type, the ranking given by respondents that prefer the mini-gastric bypass is almost equal to the overall results, only rank 7 and 8 exchanged places. The results of the patients that preferred the Roux-en-Y gastric bypass and the Sleeve gastrectomy show a different ranking.

Table 7 Ranking results - questionnaire t1

Criterium	Average weights			
	Overall (n=31)	Roux-en-Y bypass (n=10)	Mini- bypass (n=13)	Sleeve gastrectomy (n=2)
The surgery will provide the most weight loss in the short term	0.170 [1]	0.150 [4]	0.173 [1]	0.208 [1]
The surgery will be performed by an experienced surgeon	0.163 [2]	0.175 [1]	0.158 [2]	0.139 [3]
The surgery will provide the most weight loss in the long term	0.148 [3]	0.164 [2]	0.152 [3]	0.056 [6]
The surgery has the lowest chance at complications	0.142 [4]	0.153 [3]	0.137 [4]	0.139 [3]
The surgery has the highest chance at reducing diabetes	0.127 [5]	0.131 [5]	0.135 [5]	0.096 [4]
The surgery has the shortest recovery time	0.085 [6]	0.075 [7]	0.094 [6]	0.084 [5]
The surgery is reversible	0.084 [7]	0.094 [6]	0.071 [8]	0.111 [7]
The surgery has the shortest surgery duration	0.080 [8]	0.058 [8]	0.081 [7]	0.167 [2]

#.### = weight, [..] = Rank

The overall ranking results of patients that attended the meeting with the surgeon are displayed in table 8. The outcome that was valued most by all respondents after the meeting with the surgeon changed to 'the surgery will provide the most weight loss in the long term'. The least valued outcome was 'the surgery has the shortest surgery duration'. The results per chosen surgery type are displayed in column 3 and 4 of table 8. The Sleeve gastrectomy was not taken into account as surgery type, because none of the patients included in this study chose to undergo this surgery.

Table 8 Ranking results - questionnaire t2

Criterium	Average weights		
	Overall (n=31)	Roux-en-Y (n=8)	Mini-bypass (n=23)
The surgery will provide the most weight loss in the long term	0.146 [1]	0.174 [2]	0.136 [2]
The surgery will be performed by an experienced surgeon	0.145 [2]	0.128 [4]	0.151 [1]
The surgery will provide the most weight loss in the short term	0.141[3]	0.177 [1]	0.128 [3]
The surgery has the highest chance at reducing diabetes	0.132[4]	0.170 [3]	0.118 [5]
The surgery has the shortest recovery time	0.113[5]	0.083 [7]	0.123 [4]
The surgery is reversible	0.110[6]	0.087 [6]	0.118 [5]
The surgery has the lowest chance at complications	0.108[7]	0.111 [5]	0.107 [7]
The surgery has the shortest surgery duration	0.105[8]	0.069 [8]	0.117 [6]
<i>### = weight, [..] = Rank</i>			

Perceptions

The perceptions of patients are presented per timeframe (before and after the consultation with the surgeon) in figure 2 and 3, and in table 12 in Appendix 7. The main findings are described below.

The Roux-en-Y gastric bypass was perceived as surgery that is likely to cause the most complications, as well before as after the meeting with the surgeon (12 out of 37, 32.4% versus 14 out of 32, 43.8%). The majority of the patients also judged the Roux-en-Y gastric bypass to be the most invasive and the most permanent surgery. Before the patients had the meeting with the surgeon, the Roux-en-Y gastric bypass was considered as the most invasive surgery by 24 of 40 patients (60%) and as most permanent surgery by 24 out of 39 patients (61.5%). After the surgical meeting, the results were respectively 18 out of 32 patients (56.3%) and 18 out of 32 (56.3%).

The mini-gastric bypass was associated with providing the most weight loss by the majority of the patients, both before and after the consultation with the surgeon (23 out of 35, 65.7%, versus 19 out of 32, 59.4%). Besides that, before the meeting with the surgeon, the mini-gastric bypass was perceived as surgery that would give patients the lowest risk at complications (15 out of 39, 38.5%). After the surgical consultation, this perception was associated by most patients with the mini-gastric bypass, or with the idea that all surgeries have equal chances at complications (both n=10 out of 32, 31.3%).

The Sleeve gastrectomy was perceived as surgery type that would lead to the least weight loss and this surgery was also judged to be the least invasive, and the least permanent surgery. The least weight loss was associated with the Sleeve gastrectomy by 26 out of 40 patients (65%) before the consultation with the surgeon and by 18 out of 32 patients (56.3%) after the surgical consultation. The perception of which surgery is the least invasive procedure was associated with the Sleeve gastrectomy by 15 out of 40 patients (37.5%) after the preoperative group meeting and by 10 of 32 patients (31.3%) after the surgical consultation. With regard to the perception 'least permanent surgery', 16 out of 37 patients

(43.2%) perceived the Sleeve gastrectomy as least permanent procedure before they attended the surgical consultation. After the meeting with the surgeon, 13 of 32 patients (40.6%) shared this perception.

The patient perceptions towards the effect at diabetes were not specifically associated with one of the three surgical options. Regarding the perception most effect at diabetes, a large number of patients thought that all surgeries are equal regarding diabetes remission, respectively before the meeting with the surgeon by 13 patients out of 32 patients (40.6%) and after the meeting by 14 out of 32 patients (43.8%). Before the meeting with the surgeon took place, most patients did not know which surgery has the least effect on diabetes (n=15 out of 36 patients, 41.7%). After the surgical consultation, 14 out of 32 patients (43.8%) answered that all surgeries are equal regarding the effect at diabetes.

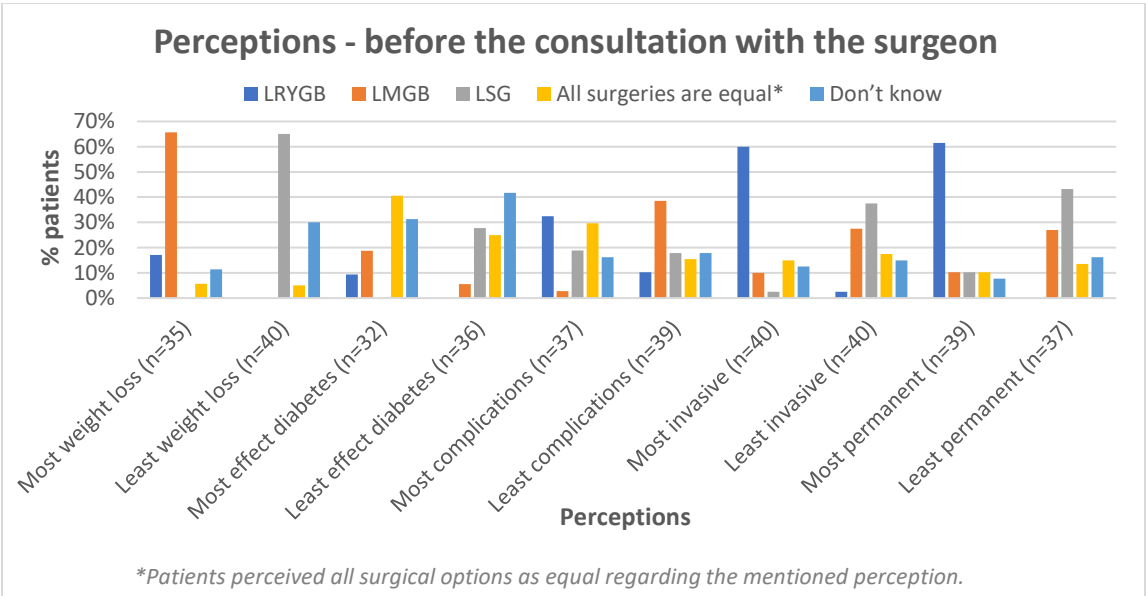


Figure 2 Perceptions of patients before the consultation with the surgeon

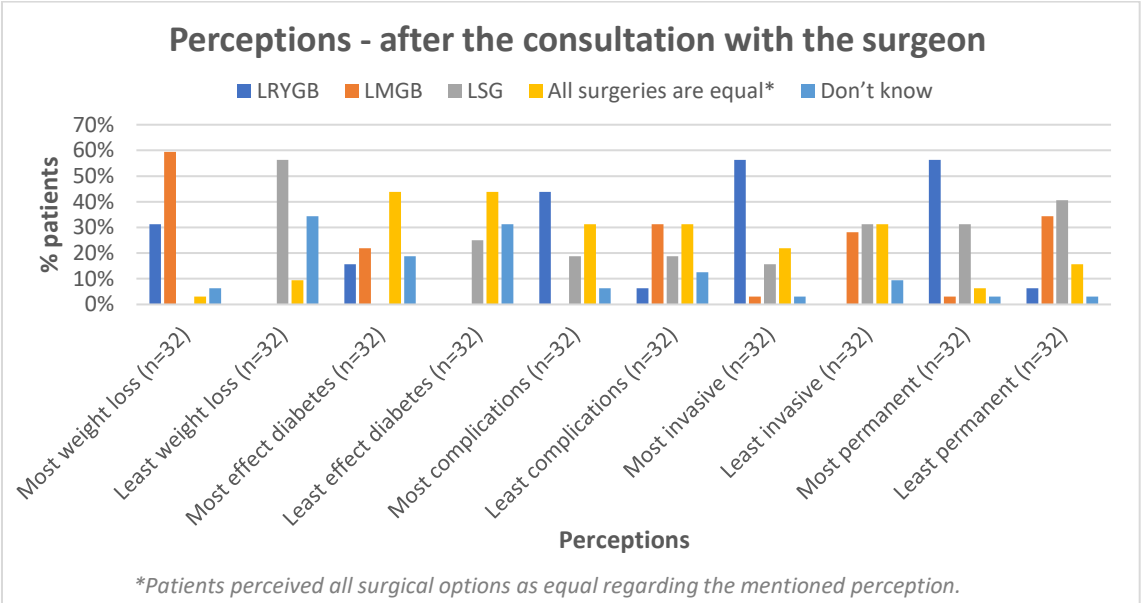


Figure 3 Perceptions of patients after the consultation with the surgeon

Preferences versus perceptions

Compared to the overall perceptions of the included patients, the results per patient group that preferred the Roux-en-Y gastric bypass, the mini-gastric bypass, or the Sleeve gastrectomy differentiated. Specifically the perceptions 'most weight loss', 'most effect at diabetes' and 'least invasive surgery' differed when taking the patient preferences into account. The patients that preferred the Roux-en-Y gastric bypass, the mini-gastric bypass or the Sleeve gastrectomy perceived that surgery as surgery that would result in the most weight loss, respectively by n=6 (54.5%), n=16 (100%) and n=2 (100%). Next to that, of the patients that preferred the mini-gastric bypass, 5 out of 14 patients (35.7%) thought that the mini-gastric bypass would lead to the best effect in diabetes, but most of the patients that preferred the Roux-en-Y gastric bypass or the Sleeve gastrectomy, thought that all surgery types have an equal effect at diabetes (n=5 out of 10, 50% and n=1 out of 2, 50%). According to the overall results, the Sleeve gastrectomy was perceived as the least invasive surgery by most patients. However, when looking at the results per patient preference, of the patients that preferred the Roux-en-Y gastric bypass or the mini-gastric bypass, their preferred surgery was perceived as the least invasive surgery (respectively n=4 out of 13, 30.8% and n=6 out of 17, 35.3%).

Change of preference versus change in beliefs, perceptions and values

After the consultation with the surgeon, 10 patients changed their preference. Eventually, each of these patients decided to choose the mini-gastric bypass (see table 5). In this section, a description is given to what extent the beliefs, perceptions, and values of patients changed if their preference changed. Due to missing items, the answers of 8 patients were taken along in this analysis. With regard to the patient values, the results of 7 patients were included, also due to missing items.

Change in beliefs

No large differences were seen when comparing the beliefs of patients before the meeting with the surgeon with their beliefs after the consultation.

Change in perceptions

A change in perception was especially seen for the perceptions about which surgery provides the most weight loss and which surgery is the most permanent procedure. After the consultation with the surgeon, the perception 'most weight loss' was associated with the mini-bypass by 5 of 8 patients, of which 3 patients did not initially associate the mini-bypass as surgery that would provide them the most weight loss. With regard to the perception of a surgery being permanent, one patient thought before the meeting with the surgeon, that the Roux-en-Y gastric bypass was the most permanent surgery. After the surgical consultation, this number increased to 5 patients.

Change in values

Per timeframe, the weights of the values are displayed in table 9. This table shows that most weight loss was valued highest before and after the consultation with the surgeon. However, the weights for this rank differed highly between t1 and t2. Furthermore, before the meeting with the surgeon, the surgical recovery time was placed at rank 7. After the meeting with the surgeon, this item was ranked at place 2.

Table 9 Overall ranking results of patients that changed their preference

Criterium	Average weights	
	T1 (n=7)	T2 (n=7)
The surgery will provide the most weight loss in the short term	0.149 [1]	0.5 [1]
The surgery will be performed by an experienced surgeon	0.142 [2]	0.125 [3]
The surgery will provide the most weight loss in the long term	0.128 [3]	0.122 [4]
The surgery has the lowest chance at complications	0.118 [5]	0.094 [7]
The surgery has the highest chance at reducing diabetes	0.122 [4]	0.094 [7]
The surgery provides the shortest recovery time	0.063 [7]	0.128 [2]
The surgery is reversible	0.101 [6]	0.104 [5]
The surgery has the shortest surgery duration	0.052 [8]	0.101 [6]

#.## = weight, [...] = Rank

3.2.3 External factors

Information

Before the meeting with the surgeon, the preferences of the patients (n=40) were mostly based on the recommendation of the physician (n=29, 72.5%). The internet, brochures, and the nurse of the obesity centre were also considered as important sources, respectively by n=15 (37.5%), n=14 (35%) and n=13 (32.5%). After the surgical meeting, 26 respondents preferred the information that was given by the surgeon (65%). Other important sources were the nurse (n=13, 32.5%) and the internet (n=10, 25%).

Before the meeting with the surgeon took place, the majority of the patients were looking for information about the effect of the surgery (n=31, 77.5%), experiences of others that underwent bariatric surgery (n=30, 75%), and information about the risks of the surgery (n=23, 57.5%). After the consultation with the surgeon, the majority of the patients were looking for the same kind of information, respectively by 24 (60%), 24 (60%), and 19 patients (47.5%).

Views of others

Family members and friends

The responses of patients given before the surgical meeting, as well as the responses given after the consultation with the surgeon, show that the majority of the patients indicated that it doesn't matter which type of surgery is recommended by family members or friends, or that they do not know what their family members or friends would recommend. However, the mini-gastric bypass was recommend more often by friends compared to the Roux-en-Y gastric bypass and the Sleeve gastrectomy (table 10).

Table 10 Views of family and friends before and after the meeting with the surgeon

“Which surgery should you choose according to your friends/family members?”	Family		Friends	
	T1 (n=39)	T2 (n=31)	T1 (n=40)	T2 (n=31)
Roux-en-Y gastric bypass	5 (12.8)	5 (16.1)	5 (12.5)	4 (12.9)
Mini-gastric bypass	9 (23.1)	8 (25.8)	4 (10)	6 (19.4)
Sleeve gastrectomy	2 (5.1)	1 (3.2)	1 (2.5)	-
Don't know	10 (25.6)	6 (19.4)	17 (42.5)	8 (25.8)
Doesn't matter	13 (33.3)	11 (35.5)	13 (32.5)	13 (41.9)

Data presented as N(%) unless stated otherwise.

Surgeon and nurse

Of the 38 respondents, 13 patients (34.2%) replied that the surgeon and nurse did not indicate a clear preference for a type of bariatric surgery during the preoperative group meeting. In addition, the patients who thought that the surgeon and nurse preferred a surgery type, indicated that the nurse and surgeon preferred the mini-gastric bypass or the Roux-en-Y gastric bypass (both n=8, 21.1%).

After the meeting with the surgeon, 14 out of 31 patients (45.2%) indicated that the surgeon had a preference for the mini-gastric bypass during the preoperative consultation. The Roux-en-Y gastric bypass and the Sleeve gastrectomy were respectively mentioned by 7 patients (22.6%) and 1 patient (3.2%). Also, 9 patients (29%) indicated that the surgeon did not state a clear preference.

3.2.4 Decision process

The questions of the decision-making part of the questionnaire were answered by 31 patients. Approximately 64.5% of the patients indicated that the decision was made together with the surgeon (n=20). Most of the other respondents mentioned that the decision was made by themselves, with the opinion of the surgeon kept in mind (n=8, 25.8%). Patients were also asked about how they would have wanted the decision to be made when choosing a certain type of bariatric surgery. In that case, 20 patients wanted to decide together with the surgeon (64.5%). Most others wanted to decide for themselves, with the opinion of the surgeon kept in mind (n=8, 25.8%).

The SDM-Q-9 questionnaire was filled in by 29 patients. The scores given by the patients ranged from 11.11 to 100 on a scale from 0 to 100. The average score was 73.33, with a Cronbach's alpha score of 0.807. In addition, the majority of the patients agreed with the items of the questionnaire. The highest scores were found on items 5 (understanding information) and 6 (patients' preference). The lowest score was found on item 2 (asking the patient how he or she wants to be involved). Besides that, from the patients that gave a low mean score, the lowest scores were given for item 2 and item 7 (considering the treatment options). Of these patients, two patients gave a mean score of <29 and three other patients gave a score below 60.

4. Discussion

This chapter will start by discussing the key results and other important findings of this study, followed by discussing its strengths, limitations, and recommendations.

4.1 Findings and comparisons to literature

The main aim of this study was to get more insight in how the decision-making process for a bariatric surgery for patients with morbid obesity in ZGT is established and whether the beliefs, perceptions, preferences, and values of patients correspond to the decision that is made.

This study shows that the mini-gastric bypass was the most performed surgery in ZGT. This surgery is preferred by patients, because it is perceived as surgical procedure that provides the most weight loss of all three surgical options. The mini-gastric bypass is also perceived by both patients and clinicians as a less invasive surgery compared to the Roux-en-Y gastric bypass. These perceptions are in line with the actual outcomes as communicated by the healthcare professionals. This also indicates that the patients, who are the leading decision-makers in this case, make normatively 'good' decisions which aligns with their values and the current evidence. However, not all perceptions correspond to the surgical choice of patients. Most patients considered the mini-gastric bypass as surgery type to provide them the lowest risk on complications. This view cannot be supported by literature, because it is unknown whether the mini-gastric bypass has a smaller chance at complications in comparison to the other surgical options.

The Sleeve gastrectomy was considered as the least invasive and the least permanent procedure, but none of the respondents chose to undergo this type of surgery. This might be explained by the fact that the outcome of a surgery being reversible was not perceived as important by patients. Another explanation could be the fact that most patients preferred a surgery that provides the most weight loss. Compared to the mini-gastric bypass and the Roux-en-Y gastric bypass, the Sleeve gastrectomy seems to provide the least amount of weight loss (13,15,18), this was also communicated by the surgeons.

The Roux-en-Y gastric bypass is perceived as the most permanent and the most invasive surgery, and patients thought that this procedure would provide the highest risk of complications. The perception of the Roux-en-Y gastric bypass being the most permanent surgery is in line with the information given by the surgeons. However, in literature it was not found which surgery is the most or the least invasive procedure and which surgery gives the highest or lowest risk on complications. Patients were also not informed about which surgery is the most invasive, but the surgeons in ZGT did indicate that the risk of complications is about equal for the three surgical options. In addition, of the ten patients who underwent the Roux-en-Y gastric bypass, six patients chose this surgery because of reflux complaints or as redo surgery after a failing gastric band. This corresponds to the recommendation of the surgeons. In those cases, most patients will follow the recommendation of the surgeon which is in line with the finding of this study that most patients base their choice for a surgery type on the information that is given by the surgeon.

The results of this study showed that most patients perceived their preferred surgery as surgery that would provide the best surgical outcomes, specifically in terms of which surgery would give the most weight loss, the most effect at diabetes, and which surgery is the least invasive. An explanation for these results could be that patients want to convince themselves that they have chosen the 'best' surgical option and therefore perceive their chosen surgery as surgery that leads to the best surgical outcomes. This phenomenon is also known as confirmation bias (33). Furthermore, with regard to the values of the patients that changed their preference after the meeting with the surgeon, the ranking of the item 'surgical recovery time' changed from rank 7 to rank 2 after patients visited the surgeon. This change might be explained by the information that is given by the surgeons during the preoperative group meeting and/or consultations. However, it was not observed that the surgeons emphasized the surgical recovery time during those meetings. Besides that, this finding is based on the results of seven patients, which makes it difficult to make a valid conclusion.

In terms of the decision-making process in ZGT, the patients are the leading decision-makers when it comes to choosing between the different surgery types. The majority of the patients indicated that the decision was made in consultation with the surgeon. This was confirmed during the observational study, where the patients and their preferences were involved in the decision-making process, and it was also confirmed by the surgeons and patients themselves. Most of the respondents also preferred this way of decision-making for a surgery type, which indicates an agreement between the actual and desired decision-making. This also corresponds to the study of Laidsaar-Powell et al. (2012), where it is stated that patients desire to have control about how decisions are made (34). Furthermore, the definition of shared decision-making applies to the results of this study. Shared decision-making includes the involvement of at least the patient and the physician when it comes to the process of decision-making (35). According to the majority of the patients, the following aspects were discussed by the surgeon during the surgical consultation: the available treatment options, the pros and cons of each option, the patient preferences, and the involvement of the patients in making the final decision. These aspects align with the stages of shared decision-making (35,36).

The framework used in this study, based on the information processing theory, gave insight in the factors that could influence the decision-making process for a bariatric surgery. The results of this study showed that most of the preferences, perceptions, and values of patients correspond to their decision, which indicates that these factors contributed to the goal of this study. However, the beliefs of patients did not remarkably change after the consultation with the surgeon, and did not influence the choice for a surgery type. This might be explained by the fact that the beliefs in this study were set up as 'general' beliefs towards bariatric surgery and patients already decided to undergo a bariatric surgery before they attended the preoperative group meeting. Also, patients were already informed by the involved professionals about the effects of bariatric surgery before they attended the group meeting. Therefore, the advice for further research is to introduce the beliefs at an earlier stage of the surgical process. Furthermore, not all factors of the information processing theory were included in this study. The internal factor '(prior) experience' and the external factor 'events' were not taken into account, because these factors were not found during the literature study. Based on literature and the results of this study, these factors might be excluded from the model when the model is used for decision-making regarding bariatric surgery. Besides that, the factor 'clinical experience with a surgery', expressed in the number of years a surgery has been introduced and performed in an organization, was not found in literature but was often mentioned by the surgeons in ZGT. For instance, the surgeons

stated that the mini-gastric bypass is known for its short clinical experience, which could make patients consider to choose one of the other surgical options. For additional research, it might be interesting to include this factor and specifically to examine the perceptions and values of patients regarding this factor.

4.2 Strengths and limitations

4.2.1 Strengths

To our knowledge this is the first study that assessed the beliefs, perceptions, preferences, and values of morbidly obese patients undergoing bariatric surgery. Another strength concerns the literature-based framework that was used for the design of the survey.

In this study, the researcher attended consultations with all bariatric surgeons employed at ZGT. Besides that, the observational study was an opportunity to create insight in the actual decision-making process.

4.2.2 Limitations

The first limitation can be found in the reliability of the results. Based on the small sample size of the research group, it is difficult to make valid conclusions about the influence of the internal- and external factors on the surgical decision-making process. Furthermore, this study only focused on patients that visited the obesity centre in ZGT. Therefore, it is difficult to generalise the research results to other obesity centres.

A limitation of the observational study was aimed at the Hawthorne effect. In this study, this effect was characterized by the fact that the surgeons knew they were being observed and therefore possibly changed their behaviour (37). This effect may have influenced the results of the observational study, therefore it is important to acknowledge that this effect was present.

Another limitation was based on the surgical information that was provided during the preoperative group meeting, because this information was always given by the same surgeon. Therefore, the information during each group meeting was almost identical. The researcher could therefore not observe an effect between surgeons.

4.3 Recommendation

With regard to the questionnaire that was given to patients during the preoperative group meeting, the patients were at that moment already informed by the professionals. For future research, a questionnaire could be introduced at the beginning of the bariatric process. In that way, a baseline could be set up to assess whether patients already have certain beliefs, perceptions, preferences, and values before participating in the bariatric process.

A recommendation aimed at the management and the surgeons of the obesity centre of ZGT may concern the Sleeve gastrectomy. The results of this study show that none of the patients in this study had the Sleeve gastrectomy. Since patients prefer a surgery that is performed by an experienced surgeon and given that the number of performed Sleeve gastrectomy procedures in ZGT is decreasing, it might be wondered if the surgeons can maintain their surgical experience with regard to this surgical procedure. According to Hollenbeak et al. (2008) early mortality is associated with a lower bariatric surgical volume (38). A solution for this potential problem could be to refer patients to a centre where the Sleeve gastrectomy is performed more often, for instance when a patient suffers from Crohn's disease or when a patient uses particular types of drugs. In those cases, the Sleeve gastrectomy is often recommended by the surgeons in ZGT.

For future research, it might also be interesting to visit other hospitals or clinics specialized in bariatric surgery to study if the perceptions, beliefs, preferences, and values of patients that visit other healthcare organizations are similar, but also to check which surgeries are recommended by the surgeons in those organizations.

4.4 Conclusion

The mini-gastric bypass was perceived as the most preferred and the most performed bariatric surgery. Most of the perceptions by patients are in line with their decision and with the actual outcomes as communicated by the healthcare professionals. However, not all perceptions correspond to the surgical choice of patients. For example, the Roux-en-Y gastric bypass was often chosen because of medical reasons, and the Sleeve gastrectomy was perceived as the least invasive and the least permanent surgery, but none of the patients in this study chose this surgery. In the obesity centre of ZGT, decisions were made in consultation with the patient and most respondents also preferred this way of decision-making when choosing between surgery types. According to the majority of the patients, the stages of shared decision-making were discussed during their consultation with the surgeon. This reflects that shared decision-making was applied in the obesity centre of ZGT.

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6. Appendices

Appendix 1 – Factors and definitions regarding bariatric surgery

Table 11 Factors and corresponding definitions regarding bariatric surgery

	Factors	Definition
Beliefs		
	Diabetes improvement (24)	Reduction or disappearance of the signs and symptoms of diabetes (39)
	Effectiveness of bariatric surgery for obesity treatment (24)	Percentage of Excess Weight Loss (%EWL) (24,40)
	Beliefs about safety regarding bariatric surgery for weight loss (24)	Safety: prevention of adverse events and errors (41)
Perceptions		
	Invasive procedure (25)	A procedure involving extraction of tissue sample, penetration of the skin or bodily orifices (not ears or mouth) or insertion of diagnostics in the bodily orifices (42)
	Permanent procedure (25)	Irreversible procedure (25). No option to undergo other therapeutic treatments after the first bariatric procedure (43)
Values		
	Diabetes remission (25)	Disappearance of the signs and symptoms of diabetes (39)
	Major weight loss	Maximum weight loss results (mostly achieved within two years after the surgery) (26)
	Short operative times	Operating time: the time needed to perform the surgery (44)
	Easily reversed/revised	Reversible procedure: the option to undergo other therapeutic

	Short recovery time	treatments after the first bariatric procedure (43) Recovery time: the number of days after the surgery has been performed and patients have resumed to daily activities, such as driving and household activities (13)
	Lasting weight loss	Weight loss maintenance (after the first two years of the performed surgery) (26,45)
	Procedure performed by experienced surgeon	Minimum number of performed procedures per year by a surgeon (46)
	Low risk of complications (26)	Complication rate of all adverse events associated with bariatric surgery, such as reflux, bleeding, vomiting and leaks (47).

Appendix 2 – Observational lists

**This part is confidential.*

Appendix 3 – Process bariatric surgery

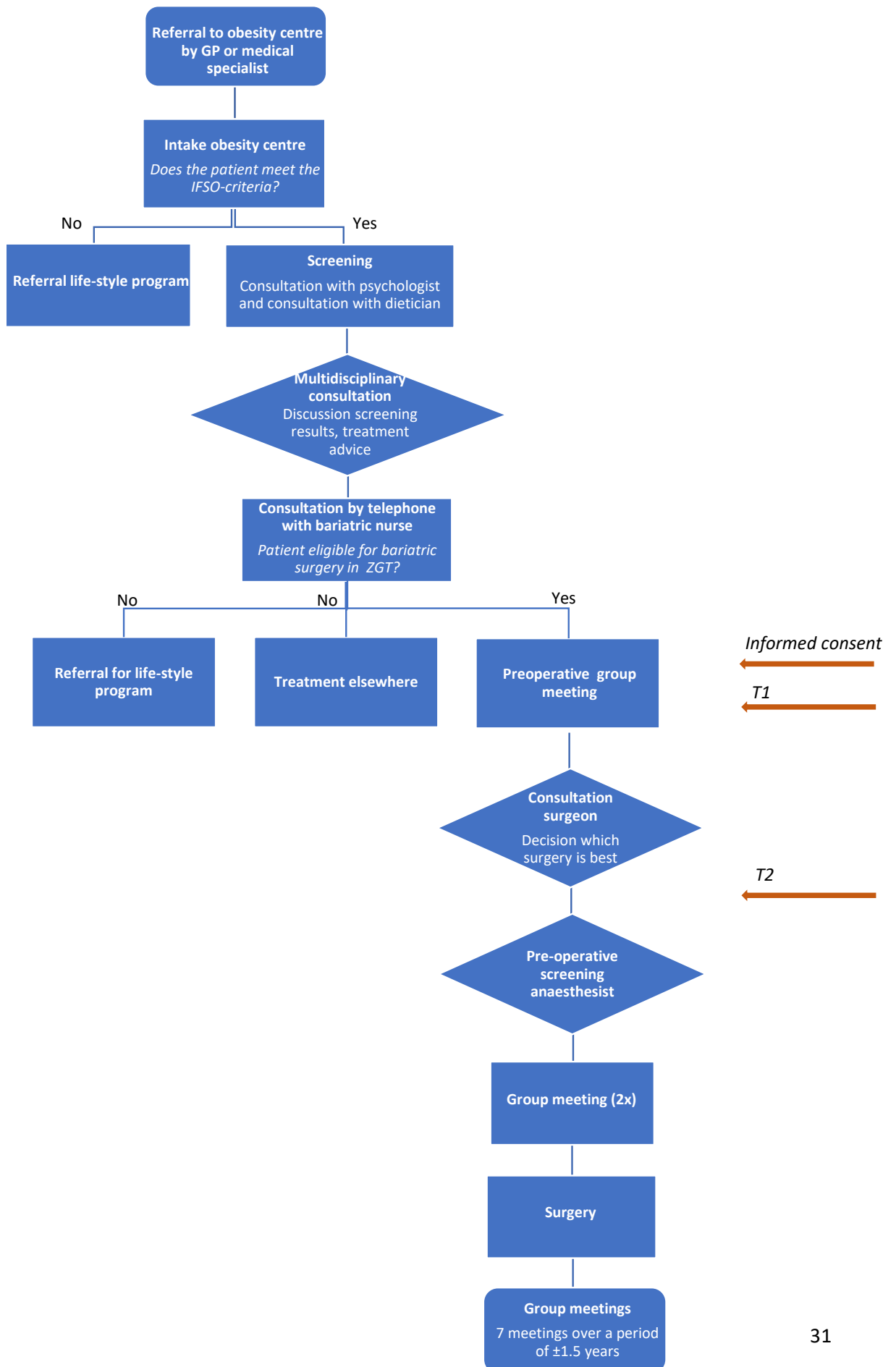


Figure 4 Process bariatric surgery ZGT (2017)

Informatie voor de patiënten

Informatiebrief “Voorkeuren van de patiënt ten aanzien van bariatrische chirurgie”

Geachte heer/mevrouw,

U volgt een traject om een bariatrische ingreep te kunnen ondergaan in het ZGT. Wij, als behandelteam van het obesitascentrum ZGT, zijn erg benieuwd naar uw voorkeuren ten aanzien van bariatrische chirurgie en hebben hiervoor een onderzoek opgesteld. Via deze weg willen we u vragen om deel te nemen aan dit onderzoek. Voordat u deze beslissing neemt, is het belangrijk om meer te weten over het onderzoek. Leest u daarom deze brief rustig door. Heeft u na het lezen nog vragen? Op de volgende pagina vindt u de contactgegevens van de onderzoeker.

1. Waarom wordt dit onderzoek uitgevoerd?

Dit onderzoek wordt uitgevoerd om inzicht te krijgen in uw voorkeuren met betrekking tot de bariatrische ingrepen die in het ZGT worden uitgevoerd. Met deze informatie kunnen wij de informatie die gegeven wordt aan patiënten over de chirurgische ingrepen verder verbeteren.

2. Wat kan ik verwachten van het onderzoek?

Indien u besluit mee te doen met dit onderzoek, zullen wij u tweemaal benaderen om een vragenlijst in te vullen. Met deze vragenlijst willen wij inzicht krijgen in uw voorkeuren ten aanzien van bariatrische chirurgie. U wordt gevraagd deze vragenlijst eenmaal in te vullen vóór het preoperatieve gesprek met de chirurg en eenmaal ná het preoperatieve gesprek met de chirurg.

Bezoeken en metingen

Voor dit onderzoek hoeft u geen extra bezoeken aan het ziekenhuis te brengen. Ook heeft deelname aan dit onderzoek geen invloed op de behandeling die u zult krijgen. Dit betekent dat u wordt behandeld zoals u normaal ook behandeld zou worden.

3. Wat wordt er van u verwacht

Als u instemt met deelname aan dit onderzoek, dan vragen wij u om het volgende te doen:

- Dit toestemmingsformulier ondertekenen;
- De vragenlijst zo volledig mogelijk in te vullen;
- Contact op te nemen met de onderzoeker als uw e-mailadres wijzigt, zodat wij u op uw nieuwe e-mailadres kunnen benaderen.

4. Mogelijke voor- en nadelen van deelname aan dit onderzoek

Deelname aan het onderzoek is niet belastend. U heeft zelf geen medisch voordeel als u meedoet aan dit onderzoek. Als u meedoet aan dit onderzoek betekent dit wel dat u bijdraagt aan het vergroten van de kennis ten aanzien van de keuzes die patiënten maken voor een bariatrische ingreep en het verbeteren van kwaliteit van zorg binnen het ZGT.

Deelname aan het onderzoek betekent dat u extra tijd kwijt bent; het invullen kost tweemaal ongeveer 10 minuten. Tevens kan het voorkomen dat u hinder ervaart van dit onderzoek doordat de vragenlijsten mogelijk confronterend voor u zijn of doordat u het aantal benaderingen ten aanzien van het invullen van de enquête belastend vindt.

5. Zijn er voorwaarden aan deelname?

Nee, deelname aan dit onderzoek is geheel vrijwillig. U beslist zelf of u meedoet aan het onderzoek. Als u besluit niet deel te nemen, hoeft u verder niets te doen. U hoeft niets te ondertekenen en u hoeft ook niet te zeggen waarom u niet wilt meedoen. U krijgt dan de behandeling die u anders ook zou krijgen. Niet deelnemen heeft geen consequenties voor u. Ook als u wel deelneemt, kunt u altijd van gedachten veranderen en terugtrekken zonder een reden op te geven, zonder dat dit consequenties heeft voor u of uw verdere behandeling. De gegevens die tot dat moment zijn verzameld, kunnen worden gebruikt voor het onderzoek.

6. Wie hebben er inzage in de gegevens van het onderzoek?

Uw gegevens kunnen worden gebruikt voor wetenschappelijk onderzoek. De informatie die verzameld wordt tijdens de onderzoeksperiode wordt vertrouwelijk behandeld in overeenstemming met de richtlijn inzake gegevensbescherming van de Europese Unie en de Wet bescherming persoonsgegevens. De verzamelde informatie wordt geïdentificeerd met een code, hierbij worden geboortedatum en initialen niet gebruikt. Alleen de code zal worden gebruikt voor het documenteren van de onderzoeksresultaten. Alleen de onderzoeker weet wie de persoon achter het codenummer is.

Mensen die uw gegevens kunnen inzien zijn het onderzoeksteam, een monitor die voor ZGT werkt om de kwaliteit en privacy van deelnemers van het onderzoek te controleren, en de Inspectie voor de Gezondheidszorg. Zij houden uw gegevens geheim. Als u de toestemmingsverklaring ondertekent, geeft u toestemming voor het verzamelen, bewaren en inzien van uw medische en persoonlijke gegevens. De onderzoeker bewaart uw gegevens 15 jaar.

7. Met wie kan ik contact opnemen bij vragen of problemen?

Bij vragen en/of problemen kunt u contact opnemen met de uitvoerend onderzoeker;

Celine Lentelink.

E-mailadres c.lentelink@zgt.nl.

Bij klachten kunt u contact opnemen met het klachtenbureau, via het formulier op de website van Ziekenhuisgroep Twente: <https://www.zgt.nl/patienten-en-bezoekers/geef-uw-mening-over-ons/een-klacht-indienen/klachtenformulier/>

Wij willen u vriendelijk bedanken voor het lezen van deze informatie. Aarzel niet om contact op te nemen met vragen!

Namens het onderzoeksteam,

Celine Lentelink
Student Gezondheidswetenschappen
Universiteit Twente / ZGT

Toestemmingsverklaring (informed consent)

Titel onderzoek: "Voorkeuren van de patiënt ten aanzien van bariatrische chirurgie"

Verantwoordelijk onderzoeker: Celine Lentelink

In te vullen door de deelnemer

- Ik heb de informatiebrief gelezen. Ook kon ik vragen stellen. Mijn vragen zijn voldoende beantwoord. Ik had genoeg tijd om te beslissen of ik meedoe.
- Ik weet dat meedoen vrijwillig is en ik weet dat ik op ieder moment kan beslissen om toch niet mee te doen of te stoppen met het onderzoek. Daarvoor hoef ik geen reden te geven.
- Ik weet dat sommige mensen mijn gegevens kunnen inzien. Deze mensen staan vermeld in deze informatiebrief.
- Ik geef toestemming voor het verzamelen en gebruiken van mijn gegevens op de manier en voor de doelen die in de informatiebrief staan.
- Ik geef toestemming om mijn gegevens op de onderzoekslocatie nog 15 jaar na dit onderzoek te bewaren.
- - Ik geef **wel**
 geen toestemming om mij na dit onderzoek opnieuw te benaderen voor vervolgonderzoek.
- Ik wil meedoen aan dit onderzoek.

Naam deelnemer:.....

Geboortedatum patiënt: __ / __ / __

E-mailadres:

Datum : __ / __ / __ **Handtekening deelnemer:**.....

In te vullen door de uitvoerend onderzoeker

Ik verklaar dat ik deze persoon volledig heb geïnformeerd over het genoemde onderzoek. Als er tijdens het onderzoek informatie bekend wordt die de toestemming van de patiënt zou kunnen beïnvloeden, dan breng ik hem/haar daarvan tijdig op de hoogte.

Naam onderzoeker: Celine Lentelink

Handtekening:

Datum:

Appendix 5 – Questionnaire t1

**This part is confidential.*

Appendix 6 – Questionnaire t2

**This part is confidential.*

Appendix 7 – Overall results patient perceptions

Table 12 Overall results of the perceptions of patients during t1 and t2

Perception		LRYGB	LMGB	LSG	All surgeries are equal*	Don't know
Most weight loss	T1 (n=35)	6 (17.1)	23 (65.7)		2 (5.7)	4 (11.4)
	T2 (n=32)	10 (31.3)	19 (59.4)		1 (3.1)	2 (6.3)
Least weight loss	T1 (n=40)			26 (65)	2 (5)	12 (30)
	T2 (n=32)			18 (56.3)	3 (9.4)	11 (34.4)
Most effect diabetes	T1 (n=32)	3 (9.4)	6 (18.8)		13 (40.6)	10 (31.3)
	T2 (n=32)	5 (15.6)	7 (21.9)		14 (43.8)	6 (18.8)
Least effect diabetes	T1 (n=36)		2 (5.6)	10 (27.8)	9 (25)	15 (41.7)
	T2 (n=32)			8 (25)	14 (43.8)	10 (31.3)
Most chance at complications	T1 (n=37)	12 (32.4)	1 (2.7)	7 (18.9)	11 (29.7)	6 (16.2)
	T2 (n=32)	14 (43.8)		6 (18.8)	10 (31.3)	2 (6.3)
Least chance at complications	T1 (n=39)	4 (10.3)	15 (38.5)	7 (17.9)	6 (15.4)	7 (17.9)
	T2 (n=32)	2 (6.3)	10 (31.3)	6 (18.8)	10 (31.3)	4 (12.5)
Most invasive	T1 (n=40)	24 (60)	4 (10)	1 (2.5)	6 (15)	5 (12.5)
	T2 (n=32)	18 (56.3)	1 (3.1)	5 (15.6)	7 (21.9)	1 (3.1)
Least invasive	T1 (n=40)	1 (2.5)	11 (27.5)	15 (37.5)	7 (17.5)	6 (15)
	T2 (n=32)		9 (28.1)	10 (31.3)	10 (31.3)	3 (9.4)
Most permanent	T1 (n=39)	24 (61.5)	4 (10.3)	4 (10.3)	4 (10.3)	3 (7.7)
	T2 (n=32)	18 (56.3)	1 (3.1)	10 (31.3)	2 (6.3)	1 (3.1)
Least permanent	T1 (n=37)		10 (27)	16 (43.2)	5 (13.5)	6 (16.2)
	T2 (n=32)	2 (6.3)	11 (34.4)	13 (40.6)	5 (15.6)	1 (3.1)

Data displayed as N(%) unless stated otherwise.

*Patients perceived all surgical options as equal regarding the mentioned perception.