

# Bilateral breast reduction surgery at Mater Dei Hospital: Analysis of physical and psychological symptoms using the BREAST- Q

Juanita Parnis, Duncan Aquilina, Matthew Borg, Francis X. Darmanin, Joseph E. Briffa

## Abstract

**Introduction:** The literature describes a high patient satisfaction rate after breast reduction. In this retrospective study, we used the BREAST-Q to analyze satisfaction with breast appearance and physical, psychosocial and sexual well-being of patients who underwent bilateral breast reduction (BBR) at Mater Dei Hospital (MDH). This was done to obtain local data which was totally lacking. With a quantitative value, we were able to compare our results with other centers worldwide and have a baseline for future work. We also looked into whether age, co-morbidities and weight of breast tissue removed makes a difference to the overall satisfaction rate.

**Method:** We hope to demonstrate a better quality of life following surgery and aim to compare the results of this study to others carried out worldwide. In this way we can better understand the local situation and see where there is the room for improvement. Permission to use the BREAST-Q questionnaire and translate it into Maltese was obtained from Mapi Research Trust. The questionnaire was offered either in Maltese or in English, after an official translation was produced following a linguistic validation process. All patients who underwent BBR at MDH under the care of both consultant Plastic Surgeons were invited to complete the BREAST-Q questionnaire via a telephone call and asked to come to MDH to fill it in. Other patient specific information was obtained from their hospital notes.

**Results:** Our study had a response rate of 91% i.e. a total of 39 patients. The average patient was 44 years of age. Over the years, there was an overall increase in BBR surgeries, with July and October being the commonest months. Hypertension was the commonest co-morbidity and 1-2 kg of tissue was removed during most of the operations. Our study compared well with results from Ohio. On the whole, younger patients are more satisfied after surgery and the amount of tissue removed does not seem to make a difference to overall satisfaction.

**Conclusion:** In this world of evidence-based medicine, the BREAST-Q is ideal for a holistic approach in analyzing patient satisfaction after BBR. Having local data at hand makes it easier for patients who are interested in undergoing the surgery to associate themselves with other local individuals.

## Keywords

Breast, Personal Satisfaction, Physical Appearances, Psychology

**Juanita Parnis MD MRCS\***  
Plastic Surgery and Burns Unit  
Mater Dei Hospital  
Msida, Malta  
juanita.parnis@gov.mt

**Duncan Aquilina MD MRCS EBOPRAS**  
Plastic Surgery and Burns Unit  
Mater Dei Hospital  
Msida, Malta

**Matthew Borg MD MRCS**  
Plastic Surgery and Burns Unit  
Mater Dei Hospital  
matthew.c.borg@gov.mt

**Francis X. Darmanin MD FRCSI, MMed, Sci, DSM**  
Plastic Surgery and Burns Unit  
Mater Dei Hospital  
Msida, Malta

**Joseph E. Briffa MD FRCS Ed FICS**  
Plastic Surgery and Burns Unit  
Mater Dei Hospital  
Msida, Malta

\*Corresponding Author

## Introduction

Bilateral breast reduction is well known for the benefits it provides to patients who decide to have the surgery. It is usually performed to improve the symptoms of macromastia including intertriginous infections, back and shoulder pain, dissatisfaction with breast appearance, poor sexual and psychosocial well-being amongst others.<sup>1-2,4-5,8-10</sup> Although a high degree of satisfaction and improvement in quality of life have been reported previously in the literature, few studies have used reliable and validated survey instruments. The BREAST-Q is the only questionnaire to assess breast reduction outcomes that meets international and federal standards for questionnaire development while measuring a variety of outcomes, including satisfaction with breasts and overall outcome, psychosocial, sexual and physical well-being and satisfaction with care.<sup>3</sup> In this retrospective study, we have looked into all the cases of patients who had bilateral breast reduction at Mater Dei Hospital, Malta using the post-operative section of the Bilateral Breast Reduction BREAST-Q questionnaire. This was done to obtain local data regarding patient satisfaction with the surgeon, nursing and clerical staff, the surgery itself and overall satisfaction, which was totally lacking. This data can also be used as a baseline for future work. By using the BREAST-Q, we were able to compare our results with other centers. We have also looked into whether age, co-morbidities and the weight of breast tissue removed in each patient, makes a difference to the overall satisfaction rate.

## Method

Permission to carry out this audit was first obtained from the two Plastic Surgeons working at MDH and from the Chairperson of surgery. Permission to use the BREAST-Q questionnaire in English was obtained from Mapi research Trust. We also obtained permission to translate the questionnaire into Maltese. In order to do so, we had to go through a linguistic validation process so that the translation is an official one. An invitation letter and a consent form for the patients were also produced in Maltese and in English. Permission was

then obtained from the Data protection Unit at MDH.

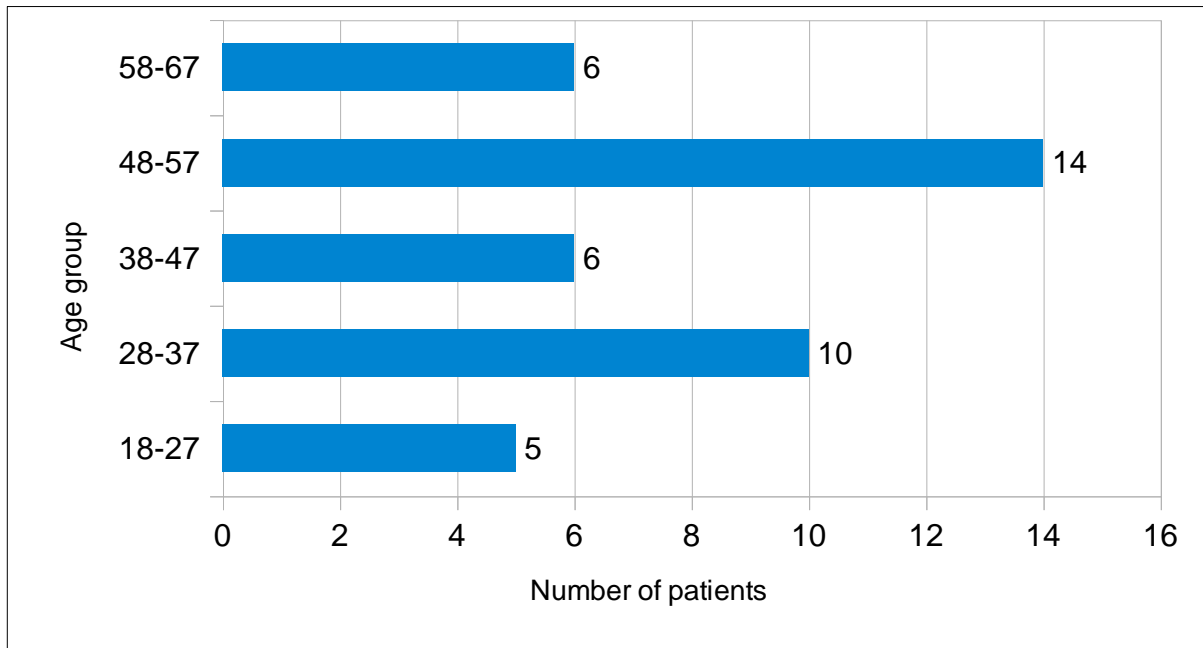
All the patients who had BBR at MDH since it opened its doors were included in the audit. This included patients from 2008 up to May 2015. All the patients were at least 6 weeks post-surgery. They were contacted via a telephone call and invited to take part in the audit. The patients were then asked to either come to MDH to fill in the questionnaire or it was sent to them by post, providing also a self-addressed envelope. The questionnaire was offered to them either in Maltese or in English and it included an invitation letter and a consent form in addition to the questionnaire. Telephone call reminders were done to follow up questionnaires sent by post. The results were inputted into the BREAST-Q scoring software: the Q score, and results were obtained. The age of the patient when they had the surgery, the total weight of breast tissue removed, smoking history and co-morbidities were obtained from the patients' hospital notes and were coded and analyzed using MS Excel®.

## Results

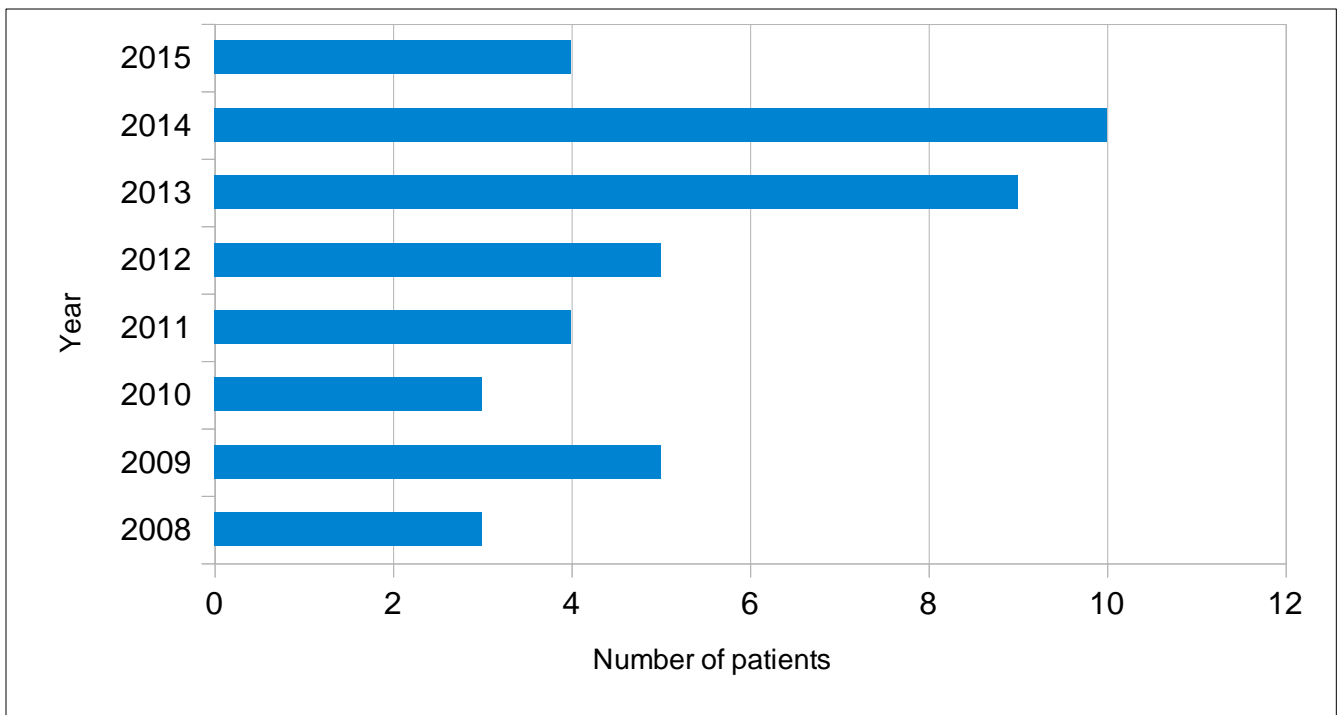
Forty three patients underwent a bilateral breast reduction under the care of both consultant Plastic Surgeons since the opening of Mater Dei Hospital in 2008 up to May 2015. Of these patients, 39 (91%) completed the BREAST-Q post-operative breast reduction questionnaire.

From a total of 43 patients, the notes of 41 patients were available to be reviewed. The average age at which the patients had their surgery was 44 years, ranging from 19 to 67 years as shown in Figure 1. Figure 2 and 3 shows the number of breast reduction surgeries done per year and the month in which they were done respectively. Patient co-morbidities are shown in figure 4. The average weight of breast tissue removed from each patient was 2kg. Total weight of breast tissue removed from each patient varied between 0.328 kg and 6.353 kg, as shown in figure 5. Twenty nine patients (71%) were non-smokers, eight patients (20%) were ex-smokers and 4 patients (10%) were smokers.

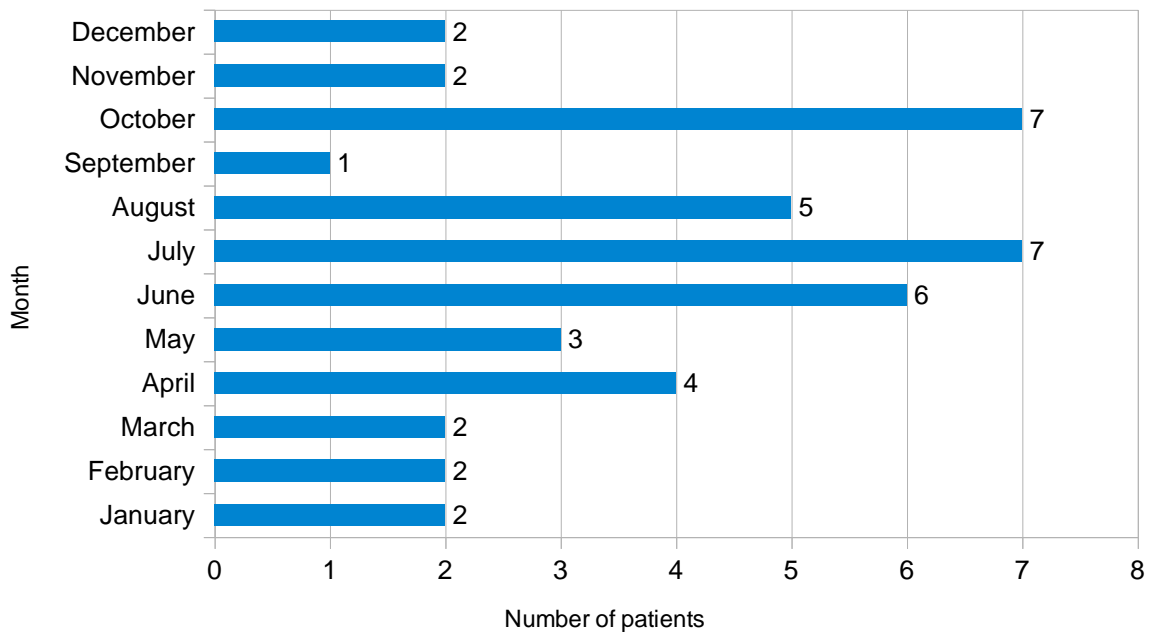
*Figure 1: Number of patients per age group*



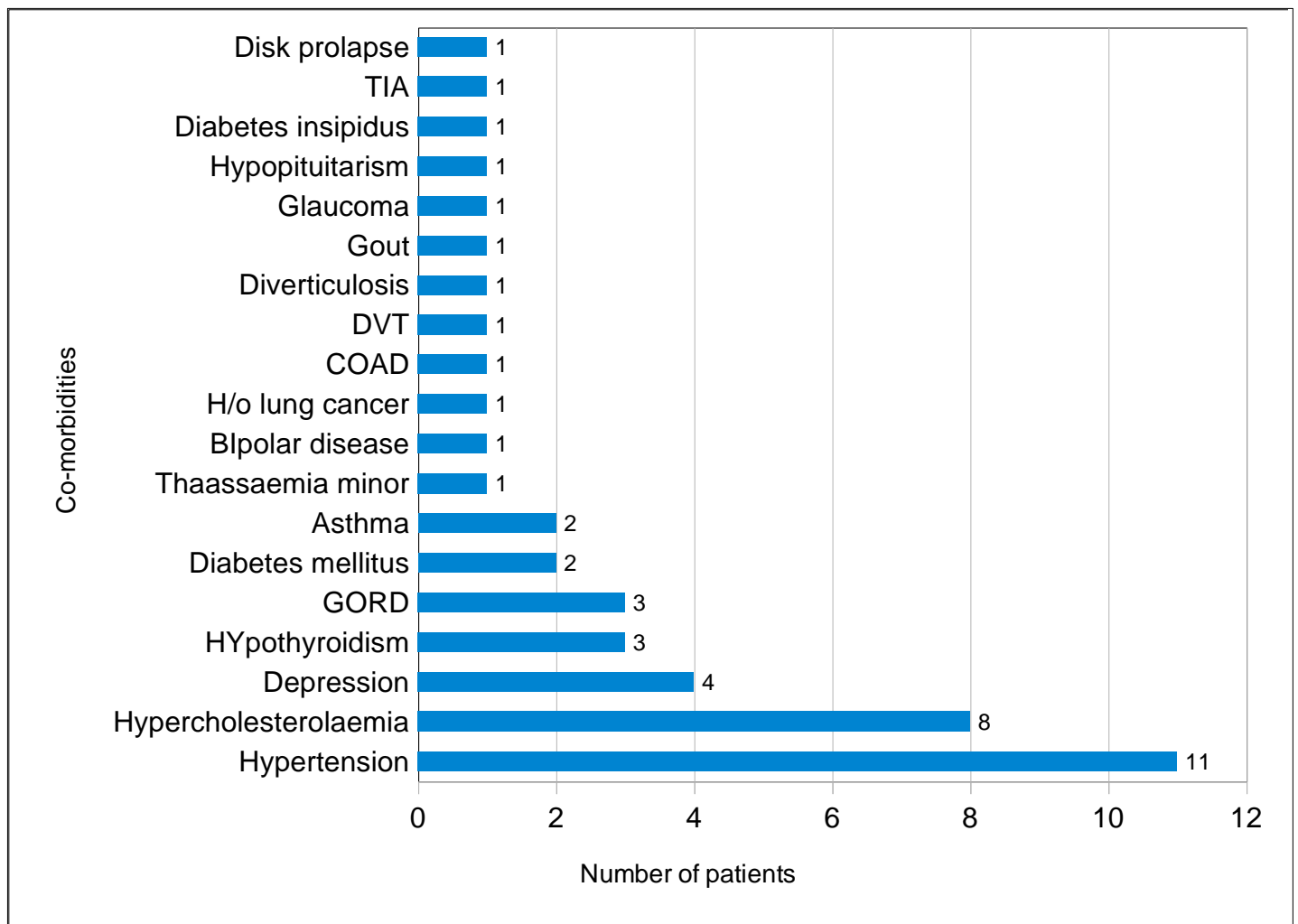
*Figure 2: Number of surgeries per year*



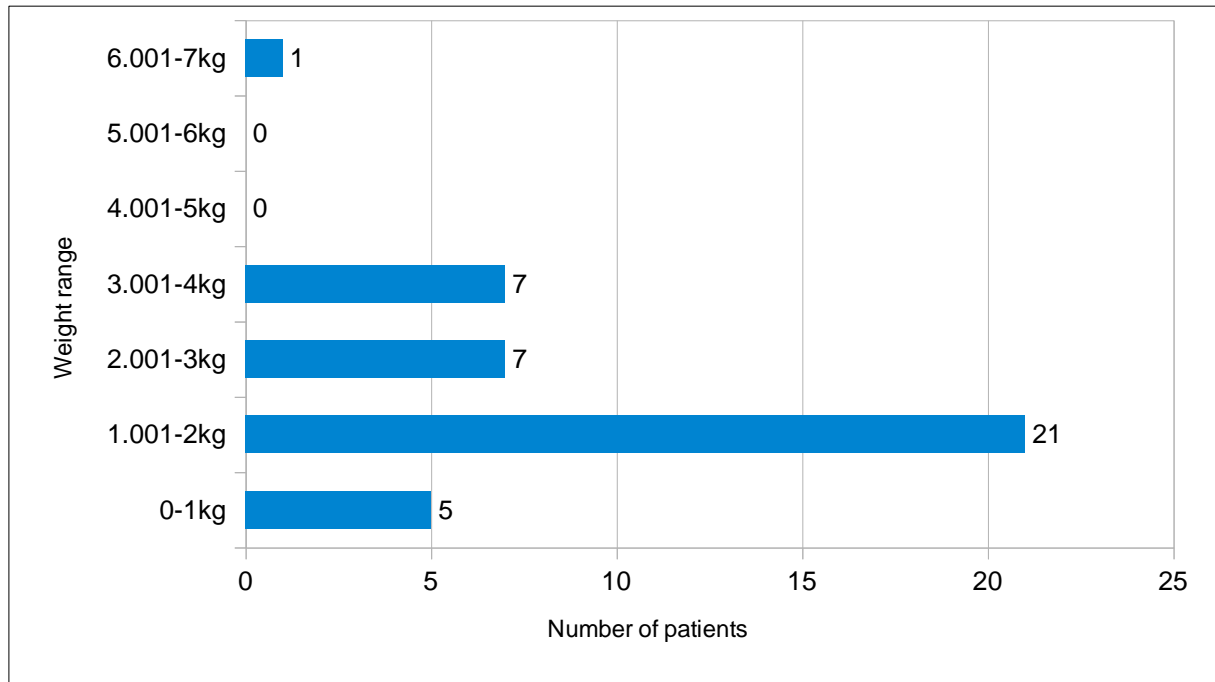
**Figure 3: Number of surgeries in each month**



**Figure 4: Patient co-morbidities**



*Figure 5: Weight of breast tissue removed per patient*



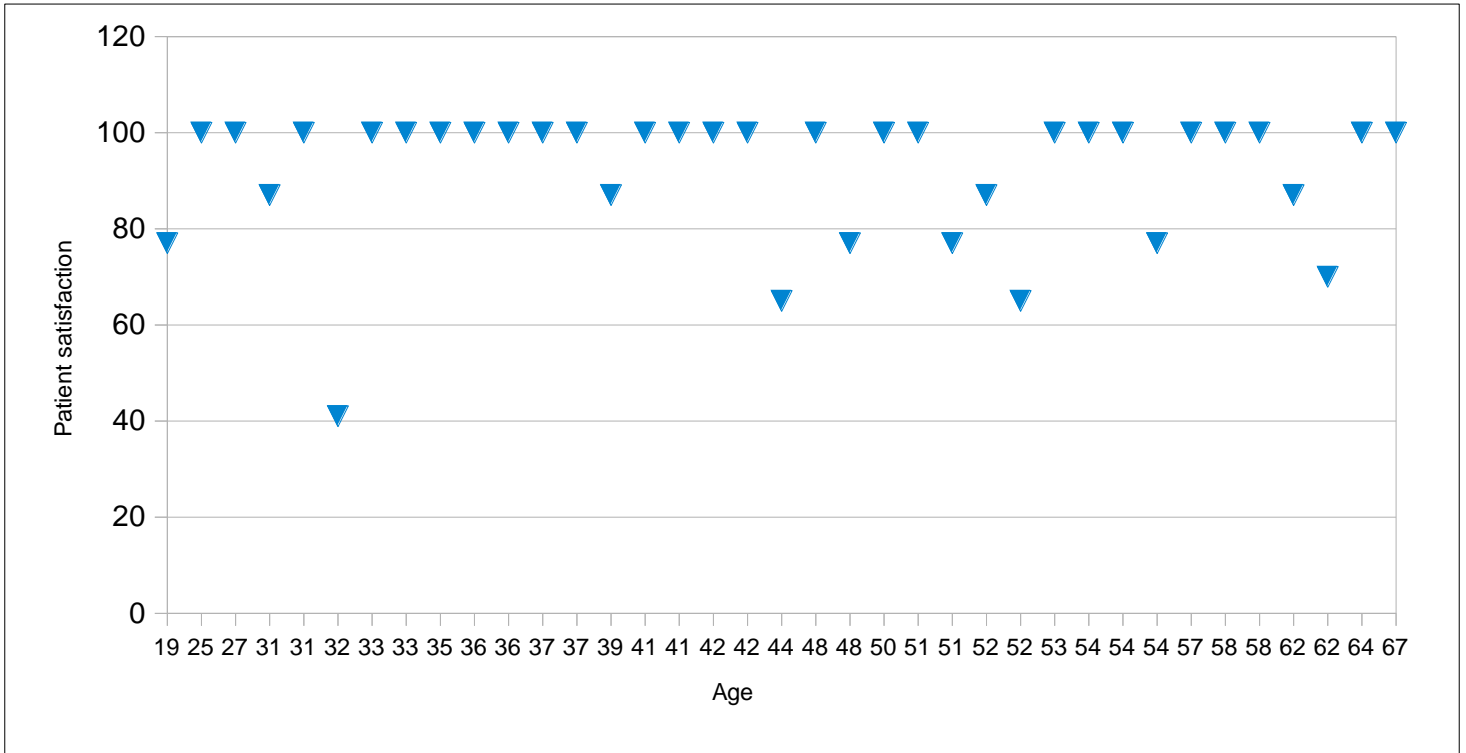
All BREAST-Q scores range from 0-100. A higher score means high satisfaction or better health related quality of life. The range and average patient satisfaction is shown in Table 1.

*Table 1: Local BREAST-Q scores*

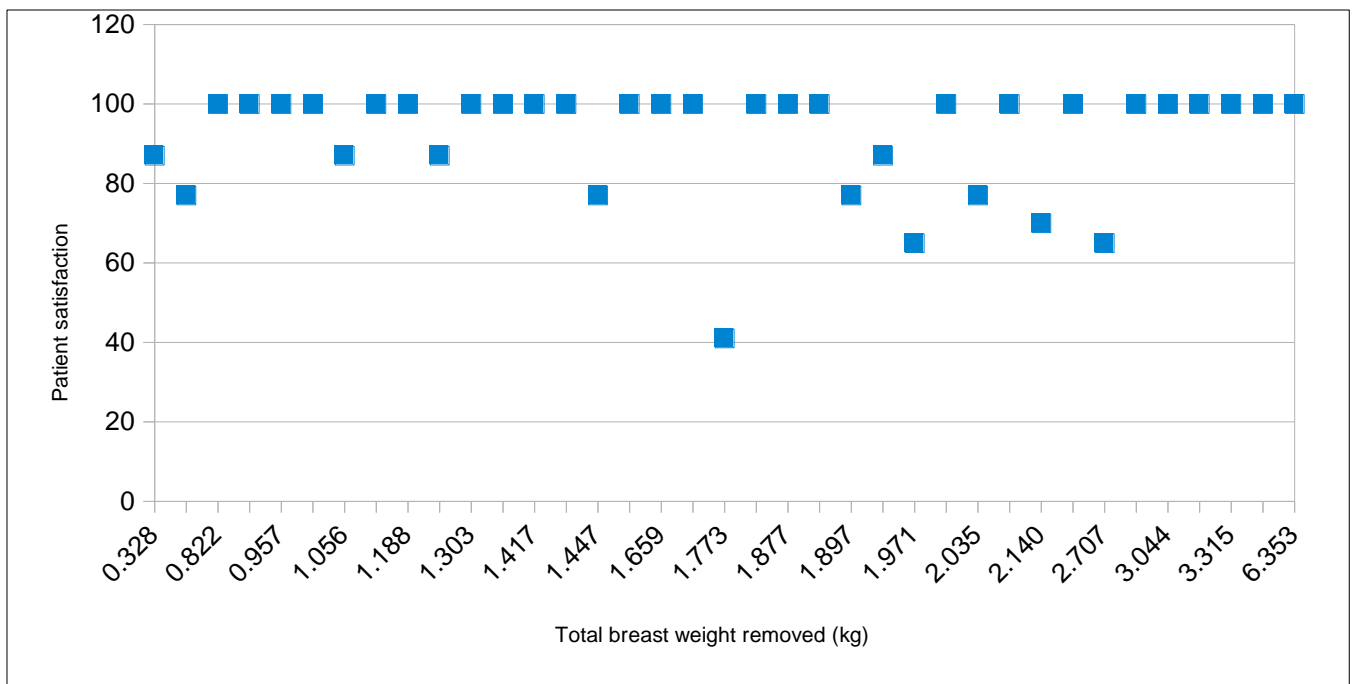
	<b>Range</b>	<b>Average</b>
Satisfaction with breasts	24 - 100	75
Satisfaction with outcome	41 - 100	91
Psychosocial well-being	34 - 100	79
Sexual well-being	21 - 100	73
Physical well-being	53 - 100	72
Satisfaction with information	48 - 100	77
Satisfaction with nipples	0 - 100	75
Satisfaction with surgeon	41 - 100	86
Satisfaction with medical staff	47 - 100	94
Satisfaction with office staff	26 - 100	95

Figure 6 shows the relation between the satisfaction with outcome of patients and their age and figure 7 shows the relation between the satisfaction with outcome of patients and the total amount of breast tissue removed.

**Figure 6:** The relation between age and patient satisfaction



**Figure 7:** The relation between total amount of breast tissue removed and patient satisfaction



## Discussion

In the literature one can find multiple patient-reported outcome measures. The Short Form-36<sup>4,8</sup>, Rosenberg Self-Esteem Scale<sup>4-5,9</sup>, Breast-Related Symptoms Questionnaire, Brief Symptom Inventory<sup>3</sup> amongst others, have been used to show patient reported improvements in satisfaction and quality of life following breast reduction surgery. However, most of these instruments are generic rather than surgery specific and thus do not assess all important aspects of quality of life and satisfaction among patients who have had a breast reduction.<sup>3</sup> We decided to implement the BREAST-Q as our survey tool because during the development of the BREAST-Q, the questionnaire was tested and underwent psychometric analysis. In our retrospective study, the data compares well with the data obtained in the study from Ohio by Coriddi et al.

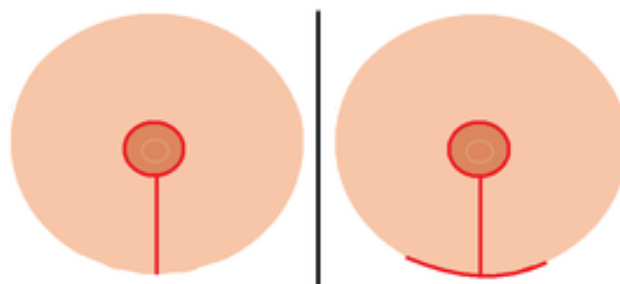
In our study, we had a 91% response rate. This might be because the patients were asked to take part by phone and non-responders were followed up. We made it easy for patients to reply by sending them a stamped self-addressed envelope. It shows that middle aged women were the ones that had BBR most frequently. This is probably because they are old enough to have older children that do not need constant support but young enough to benefit from the surgery. On the whole, there was an increase in surgeries every year. There is a drop in the year 2015 as the data was only collected till May. Summer months were the commonest months for breast reductions. This may be due to the fact that the women have less child related evening activities in the summer, they have more support or they have no work during the summer months. September was the least common month probably because of the children going back to school which involves a lot of work for the parents. Most commonly, about 1-2 kg of tissue was removed from the breast because only few women have very severe macromastia. The patients rated the overall outcome as being 91% as compared to the 75% regarding breast satisfaction. This might be due to the fact that the earlier patients did not really know what to expect from the surgery. This was improved by the introduction of the breast reconstruction nurse in our unit. The higher values were associated with satisfaction with hospital staff, confirming how important it is for the patients to feel valued and cared for when in hospital. The study could

have been improved by giving a questionnaire to the patient before and after surgery to take into consideration differences in patients' perceptions. When comparing the age and amount of breast tissue removed with satisfaction, it seems that younger patients are generally happier and the amount of breast tissue removed does not make a huge impact on their satisfaction.

Breasts that are hypertrophic have an appearance that is frequently disliked by patients. Apart from the large size, these breasts can have a flat upper pole and various degrees of ptosis because of their weight. After a breast reduction, patients are generally happy with the new appearance of their breasts which are smaller and lifted.<sup>3</sup>

Macromastia can be due to either increased breast tissue, increased adipose tissue or a combination of both. Thus, patients should ideally have a normal BMI before having the surgery. All the patients at our unit have pre-operative photographs taken at the Medical Illustrations Department. Most of our patients had wise pattern incisions and only a few had a vertical incision breast reduction. This is because if a larger volume of breast tissue needs to be removed, a wise pattern incision is needed. Scars resulting from both surgeries are shown in figure 7. Free nipple grafts are usually done when the sternal notch to nipple length is more than 40cm or the distance from the inframammary fold to the nipple is more than 20cm. This is because there will not be enough blood supply to the nipple areolar complex and thus there is a high risk of post-operative soft tissue necrosis. An insensate nipple is the price to pay.

*Figure 8: Incisions in vertical and wise pattern breast reductions*



During a breast reduction, the nipple areolar complex is raised on a pedicled flap, skin flaps are raised and excision of breast tissue carried out and sent for histology. Finally, the nipple is repositioned

at a higher level than it was before. Suturing is done using absorbable sutures to the dermis and subcuticular. Closed suction drains and antibiotics are almost always used in this cohort of patients in our unit. Complications of a breast reduction include seroma, haematoma, infection, fat necrosis, soft tissue necrosis, wound breakdown and scarring, nipple discolouration, and hypertrophic and painful scars, amongst others.

The Plastic Surgery Unit has introduced the service of a breast reconstruction nurse that meets the patients from their first encounter up to their last. The patients are counseled, shown videos and images regarding the surgery and are followed up by the breast reconstruction nurse till they are fully healed and can contact her should they have any concerns. The patients have mentioned that this service gives them a lot of reassurance and that they are very happy about the whole experience.

### Conclusion

In this world of evidence-based medicine, the BREAST-Q is ideal for a holistic approach in analyzing patient satisfaction after BBR. In this study, we have shown satisfaction with breast appearance, psychosocial, physical and sexual well-being, satisfaction with information and with surgeon, nursing and clerical staff in our unit. Having local data at hand, makes it easier for patients who are interested in having the surgery to associate themselves with other local individuals.

### Acknowledgements

Silderm and Collis Williams for their kind sponsorship for the English to Maltese translation of the BREAST-Q questionnaire.

Ms Brenda Schembri, ward clerk at the Plastic Surgery and Burns Unit, Mater Dei Hospital, Malta, for her help in getting patient hospital notes.

Ms Sharon Young and Mr Simon Caruana from the Data Protection Department at Mater Dei Hospital for their help in obtaining data protection approval.

Dr Sandra Distefano from the Clinical Performance Unit for her help in providing the necessary data.

Mr Ivan Falzon, CEO of Mater Dei Hospital for his approval for sponsorship of the English to Maltese BREAST-Q questionnaire.

I would like to thank all the patients who have kindly accepted to take part in this audit for their

time and patience.

Mr J. E Briffa and Mr F.X Darmanin, Consultant Plastic Surgeons at Mater Dei Hospital, Malta for their constant support in producing this audit.

### References

1. Blomqvist L, Eriksson A, Brandberg Y. Reduction Mammoplasty Provides Long-Term Improvement in Health Status and Quality of Life. *Plastic and Reconstructive Surgery*. Vol 106, No 5, 991-997.
2. Chao JD, Memmel HC, Redding JF, Egan L, Odom LC, Casas LA. Reduction mammoplasty is a functional operation, improving quality of life in symptomatic women: A prospective, single centre breast reduction outcome study. *Plast Reconstr Surg*. 2002; 110:1644-4652; discussion 1653.
3. Coriddi M, Nadeau M, Taghizadeh M, Taylor A. Analysis of Satisfaction and Well-Being following Breast Reduction Using a Validated Survey Instrument: The BREAST-Q. *Plast. Reconstr. Surg*. 132: 285, 2013.
4. Hermans BJ, Boeckx WD, De Lorenzi F, Van Der Hulst RR. Quality of life after breast reduction. *Ann Plast Surg*. 2005; 55:227-231.
5. Mello AA, Domingos NA, Miyazaki MC. Improvement in quality of life and self-esteem after breast reduction surgery. *Aesthetic Plast Surg*. 2010; 34:59-64.
6. Pusic AL, Klassen AF, Scott AM, Klok JA, Cordeiro PG, Cano SJ. Development of a New Patient-Reported Outcome Measure for Breast Surgery: The BREAST-Q. *Plast. Reconstr. Surg*. 124: 345, 2009.
7. Rogliani M, Gentile P, Labardi L, Donfrancesco A, Cervelli V. Improvement of physical and psychological symptoms after breast reduction. *Journal of Plastic, reconstructive & Aesthetic Surgery* (2009) 62, 1647-1649.
8. Saariemi K, Luukkala T, Kuokkanen H. The outcome of reduction mammoplasty is affected more by psychosocial factors than by changes in breast dimensions. *Scand J Surgery*. 2011; 100:105-109.
9. Sabino Neto M, Demattê MF, Freire M, Garcia EB, Quaresma M, Ferreira LM. Self-esteem and functional capacity outcomes following reduction mammoplasty. *Aesthet Surg J*. 2008; 28:417-420.
10. Scott GR, Carson CL, Borah GL. Maximising outcomes in breast reduction surgery: A review of 518 consecutive patients. *Plast. Reconstr. Surg*. 2005; 116:1633-1639; discussion 1640.