Life Post Bariatric Surgery: The Experiences of People with Type 2 Diabetes Mellitus in Kuwait

Alanoud M I H M Alobaidly MSc (ANP), BScN, AssocDegN.

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College of Nursing and Health Sciences

Flinders University

South Australia

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ABBREVIATIONS

BGLs	Blood Glucose Levels
BPD-DS	Biliopancreatic Diversion with Duodenal Switch
BS	Bariatric Surgery
GI	Glycaemic Index
HbA1C	Haemoglobin A1C
LAGB	Laparoscopic Adjustable Gastric Band
RYGB	Roux-en-Y Gastric Bypass
LSG / SG	Laparoscopic Sleeve Gastrectomy / Sleeve Gastrectomy
T2DM	Type 2 Diabetes Mellitus

GLOSSARY OF TERMS

Bariatric surgery: Weight-loss through surgical interventions. It has become a popular treatment for the obese and morbidly obese population (Jamal & Aminian, 2015).

Biliopancreatic Diversion with Duodenal Switch: A narrow sleeve gastrectomy is performed, and pylorus is preserved. After the division of the duodenum, the Roux alimentary is anastomosed to the first portion of the duodenum after pylorus, and distal duodenum end is closed. A short common channel is created by connecting the biliopancreatic limb to the alimentary limb 50-100 centimetres from the ileocecal valve. Classified as combined restrictive and malabsorptive procedure; malabsorption of macronutrients (Jamal & Aminian, 2015).

Laparoscopic Adjustable Gastric Band: Placement of an inflatable silicone band below gastroesophageal junction, creating a small gastric pouch and a narrow stoma. Classified as a restrictive procedure; restricts food intake (Jamal & Aminian, 2015).

Roux-en-Y Gastric Bypass: The jejunum is divided approximately 50 centimetres at 150 centimetres below the site of transection. The resultant 150 centimetres Roux limb of proximal jejunum is brought up and anastomosed to the proximal gastric pouch of a small size 15-30 millilitres. Classified as a combined restrictive and malabsorptive procedure; malabsorption of macronutirents (Jamal & Aminian, 2015).

Sleeve Gastrectomy: A linear cutting stapler is utilised to make a narrow gastric tube along the lesser curvature. The remaining 75-80% of the gastric body and fundus are removed. Classified as a restrictive procedure; restricts food intake (Jamal & Aminian, 2015).

Glycaemic Index: The glycaemic index or GI ranks carbohydrates according to their effect on blood glucose levels. The lower the GI, the slower the rise in blood glucose levels will be when the food is consumed. The effect may differ from person to person. It is recommended that people with diabetes have moderate amounts of carbohydrate and include high fibre foods that also have a low GI (not all high fibre foods have a low GI) (Diabetes Australia, 2015).

SUMMARY

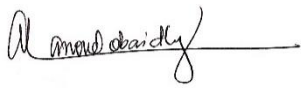
Kuwait is ranked in the top 10 countries worldwide in the prevalence of diabetes and obesity (World Health Organisation, 2016). In the past decade Kuwait has introduced bariatric surgery as a treatment option for both of these conditions. A review of the literature found that bariatric surgery (BS) is effective for the treatment of obesity and had a positive effect in lowering blood glucose levels in people with type 2 diabetes mellitus (T2DM). Recently, researchers have claimed BS to be the 'cure' for T2DM. This study aims to understand the experiences of people with T2DM after bariatric surgery.

Stake's (2005) instrumental case study methodology was used to explore what people with T2DM have experienced at six to twelve months after BS. Email interviews were conducted with four participants to describe the effect of BS on their T2DM management and their daily routine. Using Creswell's (2014) thematic analysis, three main themes were identified: knowledge, satisfaction from results and healthcare management. Thomas' (2016) positioning and quality were used to evaluate the findings that emerged from the interviews and increase the rigour when interpreting the experiences of the participants.

This study revealed that there is an absence of patient education for BS, unsuccessful diabetes education, and a deficiency of a multidisciplinary team to manage people with T2DM and BS. The limitations of this study are the use of email interviews for collecting data which was an uncommon method of communication among the Kuwaiti population. However, the number of participants required in case study research is small, this is because they provide rich detailed information on their lived experiences. This research highlighted the need for understanding cultural effects on health and the significance of specialist physicians and surgeons to collaborate for the benefit of patient health. It is recommended that policy makers and stakeholders in Kuwait be aware of the needs of the Kuwaiti population in regard to health care services. Further research is required to evaluate the impact of a multidisciplinary team approach for people with T2DM and for those undergoing BS, and how the recommendations of this research can best assist in providing suitable patient education and improving health care practices.

DECLARATION

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed 

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CHAPTER ONE - INTRODUCTION

According to the International Diabetes Federation (IDF) (International Diabetes Federation, 2017), approximately 415 million adults have diabetes; by 2040 this will rise to 642 million. An estimation of 46% people with diabetes are undiagnosed; and was the cause of 5 million deaths in 2015 (Ogurtsova et al., 2017). The World Health Organization (WHO, 2016) stated that obesity has become an epidemic threat and has contributed to 44% of diabetes, 23% of ischaemic heart disease and 7–41% of some types of cancer; it has caused the death of nearly 2.8 million people yearly; and has almost doubled between 1980 and 2008. In Kuwait, the prevalence of diabetes is 23% with 14.3% of adults aged 20-79 years (Haskin, 2013).

This chapter presents the importance of studying the lived experiences of people with type 2 diabetes mellitus (T2DM) in Kuwait after bariatric surgery (BS), starting with the researcher's details and project title, the researcher's interest in the field, the current background in this area, the significance of this research, an explanation of the problem, the research question and sub-questions, and finally a conclusion.

Researcher's Interest in Field

The researcher is an international student from Kuwait studying Graduate Diploma in Research Methods, as a pathway into a Doctorate of Philosophy degree. The researcher has a Masters' of Science in Nursing degree and is interested in the management of type 2 diabetes mellitus (T2DM). The researcher has worked as the head nurse of the medical ward at one of the government hospitals in Kuwait, and a member of the hospitals' diabetes team that provided insight into the lives of people living with diabetes. This included medication administration, medication adherence, dietary habits and response to hyperglycaemic or hypoglycaemic episodes. While the researcher was working with individuals with T2DM, it was found that most of these individuals struggled to keep their blood glucose levels (BGLs) within safe ranges. However, maintaining normal BGLs can be challenging (Meigs, Muller, Nathan, Blake, & Andres, 2003; Norris, Lau, Smith, Schmid, & Engelgau, 2002). People with T2DM seem to be less aware of the dangers of hyperglycaemia due to the slow progression of the condition (Meigs et al., 2003). Bariatric surgery (BS) claims to have a solution for hyperglycaemia, which tempted people with T2DM to undergo surgery to rid themselves of this condition (Al-Sabah, 2013). This was also supported by Jamal and Aminian (2015) who reported that BS showed beneficial effects on weight

and comorbidities especially T2DM, which found that Roux-en-Y gastric bypass was the most commonly performed among the different types of BS for its favourable long-term outcomes on weight loss and T2DM remission. However, when the researcher was communicating with individuals with T2DM in the hospital wards and diabetes clinic revealed that losing weight was more important than managing their BGLs. This might imply that the reasons for undergoing BS are not for the management of their T2DM. Since psychological assessment and support has not been offered as pre-surgery or post surgery practice in the hospitals in Kuwait, exploring this aspect is vital to understanding what individuals with T2DM are experiencing as this knowledge may improve and provide better care for these individuals.

Background

Bariatric surgery (BS) has become a common procedure for people who are obese and morbidly obese in Kuwait where both diabetes and obesity were found to be one of the highest prevalence globally (Haskin, 2013). Surgical intervention might overtake medical therapy for both weight loss and T2DM in the future (Ikramuddin et al., 2013). In 2013, political authorities banned BS in Kuwait because of the high risks involved in the procedure and then overturned a few months later, which were addressed in a review of the literature on BS performed in Kuwait (Jamal & Aminian, 2015). Moreover, surgeons were questioned on their criteria for individuals requesting BS as an easy means for achieving their ideal weight (Saarni et al., 2011). Due to the positive outcome of BS on body mass index (BMI), some surgeons may have performed the surgery for financial or research benefits neglecting the criteria, which crossed the ethical and legal boundaries (Hofmann, 2010). Such reasons caused the revision of hospital policies and practices where universal guidelines were adapted to perform the surgeries safely under suitable conditions (Jamal & Aminian, 2015).

Literature has shown the effectiveness of BS on possible remission of T2DM (Mayer & Dwyer, 2016; Schlienger, Pradignac, Luca, Meyer, & Rohr, 2009). Although weight loss surgery was recently introduced as management for T2DM in Kuwait, researchers stated the need for a larger sample to be able to generalise these findings (Courcoulas et al., 2014; Ikramuddin et al., 2013). Nevertheless, people who underwent bariatric surgery reported improvements in quality of life, despite the possibility of weight regain or reoccurring diabetes (Himpens, Verbrugghe, Cadiere, Everaerts, & Greve, 2012; Mayer & Dwyer, 2016).

A literature review was conducted by Jamal and Aminian (2015) on the types of BS and which of the surgeries was the most effective surgery in maintaining BGLs within normal ranges. Haskin (2013) stated that Kuwait holds the highest number of BS performed per year worldwide. Almarri, Al Sabah, Al Haddad, and Vaz (2017) found that contributions to research by the Arabian Gulf countries are very limited and that there is a need for more research to be published to increase the body of knowledge. These authors also stated that there were no publications found in the Arabian Gulf countries prior to 2000.

Edward, Hii, Giandinoto, Hennessy, and Thompson (2016) reported that it was important to increase awareness of BS and hence provide resources to assist in the decision making for potential patients. Lier, Aastrom, and Rørtveit (2016) stated that treating bariatric people physically and mentally would improve the care provided to them. They also suggested patient education be offered before surgery, which was also supported by Ritter, Vetter, and Sarwer (2012). While, addressing the mental well-being of bariatric patients have been studied and the importance of protecting patients' psychological health has been acknowledged worldwide, Kuwait has yet to explore this area. However, Scull, Khullar, Al-Awadhi, and Erheim (2014) stated that Kuwaitis are very reluctant to seek psychological help due to cultural stigmatisation. When providing psychological support for patients after BS, cultural stigmatisation may act as a barrier hence the need to further explore the underlying cause of obesity in the Kuwaiti population.

Significance of the Research

Kuwait holds the ninth position in the prevalence of obesity at 38.8% and seventh in diabetes at 23% listed by worldwide (Ilsley, 2017). Moreover, Kuwait was found to have the highest frequency of BS performed annually (Haskin, 2017). Behbehani (2014) is conducting an ongoing trial (2013-17) on life-style change and health promotion to battle obesity and T2DM in Kuwait, which is an effort to modify the dietary and exercise habits among the Kuwaiti individuals. Additionally, health education programmes are needed to prevent the rising prevalence of obesity among the Kuwaiti people to overcome the obesity epidemic (Al-Isa, Campbell, & Desapriya, 2013). A study found that physical activity is low in Kuwaiti adults thus leading to an unhealthy life with comorbidities like diabetes and cardiovascular diseases (Al-Baho, Al-Naar, Al-Shuaib, Panicker, & Gaber, 2016). Kuwait has a population with comorbidities that is triggered by high fat and carbohydrate consumptions with minimal physical activity (Zaghloul et al., 2013). The health status of the

Kuwaiti population was described and the necessity for change to support a healthy generation was stressed (Al-Baho et al., 2016; Al-Isa et al., 2013; Behbehani, 2014; Zaghloul et al., 2013).

Two literature reviews were published in the past five years in Kuwait (Almarri et al., 2017; Jamal & Aminian, 2015). However, these studies did not mention any psychological issues that rose from the bariatric population in relation to the surgery. Despite the impact of this life-changing surgical intervention on these individuals, their psychological well-being is yet to be explored. This is corroborated by the findings of Mayer and Dwyer (2016) and Jumbe, Hamlet, and Meyrick (2017) who found that further research need to be conducted to fully understand what a bariatric population experiences after BS. The literature in Kuwait seems to have dismissed the mental health state of their patients. This highlights a gap in the knowledge in this area of health care. Psychological well-being is an issue that is avoided in the Kuwaiti society, for example, studies such as Scull et al. (2014) indicated the presence of psychological issues acting as a barrier to health care professionals when treating and caring for the Kuwaiti population.

Limited research on psychological health before and after BS was published (Edward et al., 2016; Julia et al., 2013; Lier et al., 2016) with only a few literature reviews in this area available (Jumbe et al., 2017; Mayer & Dwyer, 2016). The literature reviews available emphasised the necessity of conducting more research on the recipients of BS due to the lack of knowledge available. Jumbe et al. (2017) also highlighted the positive impact of psychological support for these individuals, where dealing with the underlying issues that caused their weight gain and T2DM might assist in maintaining the favourable outcome of living a healthy life.

The outcomes of this research may encourage a change in nursing practice in Kuwait. This might also raise the awareness for preventing comorbidities instead of treating them thus leading to a healthier population.

Statement of the Problem

According to the World Health Organization, the incidence of diabetes and obesity are expected to double in the foreseeable future if left untreated (WHO, 2013; 2016) thus leading to an unhealthy generation and a disease-prone society. Jumbe et al. (2017) published a literature review on the psychological impact of BS on individuals indicating the importance of addressing individuals' psychological and physical well-being together to enhance the outcome of weight loss surgery. Supporting their findings, Sarwer et al. (2013) showed that only 14% of their participants thought

BS was safe to treat T2DM, and only 34% were willing to have a surgical procedure to manage their weight. This means that more than 60% of participants were not completely accepting of BS as an intervention for both T2DM and weight loss. This might be due to the lack of knowledge or the need to raise awareness.

Although, the literature has shown the effectiveness of this intervention on a population who were obese and morbidly obese, the result of the weight loss is only temporary and would need lifestyle change to maintain surgical outcomes as revealed by Lier et al. (2016) and Ritter et al. (2012). Moreover, researchers in this field have stressed the lack of research on the personal experiences of people undergoing bariatric surgery (Jumbe et al., 2017; Neff et al., 2014). In relation to this gap in the body of knowledge, the area of the experiences of the Kuwaiti bariatric population will be explored.

Research Aim, Question and Objectives

This project is entitled *'Life Post Bariatric Surgery: The Experiences of People with Type 2 Diabetes Mellitus in Kuwait'*. According to Creswell (2014) in a qualitative research project, the central question is guided by sub-questions, also known as objectives. The researcher aims to answer the question: What are the experiences of people with T2DM after BS in Kuwait? This is conducted by addressing three sub-questions: (a) What are experience of people with T2DM in Kuwait after BS? (b) What are the effects of BS on the diabetes management of people with T2DM? (c) What are the types of support that this population received pre and post BS? It aims to explore the lived experiences of people with T2DM at six to twelve months after they have undergone weight loss surgery. This is essential in obtaining insight and in-depth understanding of the experiences of this population after BS surgery.

Conclusion

Despite the publications found on bariatric surgery (BS) in Kuwait, there was a lack of research that explored the psychological aspects of individuals before and after surgery. By identifying the feasibility of the topic of interest, the significance of the research, the problem statement and the research questions and sub-questions, the researcher conducted a research project that may contribute to the body of knowledge to improve nursing care in the bariatric field.

The following chapters cover; Chapter 2: the literature review where the researcher presents the literature review that emphasises the gap in knowledge found on BS in Kuwait; Chapter 3: the methodology and settings of the study; Chapter 4: the results and analysis of the collected data; Chapter 5: the discussion of the findings and finally Chapter 6: the conclusion of the thesis and the researcher's limitations and recommendations.

CHAPTER TWO - LITERATURE REVIEW

Introduction

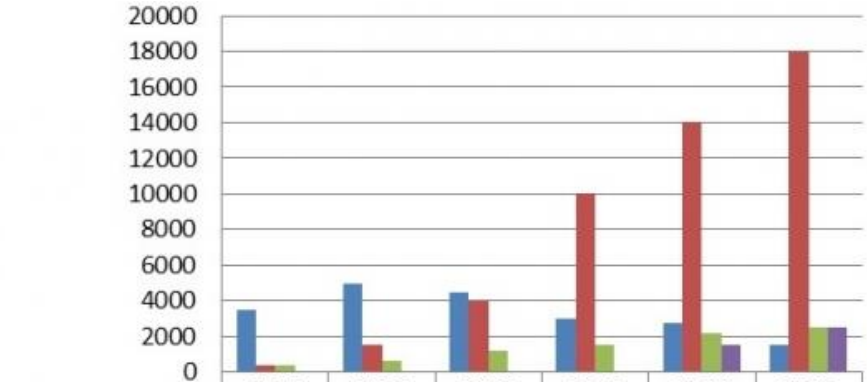
In this chapter, a review of recent literature on bariatric surgery (BS) and its effect on individuals with type 2 diabetes mellitus (T2DM) is reported. Literature presenting the background of BS, the significance of outcomes of BS on people with T2DM in Kuwait, and the published literature on the effect of BS on glucose levels for people with T2DM worldwide is reported. Following this overview of the literature, the research question and sub-questions to be addressed are identified. The selection of articles included in the study and a critique of the relevant literature is presented with a discussion about the relevance of the research topic compared to similar research conducted internationally. The primary purpose of this chapter is to provide a review of the literature addressing the impact of BS and the experiences of people with T2DM. The aim of the literature review was to understand the physical effects and psychological experiences of people with T2DM after physically recovering from BS, which is about six months, to completely heal from the surgery.

Background

Kuwait had provided a comfortable life for its citizens following the transition from a hard-working lifestyle into a sedentary one after the discovery of oil in 1938 (Haskin, 2013). Al-Isa et al. (2013) identified that high-fat low fibre diets, sedentary lifestyle and high income have contributed to the rise of obesity and comorbidities in Kuwait. Al-Baho et al. (2016) and Allafi and Waslien (2014) found that low physical activities in Kuwaiti people have caused the development of obesity, cardiovascular diseases and type 2 diabetes mellitus. Additionally, a study by Zaghloul et al. (2013) showed that poor eating habits in most Kuwaiti households is a factor in the rise of obesity and non-communicable diseases. As a consequence, Kuwait is ranked as the 8th highest country for the incidence of obesity and 9th in diabetes (Ilsley, 2017). According to the World Health Organisation (WHO, 2013; 2016), the incidences of diabetes and obesity around the world are predicted to double by 2030.

Bariatric Surgery (BS) has recently gained popularity in managing type 2 diabetes mellitus (T2DM) and treating obesity in Kuwait (Al-Sabah et al., 2013; Almarri et al., 2017) (see Figure 1, p. 8). Kuwait has the highest prevalence of people undergoing BS at 1,356 individuals of the total

population (Haskin, 2017). Several publications acknowledge the rewarding outcomes of managing blood glucose levels within normal ranges, and achieving target weight loss results for the population who were overweight, obese and morbidly obese by undergoing BS in Kuwait (Abd Ellatif et al., 2014; Al-Sabah et al., 2013; Almarri et al., 2017; Jamal & Aminian, 2015). These studies have found that Roux-en-Y Gastric Bypass (RYGB) was the most effective surgical intervention in providing long-term results for weight loss and the management for T2DM.



	2007	2008	2009	2010	2011	2012
Gastric band	3500	5000	4500	3000	2750	1500
Gastric Sleeve	400	1500	4000	10000	14000	18000
Gastric Bypass	400	600	1200	1500	2200	2500
Gastric Plication					1500	2500

Figure 1: Growth of BS in the Arabian Gulf Region between 2007 and 2012 (Haskin, 2013)

On the other hand, Edward et al. (2016) studied the effects of BS on the psychological aspects in men who were obese. Tarrant et al. (2017) also studied the psychological effects and agreed with the findings of Edward et al. (2016) that it was beneficial for the bariatric population to have psychological support to maintain good health. A review by Jumbe et al. (2017) found that treating bariatric patients psychologically as well as physiologically aids in maintaining a healthy life. They also found addressing the underlying issues that lead to obesity is essential for an individuals' well-being (Jumbe et al., 2017).

Scull et al. (2014) found that professional psychological support has been avoided by Kuwaiti individuals due to the effect of stigmatisation through cultural factors like gossip and a negative effect on a person's reputation. These factors act as a barrier between the healthcare team and the bariatric population in seeking psychological support. Consequently, there is an absence in the knowledge of the effects of BS on the psychological aspects of people in Kuwait. Despite the

expansion of literature in this area globally, further research is needed to narrow the gap about psychological issues (Jumbe et al., 2017; Lier et al., 2016).

Methods

Search Strategy:

A comprehensive search for available literature on the topic of interest included using a variety of keywords with MeSH terms, separately and in combination, such as: T2DM, BS, GS, RYGB, LAGB, BPDDS, weight loss surgery, metabolic surgery, experiences, overweight, obesity, behaviour, perception, attitude, and lifestyle (See Appendix 1). The keywords were used in several electronic databases: Cumulative Index to Nursing and Applied Health Literature (CINAHL), Medical Literature Analysis and Retrieval System Online (MEDLINE), SCOPUS and Google Scholar. The inclusion and exclusion criteria were established by applying the PICO/T method.

Inclusion Criteria are articles from 2008 to May 30th, 2018 on adults (18 years old and above) who have had BS (Laparoscopic Adjustable Gastric Band (LAGB), Laparoscopic Sleeve Gastrectomy (LSG/SG), Roux-en-Y Gastric Bypass (RYGB), Biliopancreatic Diversion with Duodenal Switch (BPD-DS)) surgery and are diagnosed with T2DM with outcomes reporting changes in glycosylated haemoglobin (HbA1c), BGLs or patients' experiences after six months from BS.

Exclusion Criteria are articles on adolescence who had BS or people who did not have BS. Surgeries of liposuction and body contouring were excluded because they are results of BS and not a weight loss intervention. Weight loss interventions for obesity and T2DM other than BS such as, conventional T2DM therapy, weight loss pills and diets.

Results of Included Articles

The databases generated 70 journal articles in the related field. Articles were chosen by following the PRISMA Flow Diagram (See Figure 2, p.10). Sixty-three publications were screened, 40 were excluded after the inclusion and exclusion criteria were applied. Twenty-three full-text articles were analysed, and two articles were excluded for not matching the criteria. This resulted in 21 included articles: six literature reviews, seven cohort studies, two qualitative studies, two Randomised Control Trials (RCTs), three cross-sectional study and one systematic review. These studies were conducted in the United States of America (USA), Taiwan, France, Norway, Australia, Kuwait, the Arabian Gulf countries and the gulf council countries (GCC) (see Appendix 2).

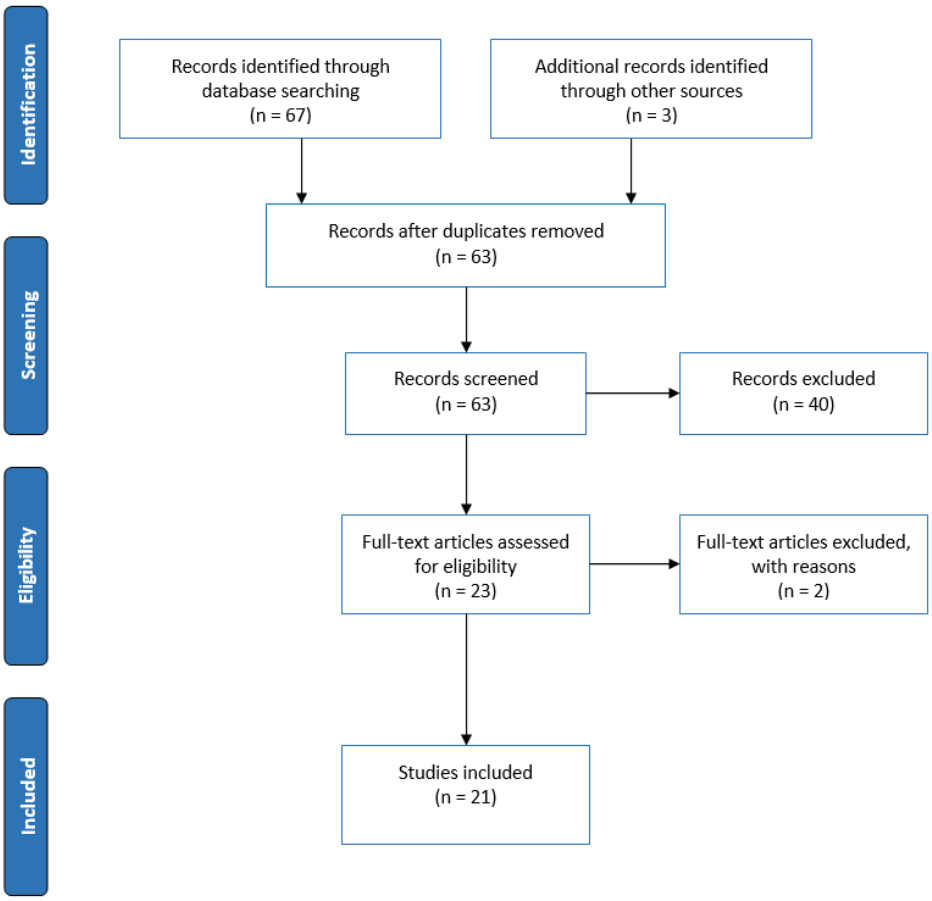


Figure 2: Article selection strategy (PRISMA)

Five out of 21 studies were unclear about the location of their research. The population found in the literature were adults due to the nature of T2DM and the option of undergoing BS. Literature shows that RYGB was the safe and most effective intervention for the treatment of T2DM (Jamal & Aminian, 2015; Mayer & Dwyer, 2016; Yan, Cohen, & Aminian, 2017).

According Jumbe et al. (2017); Lier et al. (2016) found that the psychological behaviours are addressed alongside the physiological changes in people who have undergone BS to promote longer weight loss and health benefits. Other comorbidities were excluded from the search due to the focus of the research question on T2DM. The search was conducted for the available literature in the last ten years to gain the latest findings and up-to-date knowledge in this area.

Assessment and Synthesis of the Results

Critical appraisal tools are used to judge research evidence in a systematically and unbiased way to identify the weaknesses and strengths of the included publications and to assess the validity of

their findings. Two appraisal tools were used to critique the included articles, namely the Critical Appraisal Skills Programme (CASP) appraisal tool (Critical Appraisal Skills Programme, 2013) and The Joanna Briggs Institute (JBI) appraisal tool (Joanna Briggs Institute, 2016).

The CASP tool consists of a number of questions that would assist in critiquing the included articles to establish rigour and validity. It was used to critique RCTs, cohorts and qualitative studies. The JBI tool was used to cater systematic review, literature reviews and cross-sectional studies through the application of 10 questions to critique the findings for validity and credibility.

Six papers were literature reviews. Five of them were quantitative with two of the literature reviews included the Kuwaiti population (Almarri et al., 2017; Jamal & Aminian, 2015) and two were conducted in the USA (Mayer & Dwyer, 2016; Ritter et al., 2012). The fifth literature review was qualitative (Jumbe et al., 2017). The last was a review by Yan et al. (2017) reported the outcomes of re-operative BS for treating T2DM. There was only one systematic review that was found on self-management for T2DM in the Gulf Council Countries (GCC) (Al Slamah, Nicholl, Alslail, & Melville, 2017). There were two RCTs that reported the physiological effects of patients undergoing different types of weight loss surgeries (Courcoulas et al., 2014; Ikramuddin et al., 2013). Seven studies were cohorts that included five retrospective studies (Abd Ellatif et al., 2014; Al Sabah et al., 2016; Gautier, Sarcher, Contival, Le Roux, & Alves, 2013; Himpens et al., 2012; Omar, Khudada, Safarini, Mehanna, & Nafach, 2016) and two prospective (Julia et al., 2013; Neff et al., 2014). There were two qualitative studies with one descriptive-exploratory study that examined the psychological effect of BS on six male patients (Edward et al., 2016), and the other a phenomenological study that conducted in-depth interviews with participants in to understand the impact of excessive weight loss on their lives (Lier et al., 2016). The three remaining papers were cross-sectional studies on the impact of diabetes knowledge on therapeutic goals in Kuwaiti people with T2DM (Al-Adsani, Moussa, Al-Jasem, Abdella, & Al-Hamad, 2009; Awad, Dalle, & Enlund, 2011; Waheedi, Awad, Hatoum, & Enlund, 2017).

Analysis of Data Extracted

Two main categories were identified: Physiological effects and Psychological effects. Each category generated groups that revealed outcomes of people with T2DM who had BS.

Physiological Effects

Surgical alteration to various parts of the digestive system affected the body in several ways. These changes caused individuals to reduce weight and comorbidities (e.g. glycaemic levels, low-density lipoprotein levels, systolic blood pressure and nutrients). This review focuses on two main physiological effects: Weight loss and blood glucose levels (BGLs).

Weight Loss

The main goal for BS was for people who are obese and morbidly obese is to reduce weight to a level that made it easier to achieve healthy living. Gautier et al. (2013) established that patients who have undergone RYGB after unsuccessful weight loss from LABG achieved the same outcomes after conversion to RYBG as patients who have had primary RYGB. Ikramuddin et al. (2013) conducted an RCT that found RYGB to be the most successful in weight loss with minimal side-effects. Participants lost significant weight after one year of surgery which concurred with Gautier et al. (2013) findings. Julia et al. (2013) supported this study where they found that the highest percentage of weight loss was in the three months after BS. However, Lier et al. (2016) and Ritter et al. (2012) discovered that patients regained some of the weight five years after BS. Himpens et al. (2012) also found an increase in their patients' weight in their follow-up of nine years post BS.

Type 2 Diabetes Mellitus (T2DM)

Several articles studied obesity-related comorbidities that have affected lives of people living with T2DM. In the collected literature, the length of maintained outcomes was divided into long-term (more than two years) and short-term (less than two years). This seemed to be the point where BS has reached its optimal achievements in regard to weight loss and management of T2DM. Short-term effects were reported when Courcoulas et al. (2014) conducted an RCT including the effect of BS on glycaemic levels of people with T2DM as a primary outcome. This study found that 25% of their sample had remission at the end of 12 months post BS. Ikramuddin et al. (2013); Neff et al. (2014); Al Sabah et al. (2016) and Abd Ellatif et al. (2014) found similar outcomes in their study. Nevertheless, at least 50% of the participants' T2DM progressed and they again needed oral hypoglycaemic medication to manage their hyperglycaemia (Julia et al., 2013), which was also found by Courcoulas et al. (2014).

Long-term effects of BS in Himpens et al. (2012) showed incidence of diabetes reoccurrence diagnosed after nine years of BS in 27% of their participants. Ritter et al. (2012) explained that

diabetes remission relies on lifestyle changes after BS. This corresponded with Lier et al. (2016) where they found that patients after five years surgery still found it challenging to adjust to the dietary restrictions following BS, which also resembled the findings of Hillersdal, Christensen, and Holm (2016) in changes in participants' eating habits. Furthermore, participants were suggested to be given patient education before BS to understand and deal with the undesired outcomes that may arise after their surgery, such as loose skin and dietary changes due to changes in the stomach size. Several literature reviews supported weight loss surgery as a new treatment for T2DM (Abd Ellatif et al., 2014; Al Sabah et al., 2016; Almarri et al., 2017; Jamal & Aminian, 2015; Jumbe et al., 2017; Mayer & Dwyer, 2016). However, lifestyle modification and bariatric education are essential to maintaining positive outcomes (Edward et al., 2016; Lier et al., 2016; Ritter et al., 2012).

Alfadhli, Al-Mazeedi, Bodner, and Dean (2017) found that the Kuwaiti people have limited knowledge on healthy lifestyle including their diet, exercise, sleeping patterns and smoking and their belief on what affects their health does not follow the international standard of living healthily. Studies conducted in Kuwait regarding diabetes education found that there was a limited knowledge that patients with T2DM have on self-management, which was linked to the inefficient method of patient education provided by health professionals (Al-Adsani et al., 2009; Al Slamah et al., 2017; Awad et al., 2011; Waheedi et al., 2017).

Apart from diabetes, improvements in systolic blood pressure (SBP), low-density lipoprotein (LDL), sleep apnoea, gastroesophageal reflux were noticed in these studies. Gastrointestinal disturbances occurred in participants due to the adverse effect of the surgery on absorption that lead to micronutrient deficiency (e.g. iron and vitamin B) (Gautier et al., 2013; Ikramuddin et al., 2013; Julia et al., 2013; Mayer & Dwyer, 2016; Neff et al., 2014).

Psychological Effects

As a consequence of rapid weight loss, the psychological aspects such as; an increase in confidence and being free from the stigma of being obese may have been affected. This affected their daily routine and gave them new experiences. Two psychological facets were examined in this review: quality of life (QoL) and psychological support.

Quality of Life

Positive changes in the patients' quality of life were mentioned among people who had BS; this included the ability to undertake physical activities, removal of stigmatisation and boost in confidence (Edward et al., 2016; Jumbe et al., 2017; Mayer & Dwyer, 2016). In contrast, Lier et al. (2016) explained the negative aspects where people who had BS were finding it hard to adjust to their new eating habits (healthy versus less healthy options) and changes in their digestion (eg. food they can no longer tolerate)

Psychological Support

There was an absence in the articles that studied the psychological health of people who had undergone BS in Kuwait. However, the importance of having support both professionally and personally was reported in two studies conducted in Western countries, Jumbe et al. (2017) and Lier et al. (2016), which stressed that providing psychological support and addressing the reasons behind bariatric people's obesity might be an essential factor in maintaining their weight loss for a longer period. Awad et al. (2011); Al Slamah et al. (2017) and Garduno-Diaz (2016) suggested that bariatric patients needed to be managed by a multidisciplinary team that includes a psychologist. A lack of research in areas on the psychological health of bariatric patients was discovered while reviewing the literature for Kuwait.

Discussion

The literature behind BS as an alternative intervention for the treatment of T2DM has been reviewed. However, limitations are evident in every research due to the complex nature of human beings. Although this review included several literature reviews on BS and T2DM, the literature combined still shows some limitations. For example, Almarri et al. (2017) and Nimeri et al. (2016) performed a literature review on BS carried out in the Arabian Gulf and compared it to studies conducted in countries known to have a high prevalence of obesity. However, Almarri et al. (2017) failed to clearly mention the inclusion criteria and the timeframe in which the data were taken, which is important for this studies that focuses on the experiences of people at six to twelve months post BS. The knowledge in their study could provide a solid basis for the prevalence of BS in Kuwait. Similarly, Jamal and Aminian (2015) and Ritter et al. (2012) also failed to mention the timeframe of when they collected their data. Despite this, Jamal and Aminian (2015) presented a clear description of the safety and effectiveness between the different bariatric surgeries

performed in Kuwait. Their findings would be considered as insight into the reasons behind the preferable BS in Kuwait. There is currently a lack of knowledge of the experiences that people with Kuwait have gone through after BS thus making qualitative investigation essential to gain a deeper understanding.

A small sample size in a cohort study was one of the limitations for Courcoulas et al. (2014), therefore, their findings could not be generalised. However, as an early study and one of the few RCTs conducted in bariatric surgery, their findings from 69 participants was regarded as significant (Courcoulas et al., 2014). Another RCT by Ikramuddin et al. (2013) included 120 participants recruited from 3 different centres. Although the size of the sample in Ikramuddin et al. (2013) is double that in Courcoulas et al. (2014), their findings are still not generalisable because of the small sample size. Also, both the intervention group and control group had close to normal levels of BGLs, so there was no significant difference.

Mayer and Dwyer (2016) reported a literature review on BS vs. conventional medical therapy for T2DM. Significant findings included T2DM remission due to surgical changes in the anatomy and not weight loss. They also found that people who had BS achieved healthy reductions in comorbidities within one year of surgery compared to the unachieved levels in the conventional therapy group. According to Neff et al. (2014) people who choose RYGB instead of LAGB had more weight loss, lower levels of BGLs, lower levels of blood pressure but were equal in gonadal, economic expenses and body image perception. Their inclusion criteria and settings were unclear, and no dropouts were mentioned in the study that may contribute to a reporting bias. This is different to Abd Ellatif et al. (2014) and Al Sabah et al. (2016) who found that LSG had favourable outcomes in regard to the remission of T2DM in the long-term.

Several publications found that BS was successful in maintaining weight loss in the first two years after surgery (Gautier et al., 2013; Julia et al., 2013), followed by gradual weight regain in the following years, three to five years after BS (Himpens et al., 2012; Lier et al., 2016; Ritter et al., 2012). However, this conflicts with the findings of O'Brien, MacDonald, Anderson, Brennan, and Brown (2013) showed that weight loss was maintained up t 15 years in their sample population.

One of the few qualitative studies in this review is Edward et al. (2016) where the chosen method of collecting data was via telephone interviews. This provided participants with more freedom to express their feelings and describe their experiences, which was perceived from being anonymous. Nevertheless, the sample was homogeneous, privileged men with socio-economic

advantages. There was a lack in mentioning the timeframe of when the men shared their experiences. These experiences may have been different between the men according to the time they had their BS. Jumbe et al. (2017) identified the data that relied on patients' self-reported quantitative data as a limitation. However, the study corresponds with the findings in Lier et al. (2016) and Carrasco, Appelgren, Núñez, and Schlanbusch (2014) in highlighting the importance of conducting further research in the qualitative paradigm to understand the outcomes of BS on individuals physically and psychologically.

Ritter et al. (2012) points out that patient education is needed for BS people, and that T2DM remission can be achieved if changes in daily living habits are made, which conflicts with the nature of T2DM as a progressive condition. This resembles findings of Lier et al. (2016) in the reoccurrence of T2DM. A study by Taube-Schiff, Yufe, Dettmer, D'Agostino, and Sockalingam (2016) found that participants need re-education to be able to retain the knowledge they have received from patient education programmes to be able to optimise their surgical outcome, which also supports Lier et al. (2016) in providing follow-up patient education.

Patient education for T2DM was offered in a Kuwaiti population (Al-Adsani et al., 2009) that reveal limited knowledge among the participants in effectively managing their diabetes. This resembled the findings of Awad et al. (2011) that suggested that the limited education was due to inefficient patient education provided by the health professionals in the Kuwaiti health care system. Waheedi et al. (2017) found similar findings of limited knowledge and self-management of diabetes in their study that was conducted over five years after Al-Adsani et al. (2009) and Awad et al. (2011). Al Slamah et al. (2017) agreed with the findings of Awad et al. (2011) in the culturally ineffective patient education because it was westernised and added that a tailored diabetes self-management programme to the cultural aspects of the Kuwaiti people with diabetes is essential for a providing successful patient education. Al-Adsani et al. (2009) reported that the validity might have been effected due to self-reported data provided by the participants and that levels of glycosylated haemoglobin were taken in different centres, which may have provide inaccurate readings. Awad et al. (2011) and Al Slamah et al. (2017) did not mention any limitations in their study. Waheedi et al. (2017) also did not mention any limitations and the time frame on their data was collection was unavailable. According to Aarts et al. (2017), patients who have undergone BS prefer having follow-ups after their surgery to receive patient education that are tailored to their needs by healthcare. Therefore, the importance of providing patient education after surgery is essential to provide individuals to optimise surgical outcomes.

Long-term studies generated according to the inclusion and exclusion criteria of the articles selected was Himpens et al. (2012) and O'Brien et al. (2013). A 9-year study that followed 77 patients revealed the recurrence of diabetes in 27% of the sample population, and two individuals reversed their BS due to metabolism complications (Himpens et al., 2012). The limitation in Himpens et al. (2012) was that the weight and glycaemic levels were reported via telephone which could have been falsified by the participants. Several studies reported a 52% T2DM remission in their sample following BS (Gautier et al., 2013; Himpens et al., 2012; Mayer & Dwyer, 2016; Ritter et al., 2012; Wentworth, Burton, Laurie, Brown, & O'Brien, 2017; Yan et al., 2017).

Conclusion

This literature review was based on 14 international publications that followed a defined inclusion and exclusion criteria from 2008 to May 2018, which would assist in answering the research question. The researcher was interested in exploring the psychological impact of bariatric surgery (BS) on individuals with T2DM. This chapter indicated several weaknesses such as, sample size and self-reporting bias; and strengths such as, RCTs and long-term patient follow up that were found in the included articles. The findings of the included literature focused on two main categories (physiological & psychological) and several sub-categories (Weight loss, T2DM, QoL and psychological support).

The discussion found that although BS seems to have promising results on weight loss and reduces comorbidities leading to increased quality of life. Literature suggests that lifestyle change, and education should be maintained to prolong the health and sustainability of the acquired surgical outcomes. Furthermore, it is essential to stress that the psychological well-being of participants needs to be addressed. Doing so would significantly increase their quality of life and aid in positive long-term results from the surgery.

The following chapter will discuss the methodological approach that will be undertaken in this research. It will also cover the ethical issues that may arise during the study and the data collection and analysis.

CHAPTER THREE - METHODS

Introduction

This chapter outlines the method and methodological approach to a study seeking to understand the experiences of people with type 2 diabetes mellitus (T2DM) in Kuwait after bariatric surgery (BS). The research approach, and the ethical concerns that were found in the research are presented followed by the method used to conduct the research detailing the strategies used for data collection and data analysis. Finally, the limitations and rigour of the study design are stated before ending this chapter with a conclusion.

Research Approach

A research question can be answered using different methodological approaches or paradigms, such as quantitative, mixed methods and qualitative. Quantitative research aimed to measure and analyse numeric information (Polit & Beck, 2017), for example, blood glucose levels (BGLs) in people with T2DM and its relationship to weight loss after BS. This could be studied using various approaches including: Randomised Control Trial (RCT), Cohort (Longitudinal), Correlational, Cross-sectional (Snapshot) and Case control (Polit & Beck, 2017). However, quantitative research design will not be able to answer the research question for this study as it seeks the experiences of people with T2DM.

According to Munhall (2012), mixed method research is the combination of methods in a research project, in which one method cannot be published independently and requires another (complete method). Tashakkori and Teddlie (2010) found that authors such as Bryman and Creswell describe mixed method research as a study that includes both qualitative and quantitative approaches. However, Morse and Niehaus (2009) argued that mixed method designs and multiple method designs are interchangeable and have described this method as the utilisation of two research projects in one study, for example, two qualitative methods, or two quantitative methods in one research.

Qualitative Research provides the ability to know an individual before reacting to their story (Munhall, 2012). Knowing the individual helps in discovering their deepest thoughts and understanding what they have been through or what they are feeling and most importantly what they want, thus respecting their autonomy (Munhall, 2012). This type of research allows the

participants to become the experts in their field, which is themselves and their lives, thus providing the research with genuine and rich details of their experiences (Munhall, 2012). Qualitative research aims to investigate how people understand their experiences and their world (Holloway & Galvin, 2016). This methodology is most suited to this project as it aims to explore the experiences of people with T2DM after they have had BS.

This research is designed to understand the lived experiences of a Kuwaiti population with T2DM who have undergone BS in the past six to twelve months. Therefore, seeking to answer the research question: *'Life post bariatric surgery: What are the experiences of people with T2DM in Kuwait?'* is achievable through implementing the qualitative paradigm. In the qualitative paradigm, the emphasis is on the holistic system, the person as a whole and the ability of this person to exist and interact with others (Polit & Beck, 2017). The research question focuses on people with T2DM in Kuwait at six to twelve months after a life-changing surgical procedure known to show promising results in several health aspects specifically changes in body weight and BGLs as previously stated in Chapter 2. These favourable changes in terms of health are explored through understanding the behaviours of bariatric people with T2DM in a specific point in time.

Several approaches can be used within the qualitative paradigm including: ethnography, phenomenology, case study, grounded theory, narrative, critical or feminist (Polit & Beck, 2017). To answer the research question, the following approaches in the qualitative research paradigm are presented to identify the most suitable approach for this study (Polit & Beck, 2017) (see Table 1, p. 20).

The researcher has chosen the case study approach as the design for this study due to its flexibility, a restricted sample and the study objectives. The next section details why case study was most suited for this research project, what a case study design is and what are the strengths and weaknesses of this method.

Table 1: Qualitative research approach

Qualitative Research Approaches		
Approach	**Description**	**Rationale**
Ethnological	seeks to study the culture of a population (Polit and Beck 2017).	The researcher intends to study the lived experiences of people with T2DM after BS, which may not be explored when studying their culture.
Phenomenological	is used to describe the lived experiences of a population (Polit and Beck 2017).	This approach requires an extended period of time to accomplish to acquire in-depth understanding of the lived experiences of people with T2DM after BS.
Case study	is used to explore single or multiple cases that are present in a population in the community (Polit and Beck 2017).	This approach helps to focus on a certain group through setting boundaries that would help understand the behaviours and experiences that people with T2DM go through after excessive weight loss.
Grounded Theory	focuses on developing a theory by understanding the primary concern of a problem that influences the individual's behaviour (Polit and Beck 2017).	The researcher is not looking to develop a theory in this project.
Narrative Analysis	looks into the story as a gateway to understanding how individuals view an event in their personal life (Polit and Beck 2017).	The research is interested in analysing and interpreting the experiences, not only understand it.
Critical Theory	is an action-oriented plan to implement change in the society (Polit and Beck 2017).	This project does not aim to achieve change but to add to the body of existing knowledge on bariatric surgery among T2DM population in Kuwait.
Feminist	studies female vulnerability and their position in society (Polit and Beck 2017).	The study is not focusing on gender but on bariatric surgery for both genders with T2DM.

What is a Case study Design?

Stake (1995) argued that case study is studying a case in both particular and complex manners to comprehend the essential circumstances in that case, which in this case may lead to generalisation. Several researchers have formed their individual definition of case study. Yin (1992) in Denzin & Lincoln (2017) described case study as a method, research strategy and

research tool. However, Yin (1994) in Denzin & Lincoln (2017) stated that case study research is a comprehensive research study that includes both data collection and design Stake (1995) in Munhall (2012) found that a case study follows certain characteristics that provides a critical element in choosing the appropriate case study approach. These characteristics are holistic, empirical, interpretive and empathetic, which are individually described in Table 2.

Table 2: Characteristics of case study approach

Characteristics	Description
Holistic	Concentrates on a phenomenon in specific and relevant details (Munhall, 2012).
Empirical	The researcher keeps a naturalistic method when collecting data though conducting interviews or keeping observations to gain in-depth data (Munhall, 2012).
Interpretive	It is vital that the researcher acknowledges their biases and understand that the findings of their project may be affected by their presumptions (Munhall, 2012).
Empathetic	Due to the human part in the study, the researcher respects the participants as a person and not an object (Munhall, 2012).

According to the description of the characteristics of case study approach, the most suitable method of collecting data would be empirical via interviews in order to gain rich data to help the researcher understand what people with T2DM have experienced after BS. However, in order to identify the type of case study design, it is essential to know the focus of the case. In this project, the case is people with T2DM who have had BS in the past six to twelve months from the bariatric clinic of a government hospital in Kuwait.

According to Simons (2009) in Munhall (2012), case study explores a particular issue or person in a deep level of understanding in a real-life situation. Yin (2009) explains case study as life experiences captured through understanding an individual and the events they have encountered. This may differ from one individual to another, therefore, generalisation is not an aim (Munhall, 2012; Yin, 2012). Thomas (2016) defines case study as a means to study a particular case whether it may be a person, organisation, event, country as a whole and not seek to generalise from it, which is agreed by with most researchers.

Yin (2009) describes different case study designs, which include the examination of critical, rare, unique, longitudinal, representative and revelatory cases. Such cases require a long period to

provide detail on that case that may have been disregarded due to their settings and missed opportunities (Thomas, 2016). In the critical, rare and unique study designs, the researcher is to identify the boundaries of a case that makes it important and rare enough to be examined thoroughly (Thomas, 2016). Yin (1994) in Denzin and Lincoln (2017) stated that rare cases are difficult to find especially when they involve being part of a clinical setting. Although these cases may discover interesting issues on a Kuwaiti bariatric population with T2DM, Yin's (1994) case study designs may not answer the research question due to the common practice of this surgery in the present time and the limited access of the researcher of this project over clinical exposure in finding such critical, rare and unique cases.

Stake (2005) in Denzin and Lincoln (2017) stated that in a case study, there are three points of interest; intrinsic, instrumental and multiple also known as collective. In an intrinsic case study, the researcher is focused on the bariatric population with T2DM, solely out of interest (Munhall, 2012). Though this may be interesting, this area could be expanded and studied in more detail to further understand other issues that may affect the case. In an instrumental case study, people with T2DM in Kuwait are explored at six to twelve months after BS, in order to gain insight and advance understandings that could lead to the generalisation of the findings and possibly illustrate relevant external factors (Denzin & Lincoln, 2017; Munhall, 2012). The third point of interest is a multiple case study where the researcher examines several instrumental case studies to seek similarities and differences individually that may lead to better understanding and development of theories. Although Stakes' (2005) points of interest may answer the research question, instrumental case study is the preferred method because it is more likely to provide the focused outcomes and detailed answers to the research question.

Strengths and Limitations of the Case study Approach

Strengths

The strength of the case study's approach lies in the retention of holistic features from real-life events and cases of individuals (Munhall, 2012; Thomas, 2016). Case study approach helps to study complex cases where the phenomenon cannot be separated from the contextual condition of events by presenting cases that are unique and provides rich information source when clear boundaries of the case are set (Munhall, 2012; Thomas, 2016). Both quantitative and qualitative research can use the case study approach (Thomas, 2016). Studies can be either inductive of deductive according to the boundaries set by the researcher (Munhall, 2012; Thomas, 2016).

Limitations

One of the limitations of the case study approach is that it does not abide by rules or standards, thus making it highly flexible such that researchers may often mistake case study with other approaches, such as case report, phenomenology or cross-sectional (Munhall, 2012; Thomas, 2016). In this project, the researcher is aware of the case study method and has set clear boundaries.

Another limitation is the inability to generalise the findings because it provides comprehensive information on a restricted study area, which may be the case in Stakes' intrinsic case study (Munhall, 2012; Thomas, 2016). However, in some case study such as Stakes' (2005) in Denzin and Lincoln (2017) instrumental and multiple case study, a generalisation may be generated due to the possibility of arriving at a theory or by testing one that already exists.

By following Stake's (2005) instrumental case study design, the researcher forms the structure of the study and has provided an explanation detailing the underpinnings of the project (Munhall, 2012). This project aims to understand the everyday experiences of a bariatric population with T2DM to gain knowledge to draw on the findings and possibly generate a theory.

Method

Settings

Participants were recruited from a hospital in Kuwait. The hospital consists of 4 main sections namely, Administration, Out-patient department (OPD), In-patient wards (1, 2, 3 & 4) and Casualty department. To target the study sample population, the information sheets were distributed by the receptionist at the OPD. Patients arriving to make their next appointment at the bariatric clinic were handed the information sheet and asked to contact the researcher if they were interested in participating in the study.

Sample

The recruitment process was conducted by clinic receptionists following permission and approval of the Director of the Hospital and Head of Surgery and Bariatric Department. Patients who fall into the criteria (T2DM and at six to twelve months post BS) would need to contact the researcher at an email available for the purpose of this project to receive the interview questions. Several

sampling strategies are described to explain the most suitable strategy for this research project (see Table 3).

Table 3: Sampling strategies

Sampling Strategy	
Convenience sampling	Also known as volunteers. The sample is the readiest and available individuals who are self-representative and coming forward to participate in a study (Polit & Beck, 2017).
Snowballing sampling	Also known as chain sampling or networking sampling (Schneider & Whitehead, 2016). Participants are referring their acquaintances, friends and families that may be interested and eligible to participate in a study strategy (Polit & Beck, 2017; Schneider & Whitehead, 2016).
Purposive sampling	Usually comes after convenience and snowballing sample where the researcher chooses the most beneficial cases to be included in the study (Polit & Beck, 2017). This may also be used to recruit participants according to their knowledge and experience suitable to a research project (Schneider & Whitehead, 2016).
Theoretical sampling	Known as the involvement of people that represent a theoretical construct, which is useful in grounded theory (Polit & Beck, 2017). This may also be used to recruit suitable participants that have certain characteristics to generate a theory that a researcher is exploring (Schneider & Whitehead, 2016).

A convenience sampling strategy was chosen due to its accessibility and efficiency (Polit & Beck, 2017). Several advantages of the convenience sampling are the short period of time in which the researcher can obtain data, the easy access, readily available sample and the cheapest method of gathering data (Dudovskiy, 2017). Some limitation to convenience sampling is the possibility of under representing or over representing the research group (selection bias), which interferes with the ability to generalise the findings (Dudovskiy, 2017; Schneider & Whitehead, 2016). However, due to the research design, the generalisation of findings is not the aim but rather the gaining of in-depth understanding and knowledge about the bariatric population. Following the convenience sampling strategy, a purposive sampling strategy was conducted to choose the most relevant data that may add to the body of knowledge in the experiences that face the bariatric population.

Inclusion and exclusion criteria were developed to study a specific population that could aid in answering the research question (Polit & Beck, 2017) (see Figure 3, p.25).

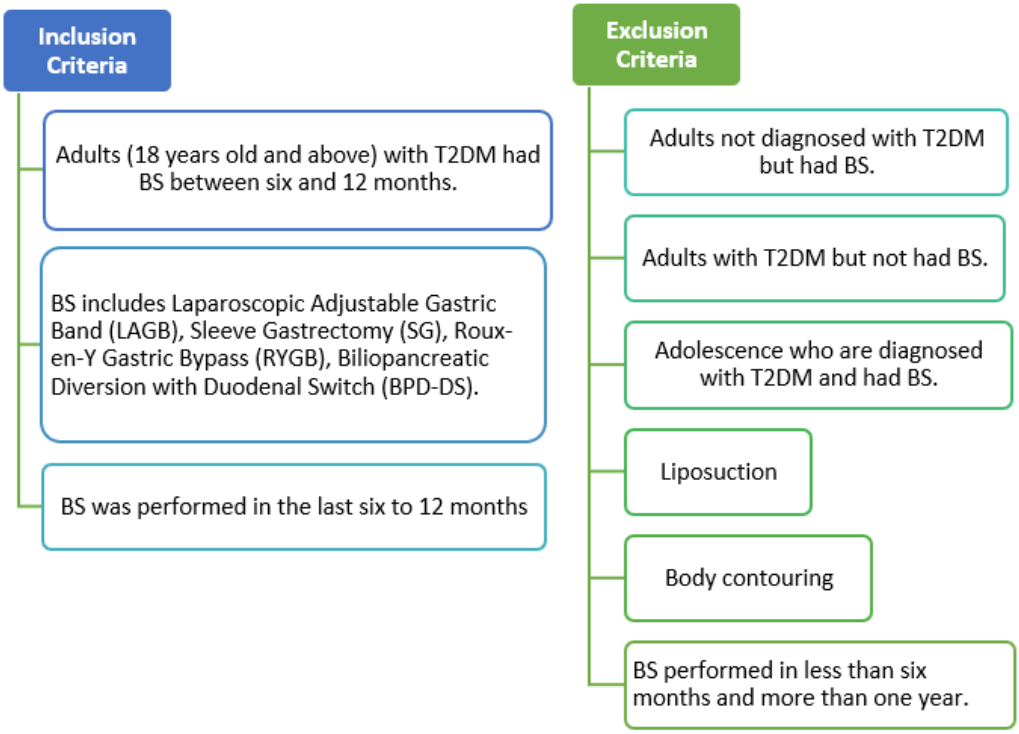


Figure 3: Inclusion and exclusion criteria

Sample Size

In a qualitative research, the sample size is not as important as the data that is provided by the participants (Schneider & Whitehead, 2016). However, the researcher needs to be aware of the sample size that may be required to achieve the data necessary for their project (Isaacs, 2014). According to Teachers of English to Speakers of Other Languages (TESOL) (Teachers of English to Speakers of Other Languages, 2017), case study guidelines, two to four cases are often enough to present a case study. Creswell (2014) recommended 3-5 participants for a case study to provide the rich data that is necessary to answer the research question. Stake (2005) in Thomas (2016) stated that data from four cases is sufficient to offer the needed data for a bounded case study.

Data Collection

Two types of data collection methods were identified as direct data and indirect data (Schneider & Whitehead, 2016). Direct data are data that you can take note of such as verbal texts, written transcripts, body language and interpersonal relationships (Schneider & Whitehead, 2016). Indirect data is data that is gained from thoughts, experiences, interactions within an individuals' circle (Baker, 2011). Polit and Beck (2017) identified and described several types of interviewing approaches (See Figure 4, p. 26).

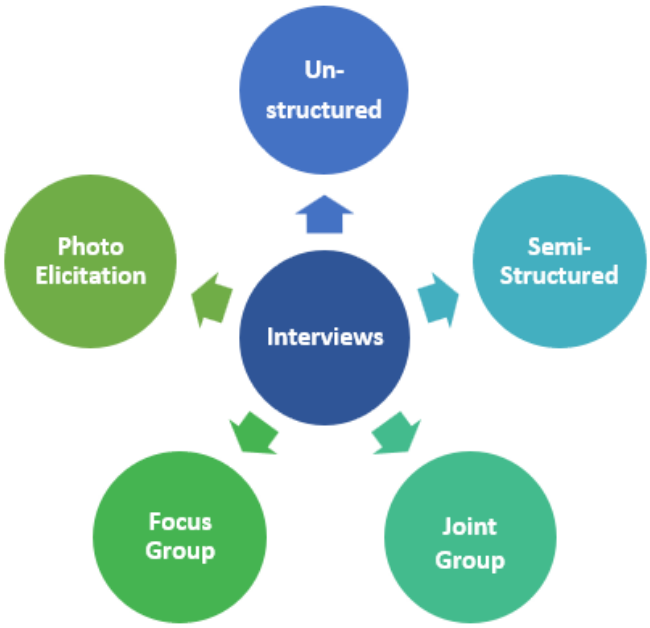


Figure 4: Types of interviews (Polit & Beck, 2017)

Unstructured interview

This is used when a researcher does not have a plan or idea on a topic of interest. Participants are asked to communicate freely on their lived experiences and stories with minimal interruptions by the researcher (Polit & Beck, 2017).

Semi-structured interview

A researcher has a list of topics that they are interested in but do not have specific predetermined questions (Polit & Beck, 2017).

Focus group

A group of people are invited to share their thoughts regarding a specific area that the researcher would like to explore though asking specific questions (Polit & Beck, 2017).

Joint group

This type of interview resembles Focus group interviews, however, in this interview, the participants are intimately related and have a close relationship (Polit & Beck, 2017).

Photo elicitation

Photographs and images are utilised to guide the interview, common in ethnographies (Polit & Beck, 2017).

A semi-structured interview was selected to encourage participants to communicate freely and comfortably using their own examples and descriptions, which ensures that all the information is collected (Polit & Beck, 2017). The interview enabled the researcher to guide the interviewees into answering the research question in the form of demographic data, and the questions provided insight and understanding of the impact of BS on the experiences of participants with T2DM.

The interview questions were developed and trialled with colleagues to ensure clarity. The questions were designed to find out the effects of BS after six to twelve months of surgery on participants' social, personal and work life based on the literature reviewed (see Appendix 3). The questions were designed to guide and assist participants in expressing their feelings, share their experiences with the hypoglycaemic medications and possible changes in their lifestyle, which helped in answering the research question.

Due to the difficulty of conducting research overseas, email interviewing was the chosen method for collecting data. Several studies have acknowledged the benefits of email interviews. Hawkins, Chard, Chenail, and Seibert (2017) found practicality in the utilisation of email interviews. Kralik, Price, Warren, and Koch (2006) stated that interviews via email could overcome the barrier of interviewing participants in different time-zones. The authors also indicated that participants were not pressurised to provide answers promptly and had time to reflect and think before providing one. Reid, Petocz, and Gordon (2008) stated the cost effectiveness of transcription can be reduced by using emails. These studies also noted that email interviews provide a medium to openly express sensitive issues (East, Jackson, O'Brien, & Peters, 2008; Hawkins et al., 2017; Kralik et al., 2006; Reid et al., 2008).

Some disadvantages of email interviews are: the inability for the researcher to read body language, and participants might provide brief answers when typing instead of comprehensive and detailed answers when verbalising them (Hawkins et al., 2017; Kralik et al., 2006; Reid et al., 2008). The absence of the ability to review the answers and modify the questions accordingly, and setting reminders to answer the emails are also limitations during email interviews (Reid et al., 2008). A limitation from using a convenience sampling strategy was the possibility of not obtaining rich information for the study (Polit & Beck, 2017).

Participants were recruited from the bariatric out-patient clinic of a hospital in Kuwait. The clinic receptionists distributed the information sheet (Appendix 4) to all patients when they approach them to make their next appointment. The receptionist was strictly asked not to engage with the

patients regarding the research and refer any questions to the researcher whose contact details were on the information sheet.

The information sheet explained the purpose of the research and its significance. Participants had the freedom to participate by choosing to email the researcher to receive the letter of introduction (see Appendix 5) and interview questions (see Appendix 3). Follow up emails were sent to the participants for clarification of responses if unclear. The email interview was conducted in Arabic, which is the national language in Kuwait. When the researcher received emails with answers to the questions, this was regarded as consent by the participants. Therefore, no formal consent form was required from the participants. If the participants no longer wanted to participate, they had the choice of not emailing the answers back to the researcher and they were excluded from the study.

The English language varies among the Kuwaiti population. The interviewees preferred to complete their interview in Arabic. Therefore, the interview questions were translated from English to Arabic. The answers were also translated from Arabic to English. However, when translating languages, a loss in meaning is expected with the use of local phrases and expressions (Loue & Sajatovic, 2008; Schofield et al., 2018). To minimise the gap in translation, both the researcher and an expert in language compared translation to identify the closest meaning of the Arabic phrases so as to ensure accurate interpretation of the data (see Appendix 6 & 7). This was then confirmed in the validation process with the supervisors to minimise bias.

Data Analysis

According to Sandelowski (2000), content analysis is used to describe data without taking the researchers' interpretation into context. In contrast, thematic analysis uses the researcher interpretation of the collected data.

In thematic analysis, similar data is grouped together to generate a theme that may be generalised (Polit & Beck, 2017), which makes thematic analysis the suitable choice to analyse the data collected in this research.

The 5 steps of thematic data analysis as described by Creswell (2014) was used to analyse the data. The steps are described in detail to show how the analysis process was applied to this project (see Figure 5, p. 29).

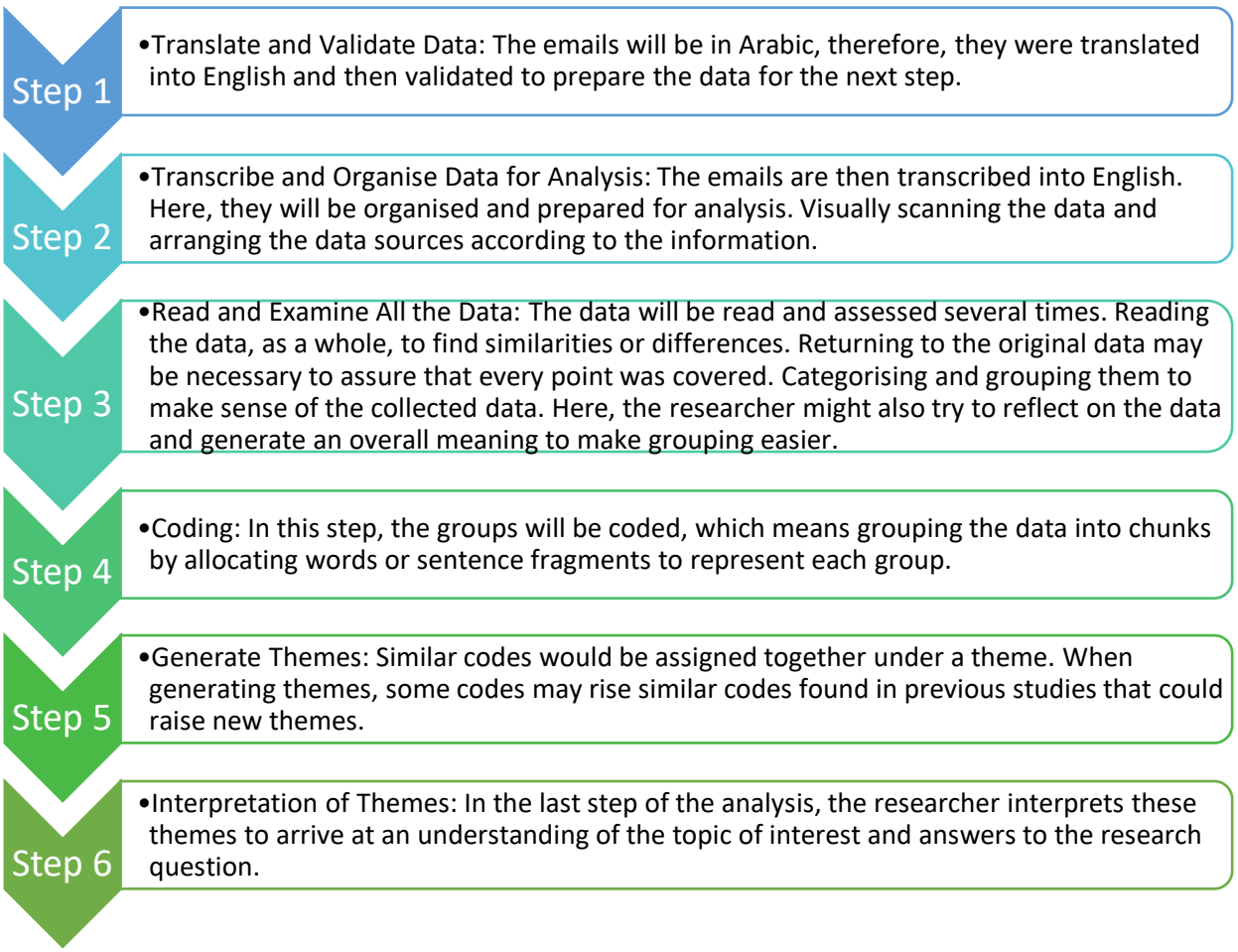


Figure 5: Data analysing process (Creswell, 2014)

Rigour in Qualitative Case Study

According to Thomas (2016), reliability and validity are not suitable to evaluate the rigour of a case study. Thomas (2016) claims that reliability and validity are dropped when conducting a case study because assumptions cannot be made when a theory or test is repeated on different individuals in various occasions and result in similar outcomes. However, Thomas (2016) suggests that triangulation, positionality, finding and regularising, and quality would aid in producing a more rigorous qualitative case study research, which will be explained in detail in the following paragraphs.

Triangulation

The researcher attempts to view the study from different angles and vantage points, which agrees with Baxter and Jack (2008) and Yin (2012) where they utilised triangulation to make their studies

rigorous. Foucault in Thomas (2016) explained that the only way to entirely understand something is when it is viewed from different directions and by different methods.

Positionality

This is when the researcher acknowledges their position in the study. The researcher's background is reflected in the study, and the researcher becomes subjective and an active agent in obtaining the knowledge (Thomas, 2016; Yin, 2012).

Finding and Regularising

It is when the researcher presents the study and believes in the findings. However, the researcher welcomes other points of view and encourages others to observe fact and make their own judgments Thomas (2016).

Quality

According to Hammersley (2007) the quality can be assessed using several indicators such as the clarity of the content, the research question, the problem statement, the methods used in the research, the research process and the presentation of the main claims. Moreover, the analysis and robustness of the study are critiqued through the choice of case, the explanation and justification of the study context and the proficiency of the arguments (Thomas, 2016).

Positionality and quality were utilised in this project to evaluate and produce a rigorous study when interpreting the findings and providing insight into the experience of the participants. Through positionality, the researcher discusses their position on people having BS to manage their weight and BGL. The quality of the research is examined several times by revisiting the literature behind the effects of BS on BMI and BGL, the research objective and question and the process of data collection.

Ethical Considerations

The National Statement on Ethical Conduct in Human Research (NHMRC) states that human research is bound by the relationship between the researcher and the participants (National Statement on Ethical Conduct in Human Research, 2007). NHMRC also obligates researchers to

respect the participants and research subjects while acting in a righteous manner (NHMRC, 2007). Ethical approval was granted by the Social and Behavioural Research Ethics Committee (SBREC) at Flinders' University with an ethics approval number (7730) (see Appendix 8). The approval to conduct the research at the hospital in Kuwait was granted by the Hospital Director (see Appendix 9).

Approval and ethical standards guiding study

Ethical principles of merit and integrity was undertaken due to the potential benefits which may contribute to the body of knowledge and understanding of people's lived experience in Kuwait after bariatric surgery (NHMRC, 2007). The method to conduct the study is developed and designed with the help of supervisors and experts in the field to achieve the aims of the research project (NHMRC, 2007). A review of the literature (Chapter 2) was conducted and gaps in the field were identified. This research project was undertaken honestly through strictly abiding by the rules of recruitment and data collection. The researcher was not involved with the recruitment process. Participants were given the choice to participate through sending an email available on the information sheet to show their interest in participation. Dissemination of the finding whether favourable or unfavourable will contribute to public knowledge and understanding. This will be ensured through providing a copy of the thesis at Flinders University library and will be accessible to the public via online databases. The researcher also aims to publish their findings in a recognised journal accessible to everyone. According to (NHMRC, 2007), the following headings below show how values, principles and themes apply in research that is the subject of this chapter.

Merit, Integrity and Justice

The researcher must inform the participants if any unprofessional role has occurred (NHMRC, 2007). Due to the nature of human relationships and the impact of revealing deep issues, which may compromise the research role, the researcher has the choice of modifying the research or discontinuing it (NHMRC, 2007). Qualitative research should also provide adequate information in case the findings may lead to generalisation (NHMRC, 2007). The sampling strategy in this project was clearly described and the rigour of the study may be established through assessing the quality and credibility of the collected data (NHMRC, 2007).

Beneficence

Participants can be identified easily so their information was protected through hiding their identifiers only accessible by the researcher. During disseminating the findings, all identifiers of

the participants will be removed. Qualitative research may contain deep, personal and emotional risks and its impact on both the researcher and participants will be described in the research project where relevant.

Respect

Accuracy and completeness of the interview transcripts was verified via two translators to translate the transcripts before analysis. Implied consent was obtained upon receiving the responses of the email questions from the participants.

Anonymity, confidentiality and privacy

The respect for the participants' privacy and confidentiality remains intact throughout the course of the study. This was clearly stated in the Information Sheet (see Appendix 4) prior to receiving the research questions (see Appendix 3). The anonymity of the participants was kept by de-identifying the participants' transcripts before sending it to the translators.

Vulnerability, power and control issues

When participants fail to make their own decision or have diminished capacity, the researcher should respect them and empower them where possible and provide protection through ensuring their anonymity and the confidentiality of their shared experiences (NHMRC, 2007). As stated in the information sheet, the participants were also given the choice to not answer any of the interview questions that they feel uncomfortable answering, or not email back the answers to the researcher. The information sheet also states that if a participant wished to withdraw their participation, the researcher will remove the transcripts and all the information that links back to the participants.

Data storage and protection

To ensure the protection of the participants, all identifying information was removed from the study, and can only be re-identified by the researcher solely. The data is stored on the university system in password protected computers accessible only by the researcher. The external translator was asked to consent for confidentiality and received a de-identified copy of the interviews and has deleted the copies of the interviews after completion (see Appendix 8).

Conclusion

The aim of this chapter was to provide a clear structure of the methodology and methods of a qualitative research project interested in exploring the experiences of people with type 2 diabetes mellitus (T2DM) after bariatric surgery (BS). Stakes' (2005) instrumental case study approach was used to explore the lived experiences of the participants through email interviews. Creswell's (2014) steps for thematic analysis were described and Thomas' (2016) study evaluation strategies were explained to be utilised in the next chapter.

Following this data collection process, the next chapter (Chapter 4) will present an analysis of the obtained data conducted by applying Creswell's (2014) thematic data analysis steps and the researcher's interpretation of the data.

CHAPTER 4 – FINDINGS

Introduction

This chapter presents the results exploring the impact of bariatric surgery (BS) on people with type 2 diabetes mellitus (T2DM) in Kuwait. This chapter starts by describing the demographic features of the participants acquired from the semi-structured email interviews. By following Creswell's (2014) five step data analysis process previously identified in Chapter 3 (p. 18), three main themes each with a number of subthemes were identified. Verbatim quotes from the interviews with bariatric individuals with T2DM have been included to provide deep understanding of the participants experiences through using their exact words, and to support the results found as evidence and illustrations. Finally, the chapter concludes with an overview of the results.

Participants Characteristics

Out of a pool of 50 participants, 13 responded via email enquiring about the research. These 13 potential participants were assessed against the inclusion criteria. In total there were four participants with T2DM that had undergone BS in the past six to twelve months in Kuwait. According to Kuwait's religion, as an Islamic country, gender included male and female only, and the marital status included single, married, divorced and widowed only. Couples who were married and separated were viewed as divorced. Unmarried couples were categorised as single individuals.

Participants' demographic features varied as illustrated in Table 4 (p. 35). Two participants were aged between 19 and 34 years, one was aged between 35 and 50 years, and one participant was aged over 50 years. Two participants were male and two female. Two participants were unemployed and two were employed. One of the participants was newly diagnosed with T2DM, while the other participants had T2DM for at least five years. Participants were diverse in their marital status and had undergone BS six to twelve months prior to this research. Three participants had Roux-en-Y Gastric Bypass (RYGB) and one had a Sleeve Gastrectomy (SG). All four participants had lost at least 50 kgs since their surgery, with the largest amount of weight loss at 77kgs.

Table 4: Demographic features

Participant	Participant 1	Participant 2	Participant 3	Participant 4
Age	19-34	35-50	19-34	Over 50
Gender	Male	Male	Female	Female
Marital Status	Married	Divorced	Single	Widowed
Nationality	Kuwaiti	Kuwaiti	Kuwaiti	Kuwaiti
Employment Status	Employed	Unemployed	Employed	Unemployed
Duration of T2DM	1 year	7 years	5 years	Over 10 years
Weight before BS (kg)	142	165	125	124
Present Weight	72	75	61	65
Period of BS	6 months	12 months	8 months	11 months
Type of BS	RYGB	RYGB	SG	RYGB

Thematic Findings

Semi-structured interviews via email were used as a guide allowing the participants to describe the impact of the surgery on their lives. The interview was a means to explore the effect of BS on the participants with T2DM to help understand their experiences at six to twelve months after BS. Participants were asked questions related to their T2DM management, the changes that were achieved after BS and the support they have received. Three main themes were generated based on the responses of four participants during this period. The themes were 'knowledge', 'satisfaction from the results', and 'healthcare management'. Each theme includes several subthemes which illustrated the participants' behaviours and the changes they had made since their surgery (see Figure 6, p. 36). These themes will be discussed in detail in the following sections.

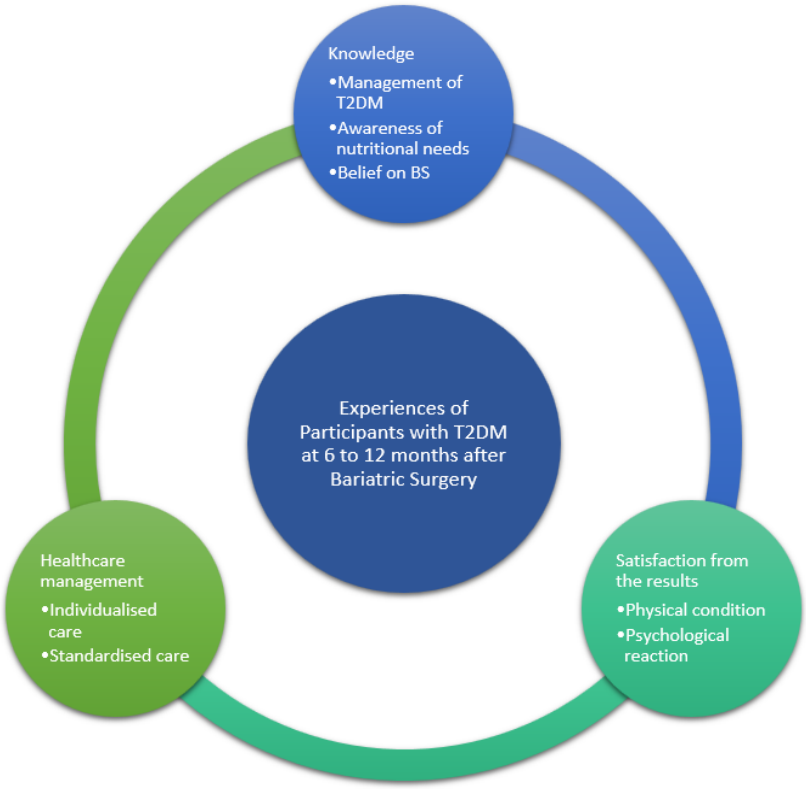


Figure 6: Themes and subthemes that present the experiences of the bariatric participants with T2DM after BS

Theme 1: Knowledge

The first theme identified from the interviews was 'knowledge'. Participants were asked about their routine care of their T2DM, what reasons they believed were behind their T2DM, what they knew about BS and whether there were any changes in their knowledge following the surgery. Three subthemes were found describing what the participants knew and what they had learnt at six to twelve months after BS. These subthemes are 'management of type 2 diabetes mellitus', 'awareness of nutritional needs' and 'belief about bariatric surgery'.

Management of Type 2 diabetes mellitus

The first subtheme identified participants' knowledge regarding their management of T2DM. Participants were asked questions how they monitored their BGLs and managed their medications. The interviews revealed that most of the participants had limited knowledge and management of their T2DM. Participant 1 who had been diagnosed recently, often replied negatively to the questions asked. This participant expressed their indifference in managing their T2DM and exhibited their limited knowledge on this condition when they said:

> "I don't check it [BGL]. It's [BGL] only check when I visit the hospital for routine check-ups, which is not often, thank god… I don't really remember the results. The nurse said it's a bit high but they didn't give me anything for it and asked me to keep taking my diabetes medication" - Participant 1

According to Participant 2 and 3, their knowledge on T2DM was limited. Although they adhered to their hypoglycaemic medication regimes, they did not follow the recommended regime of monitoring their BGL due to the physical discomfort of pricking their finger. They reported:

> "No [I don't check it]. It's [BGL checking] painful and I don't think it's too high… [I check my BGL] when I feel tired or I go to the toilet frequently" - Participant 2

> "Yes [I keep track of my BGLs], [I check my BGLs] twice a week and when I don't feel normal… I used to take Glucophage" – Participant 3

Participant 4 was more active with their T2DM management than the other participants and had adopted BGL monitoring into their daily routine. Participant 4 stated:

> "Yes, almost every day [I check my BGLs], in the morning before breakfast and at night before I go to sleep" – Participant 4

Awareness of nutritional needs

The second subtheme that emerged when participants were asked about their knowledge of nutritional intake was 'awareness of nutritional needs'. Participants were asked about the changes they observed in their eating habits after the surgery. All participants showed an improvement in their knowledge regarding their food and the type of nutrition their body needed. The participants reported that their meal portions, frequency and quality (type) of food had changed and were aware of the different food groups and which to avoid. They also reported craving certain foods. Participants reported:

> "My meal portions [changed]… [I eat more] Chocolate" – Participant 1

> "Eating times and type of food [changed]…." - Participant 2

> "I have become aware of how my body works and what my body needs… I have reduced my sugar, fats, carbohydrates and salt… [I eat more] Chocolate and chips"." - Participant 3

> "I've reduced my portions and know my limits when eating." – Participant 4

Another aspect that was explored was participants' knowledge on their nutritional habits and other factors that may have contributed to their T2DM. Participants varied in their responses but all agreed that their food, exercise and heavy weight played a significant role in their diagnosis of T2DM. They said:

> "I think it's because of my lifestyle… I don't like going to the gym… I love to eat food rich in flavour and fats. I prefer sitting at the café with friends" – Participant 1
>
> "Over weight [caused my T2DM]" – Participant 2
>
> "My weight and unhealthy lifestyle" – Participant 3
>
> "Maybe my weight [caused my T2DM]" – Participant 4

Belief in bariatric surgery

The third subtheme was identified through questions that explored participant's knowledge on BS and what they believed the surgery would accomplish.

> "[I had BS because] The people didn't accept the way I look, especially my family for being fat… [After BS] the doctor told me to stop taking them [diabetes medication] because the surgery might have treated my diabetes. And now I don't have diabetes" – Participant 3

With limited knowledge on BS, this was also influenced by the opinions of the doctors performing the surgery led the participants to believe that BS could alleviate their T2DM symptoms or cure them in addition to reducing their weight.

> "The fastest treatment for diabetes and overweight [is BS]… the doctor told me that the surgery can cure my diabetes… I don't have diabetes anymore 8 months after surgery." Participant 2

The responses of the participants showed that the reasons behind undergoing the surgery varied and included other chronic conditions.

> "Other than my diabetes, I was diagnosed with high blood pressure so I made the decision [to have BS]… [After BS] I was surprised that my diabetes was gone. The doctor told me that I might be cured and that I don't need to take diabetes medication anymore" – Participant 1
>
> "[I had BS because] I need to lose weight due to legs and knee pain and difficulty in walking… my doctor encouraged me [to have the surgery]… [After BS] I don't take them anymore [diabetes medication]." – Participant 4

Participants had a strong belief in the benefits of BS and indicated the surgery might cure their T2DM and other health problems.

Summary of theme 1

The knowledge of the participants was categorised into three subthemes with a fundamental deficit in knowledge on T2DM and BS. Although participants expressed the changes that they had

achieved in regard to their nutritional needs, the knowledge they acquired was also considered limited for long term management of their health.

Theme 2: Satisfaction from the results

The second theme 'satisfaction from the results' emerged from the responses of the participants. Participants were asked about the changes they noticed following the surgery. Two subthemes emerged that described the experiences of the participants within this period. These subthemes are 'physical condition' and 'psychological reaction'.

Physical condition

The first subtheme was 'physical condition', which encapsulates how participants' physical changes effected their satisfaction with the results of the surgery. Participants shared their experiences from losing weight (until the day of the interview) and noted the impact of their weight loss on their work environment. Participants 2 and 3 said:

> "I was assigned to office work before surgery, now I can work as a field worker" – Participant 2

> "I felt so excited because I could see the changes in my body… I am also more focused on my work especially because my work is all about numbers." – Participant 3

This subtheme also includes changes in participants' physical health where participants expressed their satisfaction by reporting an improvement in their level of activity and ease in completing daily tasks. Participants 1, 2 and 3 reported:

> "I still don't go to the gym or exercise, but I feel lighter and can move easily with less effort. I feel that I can walk faster and that I don't tire easily" – Participant 1

> "It [physical activity] has also become easier for me to go for walks and do sports… daily tasks seem to be easier for me and less tiring" – Participant 2

> "After that [BS] I started to feel lighter and more active... more comfortable with my movements and faster" – Participant 3

A lighter weight helped one of the participants in spending their family time actively. This provided the participant with a sense of satisfaction from the change in their physical state. Participant 4 expressed:

> "I move more and feel more active, I'm able to play with my grandchildren now." – Participant 4

Most of the participants were satisfied after the BS relieved breathing conditions they used to have and reported improvement in their general health when they said:

> "I used to get breathless if I walk even if it was just going to the car" – Participant 1
>
> "I don't have sleep apnoea [anymore]" - Participant 2
>
> "I can breathe easily and my asthma has subsided" – Participant 3

One of the participants reported that they felt weak after the surgery. Participant 1 said:

> "I felt exhausted and lazy at the beginning" – Participant 4

Psychological reaction

The subtheme of 'psychological reaction' emerged from the reported experiences of all the participants after having BS. Participants and the people in their lives expressed psychological reactions, both positive and negative. Positive emotions were expressed by the participants upon observing the changes in their body and weighing themselves for the first time after BS, which confirmed their satisfaction. When participants were asked about what they felt the first time they weighed themselves, they replied:

> "I was amazed." – Participant 1
>
> "Very happy and comfortable." – Participant 2
>
> "Comfortable and happy." – Participant 4

Confidence after the surgery was also a positive reaction that most of the participants reported. Participants expressed their feelings of satisfaction through their ability to wear nice clothes, while others were confident because they could move easily. Participants said:

> "My body shape… I can wear nice clothes." – Participant 2
>
> "I felt so excited because I could see the changes in my body… I can wear whatever I want." – Participant 3
>
> "… comfortable, have freedom in my movements, a feeling of lightness and confidence" – Participant 4

Another satisfied response showed positive reactions from family and friends of participants when they reported receiving support and encouragement throughout the post bariatric experience. Participant 4 reported:

> "My children and my doctor… they stood by me and encouraged me to do the surgery" – Participant 4

One satisfied participant reported a positive reaction with positive support and encouragement post BS from their family and friends. Participant 2 said:

> "Parents, ex-wife (now), and friends… they always consider the type of food we eat or help me prepare food. The also join and encourage me for sports" – Participant 2

One of the participants did not change their habits even after weight loss. Although the participant had a positive reaction from the weight loss, when Participant 1 was asked about what had changed in their life after surgery, they responded negatively:

> "Nothing much changed… It [the surgery] didn't affect my work, I work in an office. It [the surgery] didn't affect my daily routine... I still don't go to the gym" – Participant 1

Fear was another negative reaction that was found in participants' responses such as fear of regaining the weight, fear of resentment from others and fear of dying. Participants showed signs of fear of weight regain when they made dietary changes favourable to their weight loss. Two of the participants said:

> "[I avoid] food that contains high sodium, high fat and high sugar" – Participant 2

> "[I avoid] rice, fried food, bread and pastries." – Participant 3

Fear of resentment from others was expressed by one of the participants who kept knowledge of their surgery private because they did not want to be judged by others for having it done. Participant 1 said:

> "Nobody knew about it [BS] because everyone knew I was against this surgery. I've even tried to talk people out of it" – Participant 1

Fear of dying due to accumulated comorbidities was also seen in the response of Participant 1 who said:

> "When I got diagnosed with high blood pressure too, and the doctor prescribed tons of pills, I changed my mind [about the surgery] because I got scared." - Participant 1

One of the participants reported a negative reaction from their family before surgery. Although the participant was satisfied from the results, they reported not receiving any type of support

from their family. They also reported that they were judged and looked at negatively by family members for being obese. Participant 3 reported:

> "The people didn't accept the way I look, especially my family for being fat" – Participant 3

Summary of theme 2

Participants were all satisfied with the results of the surgery. Positive reactions were noted in most of the participants after surgery and was linked to their physical condition. Negative reactions accompanied participants who applied minimal change to their daily routine after surgery.

Theme 3: Healthcare management

The final theme, 'healthcare management' describes the health care system that bariatric participants with T2DM received. This theme aids in understanding the process that the participants experienced before and after BS, and the actual care that the participants were offered. Two subthemes emerged which were 'individualised care' and 'standardised care' by asking questions regarding the type of healthcare support and patient education.

Individualised care

This subtheme describes the individualised care that the bariatric participants with T2DM received following their BS. Several questions were asked regarding the role that the medical team provided to the participants. Though the participants were being treated at the same healthcare organisation, the management of their BS was different. Three participants were seen by their physician or surgeon and one participant was seen by a team that consisted of a physician and dietitian. Participants said that their physician was the sole support for them during their treatment progress.

> "My surgeon gave me advices and kept track of my weight. He had also provided me with a diet plan for after the surgery …" - Participant 1

> "He [doctor] provided me with advises to maintain my weight" – Participant 3

> "My doctor encouraged me to do the surgery" – Participant 4

However, only Participant 2 mentioned the presence of a dietician along with their physician. Participants responded:

"My doctor advised me on how to maintain my weight and asks me to continue my follow-ups and dietician gave me with a flexible meal plan" – Participant 2

Standardised care

The second subtheme that emerged from the responses from the participants on the type of management they received from their healthcare services was 'standardised care'. Standardised care provided were follow-up appointments at one, three, six and twelve months, then yearly to keep record of their progression. Standardised care that was offered for people with T2DM after BS was similar. However, there were no reports by the participants on patient education or any organised multidisciplinary team collaboration. When participants were asked whether they received health care support, none of the participants reported their awareness of a treatment plan or support prior to their surgery. However, the participants said that follow-up appointments were discussed. Participants said:

"I always went for my follow-up appointments" – Participant 1

"I didn't receive any support before the surgery but I have after" – Participant 2

"Yes. They [healthcare providers] called me for my follow-ups after surgery" – Participant 3

One of the participants reported that she had received support from their physician throughout the treatment process. When they were asked about the support they received, they said:

"My doctor stood by me" – Participant 4

Summary of theme 3

Healthcare management for BS on people with T2DM was found to be limited with inconsistent care provided to all the participants. The absence of a formal multidisciplinary team was found in the reports of the participants before and after their surgery. Although participants received standard care, the lack of patient education for BS was evident.

Conclusion

Four adult participants aged 19 years and above participated in email interviews, which identified three main themes: 'knowledge', 'satisfaction from results', and 'healthcare management'. These themes describe the experiences the participants with T2DM had undergone at six to twelve

months after their bariatric surgery (BS). The following chapter (Chapter 5) will present the discussion of the findings and compare them to other studies conducted worldwide.

CHAPTER 5 – DISCUSSION

Introduction

This research used Stake's (2005) thematic analysis to analyse data collected via email interviews for people with type 2 diabetes mellitus (T2DM) after six to twelve months of bariatric surgery (BS). Thomas' (2016) positionality and quality were used to evaluate and interpret the findings to produce a rigorous study as described in Chapter 4 (p. 34). In this discussion chapter, findings that emerged in this research will be discussed, interpreted and compared with the findings of published research conducted in Kuwait and internationally.

Kuwait is one of the countries with the highest prevalence in diabetes and obesity worldwide (WHO, 2016). The literature reviewed and presented in Chapter 2 (p. 16) identified that diabetes education is effective in the management of diabetes mellitus. However, the literature about the Kuwaiti population noted they exhibited limited knowledge in diabetes management, which was most likely due to the absence of suitable patient education in diabetes. In addition to this, the number of people undergoing BS was rapidly increasing and BS has become the treatment option for people with T2DM who are obese in Kuwait (see Chapter 2, p. 14). This raised the research question: 'what are the experiences of people with T2DM after BS in Kuwait?' To answer this question, three objectives were constructed: (a) to understand the experiences of people with T2DM after six to twelve months of BS; (b) to explore the effects of BS on diabetes management of people with T2DM; and (c) to identify the types of support that this population received pre and post BS.

Diabetes Management

According to the Haskin (2013) the prevalence of diabetes in Kuwait is at 23% where 14.3% were adults aged 20-79 years, making it one of the top 10 leading countries in the world for diabetes prevalence. The medical management of T2DM internationally has been focused on managing people's BGLs by providing this population with patient education regarding the effects of diet and exercise on blood glucose levels (BGLs). This education also empowers people with the knowledge and skills to help them manage their hyperglycaemia and avoid frequent hypoglycaemic episodes (IDF, 2017). Adapting to changes in diet, physical activity and medication is difficult to maintain, thus often resulting in poor management of T2DM (Meigs et al., 2003; Norris et al., 2002).

Managing diet, exercise and diabetes medications were considered the conservative method of T2DM management by the International Diabetes Federation (IDF, 2017). However, alarming increases of diabetes in Kuwait were contributed to by suboptimal health care, poor diabetes self-management and the lack of diabetes patient education (Al Slamah et al., 2017; Awad et al., 2011).

Based around the findings in Chapter 4, a thorough discussion of the findings will be carried out to better reflect and understand the experiences of people with T2DM after bariatric surgery. This research found that people with T2DM displayed both positive and negative emotions from the outcome of their surgery. The study results also showed that participants reported BGLs within normal ranges after six to twelve months of the surgery with improvements in their breathing condition and physical activity. Healthcare management provided to the participants varied from a lack of patient education to the provision of a multidisciplinary team approach to the patient experience. These findings will be further discussed in detail and explained according to the three themes: knowledge, satisfaction from the results, and healthcare management.

Knowledge

Findings from the interviews indicated that participants had limited knowledge regarding their T2DM management, nutritional need and BS, which might have led to their decision to undergo the surgery. The lack of knowledge may have also contributed to their uncontrolled BGLs prior to the surgery (Awad et al., 2011; Waheedi et al., 2017). Participants were not provided with any patient education for T2DM or BS prior to or following their surgery. This corresponds with the findings of Awad et al. (2011) who reported a lack of patient education and Alfadhli et al. (2017) who also reported a gap between the health practices and beliefs of a Kuwaiti population and the recommendations for optimal health.

Several studies identified that providing diabetes education to patients improved glycosylated haemoglobin levels in Kuwaiti people (Al-Adsani et al., 2009; Waheedi et al., 2017). This study found that limited knowledge was one of the issues that people with T2DM had when dealing with their diabetes, which was similar to the findings of Al-Adsani et al. (2009); Awad et al. (2011); Waheedi et al. (2017). This study also found that monitoring BGLs pre and post BS was challenging due to the discomfort of finger pricking, where one of four participants was pleased to no longer need to test for BGLs following BS. Three out of four participants reported their adherence to their

oral hypoglycaemic medications and their unwillingness to monitoring their BGLs, which could expose them to the risk of going into hypoglycaemia or diabetic coma (IDF, 2017). Seeking surgical options as a cure to T2DM in a population that have received insufficient self-management education seemed probable with the rise of BS in the past decades.

This study found that BS is used as a method to manage obesity and therefore assist with T2DM management when patients no longer respond to the medications prescribed or seek a perceived easier and faster option to manage their T2DM. According to Haskin (2017), Kuwait has one of the highest numbers of BS performed worldwide at 0.28%. Although primarily used for treating obesity, BS has shown favourable outcomes on BGLs of people with T2DM with remission in over 50% of their patients locally (Abd Ellatif et al., 2014; Al-Sabah et al., 2013; Almarri et al., 2017) and internationally (Courcoulas et al., 2014; Ikramuddin et al., 2013; Mayer & Dwyer, 2016; Wentworth et al., 2015).

This study found that participants gained nutritional knowledge following BS, which contributed to the change in their portion sizes and nutritional intake and eventually assisted in their weight reduction. This was similar to the findings of Taube-Schiff et al. (2016) on the retention of participants' nutritional knowledge following surgery. Garduno-Diaz (2016) reported that a decrease in food intake, lower appetite, malabsorption of calories were some effects of BS, which was also found by Gautier et al. (2013) and Jamal and Aminian (2015). In this study, all participants have also reported their awareness and increased knowledge about healthy eating, which made them avoid certain food that could contribute to weight gain, such as food rich in carbohydrates and fats. However, three out of four participants stated that they developed cravings of high fat or high caloric food such as chocolate and baked chips, which may be due to gaining awareness of food that are low in glycaemic index (GI), thus prolonging the rise of their BGLs. Hillersdal et al. (2016) had similar outcomes with their participants' eating habits after BS.

In this study, all participants believed that they were 'cured' from T2DM, which gave them a sense of relief from the burden of managing their BGLs. Omar et al. (2016) found that nonadherence to a diet plan and lack of exercise were factors that challenged people with uncontrolled T2DM. This study also revealed that participants' belief was influenced by their physicians and their limited knowledge on BS as a cure for T2DM. No literature reported the effect of knowledge on BS as a treatment option on the decision of people with T2DM to have BS. However, several studies have indicated that remission of T2DM was one of the outcomes of BS (Aarts et al., 2017; Abd Ellatif et

al., 2014; Al-Sabah et al., 2013; Almarri et al., 2017; Ikramuddin et al., 2013; Jamal & Aminian, 2015; Julia et al., 2013; Mayer & Dwyer, 2016; Neff et al., 2014; Wentworth et al., 2017). A study by Schlienger et al. (2009) reported that T2DM symptoms were relieved after BS but the patients will still need to be monitored and managed as people with T2DM. This opposes the findings in this study when the physician and participants believe they were 'cured' from T2DM and no longer need T2DM management.

Although BS provided people with T2DM the potential to live without diabetes symptoms and management for a brief period, this state is only temporary due to the decrease in weight and the risk of obesity on T2DM (Schlienger et al., 2009). Therefore, people with T2DM appear asymptomatic post BS and are expected to develop symptoms again. According to Himpens et al. (2012), participants resumed to oral hypoglycaemic medication and were re-diagnosed with T2DM at nine years post BS. Ritter et al. (2012) recommended that T2DM remission depended on patients' lifestyle modification following the surgery.

The current study found that knowledge affected the management of T2DM, BS and nutritional needs where participants exhibited limited knowledge in these aspects, which may impact the overall outcome of BS in the long term. A lack of research on participants' knowledge in their decision to undertake BS was also found. Both local and international studies agreed that participants' knowledge is important to increase the prognosis from BS and remission of T2DM after surgery.

Satisfaction from Results

Physical and psychological reactions were explored and participants in this study reported overall satisfaction following their BS. Participants reported that they had a sedentary lifestyle, which presented them with challenges around weight management and activities of daily living, such as difficulties in getting into and out of cars or getting up from a seat. A sedentary lifestyle had led the participants to become obese, which had also contributed to their unhealthy eating habits and decrease in their physical activity. Al-Isa et al. (2013) and Zaghloul et al. (2013) found similar findings of the effect of sedentary lifestyle, unhealthy diet and obesity in Kuwaiti people. Al-Baho, et al. (2016) Allafi and Waslien (2014) supported the findings of this research that explored the experiences of people with T2DM after BS where they found that increased incidences of

cardiovascular diseases, T2DM and obesity were associated with low levels of exercise in Kuwaiti adults.

Positive changes were reported by the participants where they expressed advances in their careers following T2DM remission was due to improvements in their image, level of activity and T2DM management. Courcoulas et al. (2014) reported that most of the weight loss following BS occurred at the first one to two years of surgery. Julia et al. (2013) found that maximum weight loss was measured at three months post surgery. Edward et al. (2016) reported their participants had positive outcomes from the surgery on their health, appearance, social life and self-esteem. This was similar to the findings of the current study that found improvements in the participants' breathing conditions such as breathlessness during activity, sleep apnoea and asthma, which were relieved following their surgery. A study by Abd Ellatif et al. (2014) and Al Sabah et al. (2016) found similar outcomes where BS positively affected hypertension, diabetes, cholesterol and sleep apnoea. Julia et al. (2013) and Mayer and Dwyer (2016) also reported similar findings regarding the benefits of the surgery on the overall health of their participants.

This study also found that negative physical changes were also reported by one out of four of their participants where despite the lighter weight, they felt weaker. Participants in this study reported feeling weaker after losing weight and this is consistent with a loss of physical energy in response to a sudden reduction in food intake. Garduno-Diaz (2016) reported similar responses from participants in a similar study.

Different psychological reactions were identified regarding the experiences of the participants and their families. One out of four participants said that they had their family's support after BS, and that this support encouraged them to change their lifestyle to maintain weight loss and prolong T2DM remission. Participants expressed positive emotions after weight loss where they stated they were happy and satisfied from the outcomes of the surgery. Edward et al. (2016) reported similar findings with weight loss after BS. This study found that an improvement in the participants' psychological health would boost their self-esteem, which would positively affect the participants. Lier et al. (2016) found the same positive emotions felt by their participants following weight loss. Overall, this study found positive reports from the participants following BS. However, negative reactions were also expressed by participants and they reported negative responses from their families. Participants in the current study showed signs of fear from weight regain and demonstrated higher nutritional knowledge, which should maintain longer weight loss results as

was also reported by Garduno-Diaz (2016). However, Taube-Schiff et al. (2016) stated that nutritional knowledge had no significant impact on their participants' weight loss.

Fear of dying due to accumulated comorbidities was another negative emotion found in this study, which might have also contributed to their negative experience for having the surgery. Edward et al. (2016) agreed with the finding of the current study on the negative feelings that participants showed from developing T2DM due to their obesity and that comorbidities had an impact on their decision to undergo BS. Garduno-Diaz (2016) and Jumbe et al. (2017) also reported the possibility of weight regain in their participants and the need for psychological support to aid with their psychological health throughout the bariatric experience.

The current study found that two out of four participants kept their surgery private, which may have been due to their family and friends' disapproval of the BS and their subsequent failure to provide support. One in four participants shared that they refused support from their family after being teased and unaccepted for being obese. Edward et al. (2016); Jumbe et al. (2017) and Lier et al. (2016) had all mentioned the importance of family support for people undergoing BS to achieve positive outcomes for a longer period.

Despite the positive results of BS on the physiological and psychological health of the participants, the negative aspects were identified and revealed by the participants. However, a lack of research around the psychological health of people with T2DM post BS was found among the Kuwaiti people. Studies conducted internationally found the importance of addressing the psychological concerns that participants have would help in prolonging their weight loss and T2DM remission and that family support has a significant impact on the participants health.

Healthcare management

All four participants in this study experienced standard care which was provided by their healthcare facility. However, none of the participants were aware of a plan of care after the surgery, and were only told to attend follow-up appointments to maintain their weight. The participants experienced diverse individualised care from the same healthcare facility where most of them reported having only their physician attending to them. Only one of four participants reported being seen by their surgeon and a dietitian. A multidisciplinary team including a nutritionist is essential to maintain the favourable outcomes of BS and avoid weight regain following BS as suggested by Al Haqan et al. (2017) and Awad et al. (2011) and Garduno-Diaz

(2016). Thus, highlighting the need to allocate a multidisciplinary team to manage people before and after BS.

Patient education for T2DM was known and practiced in Kuwait. However, there is a gap in this practice provided at the Kuwaiti health care services where not all the health care services provide T2DM education to their patients. Waheedi et al. (2017) reported low commitment to diabetes education by the Kuwaiti people, which is due to the limited availability and accessibility of diabetes education. This may explain the reason why none of the participants reported the availability of patient education before their surgery. Aarts et al. (2017) also found it necessity to provide a focused patient-centred management programme to support the health and diet of people after BS. A study by Al Slamah et al. (2017) found that diabetes patient education was unsuccessful among the Kuwaiti population due to the lack of cultural adaptation of T2DM self-management programme for the Kuwaiti culture. Al Slamah et al. (2017) also suggested that a tailored programme might be more successful and accepted by a Kuwaiti population with T2DM.

Standard care was provided to people with T2DM after BS but there was an absence of a formal multidisciplinary team and patient education in T2DM and BS. This study concurs with Al Slamah et al. (2017) that cultural adoption of western educational programmes is a necessity for health care providers to be able to successfully educate their patients.

Conclusion

This chapter has discussed the findings that emerged from interviewing people with type 2 diabetes mellitus (T2DM) after six to twelve months of undergoing bariatric surgery (BS) in Kuwait (see Chapter 4 p 34.). Findings on diabetes management, knowledge, satisfaction from results and health care management were all compared to literature published worldwide in the past decade. Limitations identified in the study were noted and recommendations were listed. There is limited quantitative research and a lack of qualitative research conducted in Kuwait, which hinders an all-encompassing view of the effect of BS on their population.

CONCLUSION OF THE THESIS

Kuwait as a country with a population of less than five million people and is listed in the top 10 countries with the highest prevalence of diabetes and obesity (WHO, 2016). The aim of this project was to explore the lived experiences of people with type 2 diabetes mellitus (T2DM) after they had bariatric surgery (BS). Three objectives were constructed to address the aim of this study. These were (a) understand the experiences of people with T2DM after six to twelve months of BS; (b) explore the effects of BS on the diabetes management of people with T2DM; and (c) identify the types of support that this population received pre and post BS.

A comprehensive review of the electronic databases literature was conducted investigating the physical and psychological effects of BS on people with T2DM. Literature revealed gaps in the experiences of the bariatric population with T2DM in Kuwait. The keywords used in the database search included 'bariatric surgery', 'type 2 diabetes mellitus', 'experiences', and their MeSH terms in combination or on their own over a period of 10 years (2008 to 2018). The search identified gaps in literature regarding the experiences of BS in a Kuwaiti population. The literature also found that Kuwaiti people were not committed to diabetes education programmes, which would explain the poor management of blood glucose levels (BGLs) in this population. Although BS was initially provided to reduce weight in people who are obese, research found that the surgery also had positive effects on BGLs which encouraged physicians to suggest BS as a treatment option for people with T2DM. Therefore, this research project found it necessary to explore the experiences that people with T2DM following their BS.

Stake's (2005) instrumental case study research design was used to answer the research question. Ethical approval (# 7730) was granted by Flinders' Social and Behavioural Ethics Committee (SBREC), and the consent from the Director of the hospital was obtained for the research to be carried out. Participants were recruited by the departments' receptionists in the hospital (surgical and medical wards, bariatric and surgical out-patient clinics). Semi-structured interviews were the chosen method of interviewing where participants would be encouraged to express their feelings freely in their own words, and the researcher would ask questions to guide the participants into answering the research question. The interviews were conducted over emails due to the different time zone between the researcher and the sample population.

Four participants were interviewed in this study to explore the lived experiences of a Kuwaiti population with T2DM after BS. This allowed the researcher to gain insight into issues that challenged patients who had BS in Kuwait and understand what they had experienced. A description of the experiences of the participants were obtained and analysed using Creswell's (2014) thematic analysis where three main themes emerged namely, knowledge, satisfaction from results, and healthcare management. To address the rigour of the study, the researcher followed Thomas' (2016) positioning and quality to evaluate the findings from the themes found in this qualitative case study research project.

This study found that the experiences of the participants revolved around their lack of knowledge on T2DM and BS, their limited knowledge on nutrition after BS, and the belief of BS as 'cure' to their T2DM. In spite of the successfulness of BS in reducing the weight of the participants and lowering their BGLs, the participants were still at to be managed as people with T2DM due to the various lengths of T2DM remission between individuals. Also, the psychological effects of people who had BS were not addressed, and that although participants were satisfied with their physical appearance, their feelings remained unstable. Furthermore, this study identified that the medical treatment of T2DM was difficult to maintain in the Kuwaiti population due to the inaccessibility of diabetes education and the lack of available healthcare professionals managing this condition.

Western medicine and diabetes education addressed the psychological needs of people with T2DM along with the physical changes that occur with BS that could help prolong T2DM remission and weight loss. However, remission of T2DM does not mean being cured from T2DM, but rather delaying the symptoms. Therefore, continuous T2DM management is necessary for the safety of a population with T2DM after BS in Kuwait.

Limitations

Several limitations were identified in this research project. One limitation was that this research was conducted using email interviews as the data collection method, which was unpopular with the Kuwaiti population. Feedback from the participants indicated that they preferred instant messaging such as "WhatsApp" or even phone calls, even though they supported research and the need to raise awareness especially in regard to patient education and patients' needs. Another limitation was the methodology of case study that was used, which uses the small numbers of participants, hence the results cannot be generalised to the whole population groups. However,

despite these limitations, this study provides insight into the many issues that people undergoing BS may experience and suggest possible directions for future research into this area of healthcare.

Recommendations

There are a number of recommendations that have emerged from this study. These include:

- Improved patient education pre and post BS.

  Adequate patient education impacts on self-management skills for people with T2DM. BS has to be explained thoroughly to patients by their health care professionals because limited knowledge in T2DM, BS and nutrition affect the sustainability of the patients to maintain weight loss and possibly delay T2DM progression.

- A formalised patient education programme needs to be developed in Kuwait's healthcare systems.

  This programme is necessary to provide patients with the best healthcare service provision that includes all options and details, so they have appropriate information necessary that may assist them in deciding and choosing the most suitable method for their T2DM management.

- A multidisciplinary healthcare team is essential to promote healthy living before and after surgery for people with T2DM and BS.

  A psychologist should also be included in this team to help patients understand the changes and prepare for a new life post surgery. Physiological and psychological health need to be addressed by health care professionals to maintain positive results after surgery. This should include information for family and friends to enable them to be supportive.

Following this project, there is a need to conduct quantitative, qualitative or mixed method research in the Kuwaiti population. Using different methodologies could assist in identifying and understanding the influence of BS on a culture that has strong religious beliefs, and the social perceptions on individuals undergoing or who had BS.

Further research is recommended to understand:

- The encouragement of BS in treating T2DM
- Cultural and social impact towards people who had BS
- Impact of new lifestyle on weight regain following BS
- Different lengths for T2DM remission
- The reason T2DM education is less acceptable in Kuwaiti population
- Cultural perception on physical appearance in Kuwait
- The impact of individuals' religious beliefs on health decisions

Summary

Overall, this study has found that an increase in people's awareness and knowledge on T2DM and BS might impact on current practices in Kuwait. Further research in this area is vital to improve the understanding and care provided to patients in Kuwait undergoing BS.

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APPENDICES

Appendix 1: Keyword Search

S#	Key terms	Results
1	Diabetes type 2	28207
2	T2DM	1512
3	Diabetes II	28207
4	1 or 2 or 3	28573
5	Obes*	37022
6	Morbid obes*	37001
7	Overweight	35036
8	5 or 6 or 7	37022
9	BS	3046
10	Weight loss	3046
11	Roux-en-Y gastric bypass	3040
12	Metabolic surgery	300
13	BPDDS	3046
14	Sleeve gastrectomy	154
15	Gastric band	54
16	9 or 10 or 11 or 12 or 13 or 14 or 15	3151
17	Experience	102431
18	Attitude	100021
19	Behavio*	25600
20	Perception	18698
21	Lifestyle	100024
22	17 or 18 or 19or 20 or 21	117879
23	4 and 8 and 16 and 22	162
24	Limit 23 to English language and yr= "2008-current"	67

Appendix 2: Summary of Literature Review

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
1	Abd Ellatif M.E, Abdallah E., Askar W., Thabet W., Aboushady M, Abbas A.E., El Hadidi A, Elezaby A.F., Salama A.F., Dawoud I.E., Moatamed A. Wahby M.	2014	International Journal of Surgery/ Long term predictors of success after laparoscopic sleeve gastrectomy	Jahra Hospital- Kuwait, King Faisal Hospital- KSA, Mansoura University Hospital- Egypt	To review researchers' experience with application of LSG as a definitive procedure for morbidly obese patients	Retrospective multi-centre study	1395 morbidly obese patients from April 2005 to March 2013	>DM was found in 41%, hypertension (HTN) in 57%, obstructive sleep apnoea syndrome (OSAS) in 22% cases, degenerative joint disease (DJD) in 32%, and hyperlipidaemia (HLP) in 43% patients. > At 3 years, DM, HTN, OSAS, DJD, and HLP were remitted in 69%, 54%, 51%, 61% and 43% respectively > GERD symptoms appeared immediately in the majority of patients which can be explained by alteration of the natural anti-reflux mechanisms such as angle of His and pharyngoesophageal membrane. > 0% mortality rate among > 1395 patients who underwent laparoscopic sleeve gastrectomy which reflects the high safety of this procedure.	> No limitations mentioned

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
2	Al Sabah S., Alsharqawi N., Al-mulla A., Ekrouf S., Al Subaie S, Al Haddad M, AlEnizi K. Jumaa T.	2016	Medcrave - Advances in Obesity, Weight management & Control/ Laparoscopic Sleeve Gastrectomy in patients 55 years and older	Al Amiri Hospital - Kuwait	To determine the weight loss, post-operative complications, excessive weight loss percentage and morbidity and mortality in patients aged 55 and older, which underwent Laparoscopic Sleeve Gastrectomy (LSG).	Retrospective study	1200 patients between February 2009 to October 2012	> Elderly patients aged 55 and above may experience a successful weight loss procedure with low mortality rate and appropriate morbidity rates. > BMI significantly reduced with each time period (2 weeks, 3months, 6 months, 1 year and 18 months) > An improvement in patents' well-being and reduction of daily use of medications > The top three comorbidities present were hypertension, diabetes mellitus and hypercholesteremia. > Sixteen patients were diagnosed diabetics, of which 9 patients diabetes had resolved (discontinue all diabetes-related medications and maintain a glycosylated haemoglobin less than 6.5%) after the procedure.	> No limitations mentioned

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
3	Al-Adasani A.M.S., Moussab M.A.A., Al-Jasem L.I., Abdella N.A. Al-Hamade, N.M.	2009	Diabetes and Metabolism/ The level and determinants of diabetes knowledge in Kuwaiti adults with type 2 diabetes	The study involved 24 diabetes clinics at primary-care health centres in the five health regions of Kuwait.	>To investigate the level of diabetes knowledge in a population with type 2 diabetes (T2D) and a high prevalence of illiteracy. >To identify the main gaps in the knowledge and to study the determinants of the knowledge score.	Cross-sectional survey using the Michigan Diabetes Knowledge Test.	5148 agreed to participate in the cross-sectional sampling survey was conducted from January to June 2004.	> Patients with T2D have misconceptions regarding the nutritive value of foods, such as low-fat milk and unsweetened fruit juice. > The main sociodemographic factors affecting diabetes knowledge, according to our survey, were old age, low level of education and limited family income. > Smokers with diabetes tend to be less actively involved in their diabetes care and less likely to comply with diabetes-care recommendations than non-smokers, which may be partly due to the depression and general feelings of sadness associated with diabetic smokers, thus requiring more creative interventions and support. > Longer duration of diabetes among our patients suggests that they gained their knowledge over time with the disease. > The lack of knowledge among newly diagnosed patients found in our study indicates that such patients require more focused attention. > There is a relation between good knowledge score and poor glycaemic control because diabetic patients obtained knowledge from experience gained over their long duration of the disease and complications rather than from any formal educational programmes, which are lacking in Kuwait.	> Findings are based on self-reported data from the patients themselves and the validity of such data is questionable. > Data on HbA1c were obtained from different laboratories.

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
4	Almarri, F., Alsabah, S., (MBBS, MBA, FRCSC, FACS), Alhaddad, E., Vaz, J.D.	2017	Obesity Surgery/ A Call for More Research from the Arabian Gulf	Arabian Gulf	To examine all studies published on BS in the Arabian Gulf and evaluate quality, quantity and impact	> Literature review on BS in the Arabian Gulf countries till March 2016 > Compared data to another country with high incidence of diabetes	Original papers, systematic reviews and case report was done in: Kuwait, KSA, Qatar, UAE vs. USA and Australia	> No publication before 2000, sharp increase of publication 2012 onwards > Majority of publication in clinical outcomes of weight loss procedures 47%, studies on anaesthesia during bariatric procedure 14% > Retrospective 54.4% (majority from Alamiri hospital by Dr Salman Alsabah), 31% on sleeve gastrectomy (popular at that time), 75% in Obesity Surgery Journal, 44 articles from Kuwait, six from Bahrain and Qatar, UAE 19 and KSA the majority. > Studies on pre-op surgery, effects of surgery on obesity-related comorbidities, long-term survival benefits of surgical weight loss > Only 3% from Arabian Gulf vs. 30% worldwide are RCT > Kuwaiti adolescent population has the highest prevalence of obesity (Male 34.8%, female 20.6%)	> Limitations, high quality studies less cited than other due to a factor of time. > Failure to reveal contribution in development of BS and metabolic surgery over the past 60 years > Lack of regional registry on bariatric surgeries > Bahrain as an arabian gulf country was not included in search strategy. > Effects were not included in surgery on obesity-related comorbidities, long search strategy. > Mexico, Canada and UK and New Zealand were not in search strategy.

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
5	Alslamah T., Nicholl B.I., Alslail F.Y. Melville C.A.	2017	PLOS One/ Self-management of type 2 diabetes in gulf cooperation council countries: A systematic review	GCC	>To systematically review intervention studies on self-management of type 2 diabetes in Gulf Cooperation Council (GCC) countries > To determine the most effective self-management strategies for individuals with type 2 diabetes in the GCC.	Systematic Review	8 studies between 1996 and October 2015	> DSME interventions can have a positive impact on glycaemic control as indicated by blood HbA1c levels. > Self-management education and support alongside contact time and supportive methods from health providers can positively help patients with type 2 diabetes manage their condition and status, lifestyle and nutritional choices, cultural values and traditions, and their access to health provision. > Increased self-efficacy, patient self-confidence, and improved knowledge about the disease can result in better self-management of the diabetes. > Improved knowledge creates a positive belief in the intervention plan. > Studies considered in this review revealed that cultural adaptation in DSME is lacking in the GCC countries and there is need for full cultural adaptation of the DSME as an intervention for self-management of diabetes.	> No limitations mentioned

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
6	Awad A., Dalle H., Enlund H.	2 0 1 1	Medical Principles and Practice/ Diabetic Patients' Knowledge of Therapeutic Goals in Kuwait	6 diabetic clinics in Kuwait	> To analyse patients' knowledge about therapeutic goals for diabetic patients and factors associated with good knowledge	Descriptive, cross-sectional survey was conducted from February to May 2008, the questionnaire contained both closed and open-ended questions.	247 patients in which 143 were male.	> Respondents had poor knowledge about the recent levels of their HbA1c, LDL-C, and the correct target goals for these parameters and diastolic BP. > Knowledge deficit may be due to lack of patient education by the clinicians, which could be due to the patient load, and consequently the lack of time to allow the clinicians to effectively educate patients about diabetes > Most patients believe that knowledge about BP is essential because its control reduces the risk of complications > Knowledge in relation to LDL-C and HbA1c is insufficient because they had not been informed about these parameters and the importance of their control > High education proved to be associated both with good knowledge about target goals and own recent levels. > A family history of diabetes was associated with better knowledge about target goals. >The knowledge deficits among diabetic patients, and that high education and a positive family history of diabetes were significantly associate with better knowledge. >Effective multidisciplinary team approach to encourage patient education, self-care and plan goals.	> Survey was conducted as structured face-to-face interviews were which may contribute to a potential limitation due to social desirability and that respondents may have offered favourable answers (non-response bias).

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
7	Courcoulas, A. (MD, MPH), Goodpaster, B. (PhD), Eagleton, J. (MPH), Belle, S. (PhD, MScHyg), Kalarchian, M. (PhD), Lang, W. (PhD), Toledo, F. (MD), Jakicic, J. (PhD)	2014	JAMA Surgery/ Surgical vs. Medical Treatment for Type 2 Diabetes Mellitus A Randomised Clinical Trial	University of Pittsburgh Medical Centre (USA)	> Feasibility of RCT and compare outcomes of BS (RYGB and LAGB) and structured weight loss programme	12 months, three arm RCT at a single centre	69 (adults 25-55 years) with BMI 30-40 kg/m2	> RYGB showed most significant weight loss and HbA1c at the end of 12 months then LAGB. No significance in LWLI group. > T2DM remission observed in 27-50% in RYGB, 23-25% in LAGB. > Reduction in antidiabetic meds in all groups, especially in RYGB and LABG. > Anti-hypertensive meds were reduced in all groups > No deaths in trial > Only three severe side effects reported (RYGB - 1 Ulcer, LAGB - 2 dehydration > All potential participants were accounted for. > All participants were accounted for until the end of 12 months.	> Small sample size, single centre > Drop-outs due to randomizations? > Long-term effects need to be studied > Longer, and bigger sample size need to be studied to have generalised findings

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
8	Edward, K.L., (PhD, RPN,BN,GDipPschy, FACMHN,MRCNA), Hii, M.W., (FRACS,MBBS,BMedSc, PDGipSUrgAnat), Giandinoto, J.A., (RN,BNHons,BBSc), Hennessy, J. (PGDipDiet,BSc), Thompson, L. (BA Hons)	2016	American Journal of Men's Health/ Personal Descriptions of Life before and After BS from Overweight or Obese Men	Victorian-based weight loss surgery clinic /Australia	> Explore descriptions from male bariatric patients before and after surgery - adaptation to a new lifestyle, boundaries post surgery > Illuminate potential barriers to seeking consultation for BS	> Descriptive-exploratory qualitative study design - in-depth semi-structured interviews > Data collected and analysed between May and October 2016 > Recruited via advertisement flye	> Morbidly obese or male who were obese and had undergone BS > Age range 27-69 years	> Telephone interviews may contribute to willingness of participants and the authentic of their experiences fully > Improved medium and long-term outcomes for men who require BS > Need more information targeted for men who are deciding to undergo BS > Readily accessible information of life experiences of other men who had BS may be preferred by men > Internet-based healthcare information may offer a private first step for males considering weight loss surgery	> Culture of the men interviewed, all white? > Types of BS and the severity (how long before going back to almost normal) > Life wasn't included search strategy? > Information wasn't included search strategy? > How long after surgery were they interviewed?
9	Gautier, T., Sarcher, T., Contival, N., Roux, Y., Alves, A.	2012	Obesity Surgery/ Indications and Mid-Term Results of Conversion from Sleeve Gastrectomy to Roux-en-Y Gastric Bypass	Caen, France	unclear	> Retrospective study - Conversion from SG to RYGB (October 2006 to July 2011) > Measured reflux, sleep apnoea, BMI, SBP and diabetes	18 patients (BMI > 50 kg/m2) with one or more comorbidities ages 24-55 years old	Improvements significant after conversion to RYGB and had similar outcomes as primary RYGB patients	> No limitations noted. > Not clear in diabetes parameter and improvement measurement > How long after surgery were the data checked? > Type of analysis was not stated > No recommendations or implications were made.

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
10	Himpens, J, Verburgghe, A., Cadiere, GB., Everaerts, W., Greve, JW.	2012	Obesity Surgery/ Long-term Results of Laparoscopic Roux-en-Y Gastric Bypass: Evolution After 9 Years	unclear	To evaluate long-term results of LRYGB	Retrospective data from (2001 - 2002) and analysed in 2011	> 77 patients (including 18 with the previous BS) > No post-op mortality	> BMI lost (52±29%) > 27% developed new onset diabetes > Four hospitalised due to hypoglycaemia > Two underwent reversal of BS due to metabolism problems > QoL was fair in all	> Ethics approval for telephone interviews? > Subjective data with telephone interviews regarding weight and diabetes (majority of patients) > Location of cohort (country not mentioned) - sample population

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
11	Ikramuddin S, Korner, J., Lee, W., Block, J. (MD, MPH), Jay, M. (MD, MS), Hwang, U. (MD, MPH), Vijayaraghavan, M. (MD), Lewis, K. (MD, MPH), Hung, W. (MD, MPH)	2013	JCOM Journal/ Should We Bypass Meds in Favour of Surgery? BS for the Moderately Obese Diabetic Patient	USA and Taiwan (3 Centres in USA, 1 Centre in Taiwan)	To determine if RYGB is better than medical management to improve diabetes, dyslipidaemia and hypertension in patients with BMI 30-39.9 kg/m2	> RCT - 2008-2011 - 3 centres in USA and one centre in Taiwan > RYGB (discontinued meds) vs. medical therapy > Medical therapy group - meds titrated to have hbA1c < 7%, LDL < 100mg/dL, SBP <130 mmHg > Both groups received intensive lifestyle modification intervention (counselling and meetings included) >Weekly exercise for a minimum of 325 minutes.	> 120 participants randomised (block randomisation) > 60 each group > T2Dm with HbA1c > 8.0% (at least 6 months) > BMI 30-39.9 kg/m2 > Free from psych disease, CVD, malignant disease & no prior GI surgeries.	> Dropouts (3 in each group lost in follow-up), 1 have RYGB, 2 refused surgical intervention, no deaths > No significant changes between groups in LDL and SBP > RYGB achieved better HbA1c and BMI results (diabetes remission) > RYGB have nutritional deficiencies (iron and vit B) > 22 RYGB advert reactions, 15 in medical therapy > Cost to have RYGB is high	> BMI was more than 40 was not included > LDL and SBP were close to normal at the beginning of intervention for both groups > Small sample can't be generalised > Difficult to recruit people in an intensive strict medical therapy group. > Long-term follow-up not measured (only up to 12 months post-op) > Results in physical activity was not found in the outcome.

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
12	Jamal, M., (MBChB(HONS), MEd, FRCSC, FACS, FASMBS), Aminian, A.	2015	Kuwait Medical Journal/ BS: Is it a Safe Treatment Modality?	N/A	Discuss the types of bariatric surgeries and their safety and complications	Review of the current literature concerning BS and its complications and safety	Papers on bariatric surgeries in Kuwait	> Gastric band (LAGB) is the safest and least invasive bariatric procedure, non-threating complications > Sleeve gastrectomy (LSG) relatively simple and safe with reasonably low complication rates in very high-risk patients > Gastric pilation (LGP) is after LSG with even lesser complication due to no gastric resection involved, post 24 months average of 3.7% reoperate. Absence of durability of weight loss from LGP > Roux-en-Y gastric bypass (RYGP) most common, beneficial effects on weight and co-morbidities especially T2DM and GERD > Biliopancreatic diversion (BPD) high incidence of marginal ulcers at gastro ileal anastomosis and gallstone > BPD-duodenal switch(DS) is the modified version of BPD at the gastric portion of operation that shows excellent and durable weight loss but technically difficult, higher perioperative and late complications and nutritional deficits but lifetime follow up and supplements are essential to maintaining good health.	> Safety of RYGB not mentioned > LGP durability in weight loss (no data) > No research to compare data with from bariatric surgeries in Kuwait (lack of data - complications, mortality)? > Sample size of 44 only in bariatric surgeries that author yielded data from (quantitative study) > Mortality has decreased significantly in comparison to BS 20 years ago > Databases reported 4% complication rate > Overestimation of medical approach benefit and surgical approach risk

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
13	Julia, C., Ciangura, C., Capuron, L., Boiullot, J., Basdevant, A., Poitou, C., Oppert, J.	2013	Diabetes & Metabolism/ Quality of Life After Roux-en-Y Gastric Bypass and Changes in Body Mass Index and Obesity-Related Comorbidities	Pitie-Salpetriere University Hospital France	To investigate early and midterm changes in QoL after RYGB and their relationship to BMI, DM, HTN and increased LDL	Prospective study\ > QoL questionnaires (French version) with two dimension: physical and mental QoL. > Questionnaires are taken 3, 6, and 12-month post-op.	> Hospital admissions for RYGB (March 2007- October 2009) > Excluded patients with the previous BS > Women 80% with mean age 42.1 ± 11.2 and 124 (53 excluded - incomplete data), (57 of 71 included are female)	> Most significant data was measured at three months post-surgery. > Remission of dm in 41%, dyslipidaemia in 85%, hypertension In 52% and sleep apnoea in 78% > PSC significantly higher in female over time?! > PSC independent of change in BMI > MSC no significance	> Authors reported significant (higher) change in female PSC (due to 80% women participants!) - not accurate > Remission of dm? Study follow-up period is not enough to diagnose remission. > Male population in the study did not have data? Or mean age? (Insignificant?)
14	Jumbe, S., (PhD, MScPsyc, BScPsych), Hamlet, C., (BAHons, MScPsyc), Meyrick, J. (FFPH, AFBPsS, HPC)	2017	Current Obesity Report/ Psychological Aspects of BS as a Treatment for Obesity	N/A	> Discuss the literature behind the psychological impact of BS > Explore whether the procedure addresses the underlying condition that can lead to morbid obesity > Effect on eating behaviour post-op.	Literature review of the psychological aspects of BS on individuals who have had surgery	unclear	> Psychological problems linked to disordered relationship with food > Need to Identify risk group among BS patient who might need additional support > Lack of post-BS psychological follow-up despite the undisputed leading intervention in weight loss > Psychological problems linked to physiological changes (body image, mood, concerns, stress, substance use and weight regain)	> Psychological research relies heavily on self-report quantitative data > Importance of capturing the insight into the experience of having BS from a patient's perspective (further qualitative research)

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
15	Lier, H.Ø., Aastrom, S., Røtveit, K. (PhD)	2015	Journal of Clinical Nursing/ Patients' Daily Experiences Five Years After Gastric Bypass Surgery - a Qualitative Study	Norwegian hospital	Explore and describe patients' daily life experiences five years after gastric bypass surgery	> Qualitative method using content analysis > Guided semi-structured in-depth interview audio-taped (60-90 minutes) > Asked via telephone to participate	> 11 patients, 10 accepted to participant (3 men, four women) > Age range 39-57 years old > Had LGBP (gastric bypass) in 2008 and 2009	> Body image has an impact on patients' emotional well-being after excessive weight loss that can be challenging in close relationships > Hanging skin is problematic, effects everything from sexual attractiveness to everyday wardrobe dilemmas, clothing becomes a focal that protect dignity, hides embarrassing bodily issue > Long-lasting difficulties in eating habits (dumping - food doesn't stay in body) > Improved self-esteem, weight closer to societal norm convinces other that one has self-control > Fear of regaining weight > Feeling attractive changes from look good dressed to looking bad naked > Patients are mainly satisfied with their lives > Study can serve as basis or knowledge for patients (patient education) and awareness for people wanting to have BS (both helps in increasing quality of treatment and care)	> Small sample (but in-depth interview is gained - qualitative study) > Lost in translation (from Norwegian to English) > Sample have similar background/culture ? > Weight closer wasn't included surgery on obesity-related comorbidities, long search strategy?

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
16	Mayer J., (MS, RD), Dwyer J. (DSc, RD)	2016	Nutrition Today/ BS or Conventional Medical Therapy? Which is Best for Severely Obese Adults with type 2 Diabetes?	N/A	> Explores the risks and benefits of conventional therapies and Roux-en-y gastric bypass in morbidly obese adults.	Literature review comparing diabetes-related outcomes of roux-en-y gastric bypass and conventional medical therapy	unclear	> Morbid obese T2DM treated conventionally (diet, meds and lifestyle) vs. BS (Sleeve Gastrectomy vs. gastric bypass) > RYGB most effective for T2DM and maintaining weight loss and least malabsorption and side effect. > RYGB effective in T2DM remission due to alteration in anatomy > SG causes oesophageal reflux and weight regain > RYGB vs. SG = RYGB 80% recovery from DM and if DM gain only single drug or diet needed, weight is maintained, lipoprotein levels and systolic blood pressure and albuminuria reached normal within one year (vs. conventional) > RYGB unclear on diabetic neuropathy (mild vs. severe) > Long life supplement needed for RYGB vs. conventional treatment (costly) > Dumping syndrome reduced at 15-18 months post op in RYGB > QoL in RYGB is better than in conventional treatment > BS expensive as treatment pre and post op, body contouring costs in the future	> Lack of RCT done to measure long-term outcome of RYGB on T2DM > Lack of research on RYGB effect on diabetic neuropathy > The review did not include the timeframe of papers collected. > The review did not clearly state where the papers collected where from? (Studies were done in USA or worldwide?)

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
17	Neff, K., Chuah, L., Aashiem, E., Jackson, S., Dubb, S., Radhakrishnan, S., Sood, A., Olbers, T., Godsland, I., Miras, A., Roux, C.	2013	Obesity Surgery/ Beyond Weight Loss: Evaluating the Multiple benefits of BS After Roux -en-Y Gastric Bypass and Adjustable Gastric Band	Obesity Surgery/ Beyond Weight Loss: Evaluating the Multiple benefits of BS After Roux -en-Y Gastric Bypass and Adjustable Gastric Band	> To evaluate the outcomes after RYGB and LAGB using modified King's Obesity Staging System before and 12 months after surgery. > To assess the impact of treatment on multiple patient outcomes after RYGB and LAGB > To evaluate the effects on respiratory functions after RYGB and LAGB > To emphasise a modified King's obesity staging system with high clinical utility	Prospective study/ > Assessing obesity-related comorbidities via modified King's Obesity Staging system including BMI and glycaemic markers assessed by clinicians preop. and 12 months postop. > Chi-square test > McNemar-Bowker test > Statistics via PASW and STATA 8.0	> 217 consecutive patients (RYGB 148, LAGB 69) - non-randomised > Majority is female > LAGB younger and healthier than RYGB	> RYGB is more effective than LAGB in DM remission and BMI > RYGB and LAGB are equally effective in most domains > LAGB was not significant in gonadal, economic and image domains > Recommendations for further studies to include more domains like hypertension, neurological disease, kidney disease, medication and gastro-oesophageal reflux. > Need for further research with the bigger sample was implied.	> Age group not specified > Inclusion criteria not clearly stated. > LAGB were healthier than RYGB preop. > Genders between groups were not equal in numbers > Location of the cohort was not mentioned > No reports of dropouts in the whole period. > No reports of complications post-op.

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
18	Omar M.S., Khudada K., Safarini S., Mehanna S., Nafach J.	2 0 1 6	Indian Journal of Endocrinology and Metabolism/ DiabCare survey of diabetes management and complications in the Gulf countries	Saudi Arabia, Kuwait, and the United Arab Emirates.	> To describe the status of diabetes control and complications, and the quality of diabetes management in Saudi Arabia, Kuwait, and the United Arab Emirates. > To obtain an insight into the relationship between these factors.	The Gulf DiabCare survey was designed to assess the status of diabetes control, management, and diabetes-related complications (retrospective data / observational study)	> 17 participating diabetic-specialist clinics enrolled patients across the three countries from May 31, 2009, to January 18, 2010. > 1290 patients were enrolled, of which 90.0% had T2DM, 8.9% had T1DM, 0.9% had undetermined diabetes, and 0.3% had GDM.	> Baseline diabetes care was revealed to be suboptimal, with a lack of adequate management to prevent or delay the development of related complications. > The data suggest that many patients in the Gulf countries had relatively poor glycaemic control. > the low proportion of patients receiving insulin even after 10 years of diabetes points to a lack of adequate disease management. > The high proportion of patients with micro- and macro-vascular complications could be due to multiple factors such as a failure to intensify treatment strategies in time, lack of adequate follow-up, patient nonadherence to treatment, and the need for increased awareness on this condition in the region. > The need for regular and effective diabetes education, frequent assessments, and better glycaemic control, together with prompt management of associated complications in the Gulf region.	> There was no randomization scheme, and hence the study results could be subject to selection bias during recruitment > Study does not reflect on diabetes care in general hospitals, only in diabetes clinics. > The study used retrospective data.

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
19	Ritter, S. (MS) Vetter, M. (MD, RD), Sarwer, D. (PhD)	2012	Postgraduate Medicine/ Lifestyle Modifications and Surgical Options in the Treatment of Patients with Obesity and T2DM	USA	Review on current practices in the treatment of obesity as it specifically pertains to the management of T2DM	Literature review	N/A	> BS is an option for obese people with uncontrolled T2DM > DM remission also relies on lifestyle modification after surgery.	> Time frame was not mentioned > Number of articles included was not clear.
20	Waheedi M., Awad A., Hatoum H., Enlund H.	2017	International Journal of Clinical Pharmacy/ The relationship between patients' knowledge of diabetes therapeutic goals and self-management behaviour, including adherence	6 Primary care chronic care clinics within the Ministry of Health of Kuwait	To: (1) understand the relationship between knowledge of therapeutic goals and socio-demographic and other patient characteristics. (2) assess patients' self-reported adherence to either diet, physical activity, or drug therapy regimens. (3) characterise the association of knowledge of own levels and therapeutic goals of diabetes; namely HbA1c, LDL-C, and BP, on adherence to diet and physical activity, and medication.	Cross sectional survey	247 patients with either type 1 or type 2 diabetes responded of which 238 patients with type 2 diabetes	> Adherence to diet and exercise among patients with type 2 diabetes in Kuwait were found to be lower than adherence to medications. > the study found that better knowledge significantly improved adherence to medications, diet and physical activity. > Low adherence to self-care management and poor overall knowledge of diabetes is a big challenge to successful diabetes care in Kuwait. > Positive association between understanding of target HbA1c therapeutic goal and adherence to diet.	> Time frame of when the study was conducted was not mentioned. > No limitations mentioned

S#	Authors		Journal / Title	Hospital / Country	Research Aim / Statement	Method	Sample	Outcomes / Findings	Limitations
21	Yan, J. Cohen, R. Aminian, A.	2 0 1 7	Surgery for Obesity and Related Diseases/ Re-operative Bariatric Surgery for Treatment of T2DM	N/A	To summarise the evidence and determine whether revisional surgery can have a positive impact on metabolic diseases that were not reversed by initial BS	Literature Review	30 studies	> Revisions induced 20–80% additional excess weight loss, or further decrease of body mass index by 10–30% > Conversion to Roux-en-Y gastric bypass (RYGB) yielded improvement of diabetes in 79%, 72%, and 62% of patients who previously had vertical banded gastroplasty (VBG), adjustable gastric banding (AGB), or sleeve gastrectomy (SG), respectively > Converting AGB to SG improved diabetes in 65% of patients, and SG to duodenal switch improved diabetes in 79% of patients > Revision of the gastric pouch or stoma in RYGB yielded improvement of diabetes in 79% of patients	> Time frame was not clear > Inclusion criteria of articles was between 1 and 5 years after BS, which presented several variables.

Appendix 3: Interview questions (translated form included)

Demographic Data:

Age: □ 19-34 □ 35-50 □ above 50
Gender: □ Male □ Female
Nationality: □ Kuwaiti □ Non-Kuwaiti
Relationship Status: □ Single □ Married □ Divorced □Widowed
Work Status: □ Student □ Employed □ Unemployed □ Retired
Time of surgery: □ Less than 6 months □ 6 months ago □ 7 months ago
□ 8 months ago □ 9 months ago □ 10 months ago
□ 11 months ago □12 months ago □ more than 1year
BMI ***or*** Weight**:** _____ (kg) and Height**:** _____ (cm)
□ less than 18 kg/m2 □ 18-24.9 kg/m2 □ 25-30.9 kg/m2
□more than 31 kg/m2

Interview Questions:

Q1: When did you find out that you have had type 2 diabetes mellitus?
- What was the reason for your diabetes?
- Do you keep track of your blood sugar (glucose)?
- How often do you check it?

Q2: Describe to me how you felt the first time you checked your weight after surgery?
- How much weight have you lost until now?

Q3: What helped your decision to have bariatric surgery?
Q4: What has changed in your eating habits after surgery (if any)?
Q5: What changes did you feel in your physical activity after surgery (if any)?
Q6: What were the changes in your diabetes medication after surgery (if any)?
Q7: Describe to me how your life has changed since you had the surgery?
Q8: Did you receive support before or after surgery?
- Who supported you?
- How did they support you?

Q9: What do you suppose is the reason people would want to have this surgery?
Q10: What do you think of this type of interview (via email)?

This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project number 7730). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au

البيانات الشخصية:

العمر: □ 19-34 □ 35-50 □ فوق 50

الجنس: □ ذكور □ أنثى

الجنسية: □ كويتي □ غير كويتي

حالة العلاقة: □ اعزب □ متزوج □ مطلق □ أرملة

حالة العمل: □ طالب □ موظف □ عاطل عن العمل □ متقاعد

وقت الجراحة: □ أقل من 6 أشهر □ قبل 6 أشهر □ قبل 7 أشهر

□ قبل 8 أشهر □ قبل 9 أشهر □ قبل 10أشهر 11 أشهر منذ
□ 12 أشهر منذ □ أكثر من 1 سنة مضت

مؤشر كتلة الجسم أو الوزن: _____ (كغ) والارتفاع: _____ (سم)

□ أقل من 18 كجم / م 2 □ 18-24.9 كجم / م 2 □ 25-30.9 كجم / م 2

□ أكثر من 31 كجم / م 2

اسئلة المقابلة:

: متى اكتشفت أنك مصاب بداء السكري من النوع الثاني؟ 1س
ما هو سبب مرض السكري؟-
هل تتبع نسبة السكر في الدم (الجلوكوز)؟-
كم مرة تحقق من ذلك؟-
: وصف لي كيف شعرت في المرة الأولى التي فحص وزنك بعد الجراحة؟ 2 س
كم من الوزن فقدت حتى الآن؟-
ما الذي ساعد قراركم في الحصول على جراحة لعلاج البدانة؟3: س
: ما الذي تغير في عادات تناول الطعام بعد الجراحة (إن وجدت)؟ 4 س
س 5: ما هي التغييرات التي شعرت بها في نشاطك البدني بعد الجراحة (إن وجدت)؟
س 6: ما هي التغيرات في داء السكري بعد الجراحة (إن وجدت)؟
: وصف لي كيف تغيرت حياتك منذ أن أجريت الجراحة؟ 7 س
س 8: هل تلقيت الدعم قبل أو بعد الجراحة؟
من دعمك؟-
كيف دعموا لك؟-
س 9: ماذا تفترض هو السبب في أن الناس يريدون أن يكون لهذه الجراحة؟
: ما رأيكم في هذا النوع من المقابلات (عبر البريد الإلكتروني)؟ 10 س

وقد تمت الموافقة على هذا المشروع البحثي من قبل لجنة الأخلاق البحوث الاجتماعية والسلوكية جامعة فليندرز (مشروع رقم 7730). لمزيد من المعلومات حول الموافقة الأخلاقية للمشروع يمكن الاتصال بالموظف التنفيذي للجنة عن طريق الهاتف على 61882013116+، عن طريق الفاكس على 61882012035+ أو عن طريق البريد الإلكتروني human.researchethics@flinders.edu.au

Appendix 4: Information Sheet (translated form included)

Mrs Alanoud Alobaidly
College of Nursing and Health Sciences
Flinders Drive, Bedford Park SA 5042
GPO Box 2100
Adelaide SA 5001
Tel: +61 (08) 82015433
Email: grad.dip.res.bst2dm@outlook.com
CRICOS Provider No. 00114A

INFORMATION SHEET

(for 'Participants')

Title: 'Life Post-Bariatric Surgery: What are the experiences of people with type 2 diabetes mellitus (T2DM) in Kuwait?'

Researcher:
Mrs Alanoud Alobaidly
College of Nursing and Health Sciences
Flinders University
Email: grad.dip.res.bst2dm@outlook.com

Supervisor(s):
Dr Wendy Abigail
College of Nursing and Health Sciences
Flinders University
Email: wendy.abigail@flinders.edu.au

Dr Pauline Hill
College Nursing and Health Sciences
Flinders University
Email: pauline.hill@flinders.edu.au

Description of the study:

This project is entitled '*Life Post-Bariatric Surgery: What are the experiences of people with type 2 diabetes mellitus (T2DM) in Kuwait?'* This project will investigate the lived experiences of people with T2DM after bariatric (weight loss) surgery. This project is supported by the Flinders University College of Nursing and Health Sciences.

Purpose of the study:

This project aims to:

- To explore the experiences of people diagnosed with T2DM undergoing bariatric surgery in Kuwait within the last 6-12 months.
- To explore the effects of bariatric surgery on the diabetes management of participants with T2DM and its impact on their daily activities within the last 6-12 months.
- To explore the types of support that participants have received or would like to have received pre and post-surgery within the last 6-12 months.

What will I be asked to do?

You are invited to answer some questions sent via email about your experiences after weight loss surgery. Participation is entirely voluntary. To participate, send an email with the subject title (diabetes and surgery) to (grad.dip.res.bst2dm@outlook.com) to receive the introductory letter and interview questions. It will take you about 15 minutes to answer. A follow up email may be sent to clarify a certain point(s), which will take about 5 minutes.

What benefit will I gain from being involved in this study?

There will be no direct benefit to you. However, sharing your experiences will assist with the improvement of the planning and delivery of future education programmes.

Will I be identifiable by being involved in this study?

You will be identifiable by the researcher only. However, any identifying information will be removed and the typed-up file stored on a password protected computer that only the researcher will have access to. Your comments will not be linked directly to you. No information that identifies you will be published or made public by the researcher.

Are there any risks or discomforts if I am involved?

The researcher anticipates few risks from your involvement in this study; however given the nature of the project some participants could experience emotional discomfort. If any emotional discomfort is experienced please contact your GP for support / counselling. If you have any concerns regarding anticipated or actual risks or discomforts, please raise them with the researcher.

How do I agree to participate?

To participate, you will need to be over 18 years old, previously diagnosed with type 2 diabetes mellitus and have had weight loss surgery within the last 6-12 months. Please send an email to (grad.dip.res.bst2dm@outlook.com) with the subject title (diabetes and surgery) expresses your interest in participating. Participation is voluntary. You may answer 'no comment' or refuse to answer any questions and you are free to withdraw from the email interview at any time without effect or consequences. If you agree to participate, your consent is implied on receipt of an email containing your responses. This can be done by using the 'reply' function in your email, insert your answers under each question and return to the researcher by clicking the 'send' option.

How will I receive feedback?

Feedback about the outcomes of the project will be provided on request.

Thank you for taking the time to read this information sheet and we hope that you will accept our invitation to be involved.

This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project number 7730). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au

السيدة العنود العبيدلي
كلية التمريض والعلوم الصحية
فليندرس دريف، بيدفورد بارك
ا س 5042
غبو بوكس 2100
ا س أديليد 5001
هاتف: 82015433 (08) 61+
البريد الإلكتروني:
grad.dip.res.bst2dm@outlook.com
CRICOS Provider No. 00114A

ورقة المعلومات

(ل "المشاركون")

العنوان: "الحياة بعد اجراء العمليات الجراحية لانقاص الوزن: ما هي تجارب مرضى السكري من النوع الثاني في الكويت؟"

الباحث:
السيدة العنود العبيدلي
كلية التمريض والعلوم الصحية
جامعة فليندرس
البريد الإلكتروني:
grad.dip.res.bst2dm@outlook.com

المشرفين:
الدكتورة ويندي أبيغيل
كلية التمريض والعلوم الصحية
جامعة فليندرس
البريد الإلكتروني:
wendy.abigail@flinders.edu.au

الدكتورة بولين هيل
كلية التمريض والعلوم الصحية
جامعة فليندرس
البريد الالكتروني:
pauline.hill@flinders.edu.au

وصف الدراسة:

هذا المشروع بعنوان "الحياة بعد اجراء العمليات الجراحية لانقاص الوزن: ما هي تجارب الأشخاص المصابين بداء السكري من النوع 2 في الكويت؟" هذا المشروع سوف يدرس تجارب الأشخاص الذين يعانون من داء السكري من النوع 2 من بعد جراحة فقدان الوزن (البدانة). ويدعم هذا المشروع كلية فليندرس جامعة التمريض والعلوم الصحية في استراليا.

الغرض من الدراسة:

يهدف هذا المشروع إلى:

1. **استكشاف تجارب الأشخاص المشخصين ب بداء السكري من النوع 2 والذين خضعوا للعمليات الجراحية لانقاص الوزن في الكويت خلال ال 6-12 اشهر الماضية.**
2. **استكشاف آثار العمليات الجراحية لانقاص الوزن في علاج مرض السكري للمشاركين الذين يعانون من داء السكري من النوع 2 وتأثيره على أنشطتهم اليومية في غضون 6-12 اشهر الماضية.**
3. **استكشاف أنواع الدعم المعنوي التي حصل عليها المشاركون أو يرغبون في تلقيها قبل وبعد العمليات الجراحية في غضون 6-12 اشهر الماضية.**

ماذا سيطلب مني أن أفعل؟

أنتم مدعون للإجابة على بعض الأسئلة المرسلة عبر البريد الإلكتروني عن تجاربك بعد جراحة لانقاص الوزن. المشاركة تطوعية تماما وذلك عن طريق إرسال بريد إلكتروني الىgrad.dip.res.bst2dm@outlook.com مع وضع عنوان الموضوع (مرض السكري والجراحة) لتلقي الرسالة التمهيدية وأسئلة المقابلة. سوف يستغرق منكم حوالي 15 دقيقة للرد. قد يتم إرسال بريد إلكتروني متابعة لتوضيح نقطة (نقاط) معينة، والتي ستستغرق حوالي 5 دقائق للإجابة عليها.

ما الفائدة التي سأكتسبها من المشاركة في هذه الدراسة؟

لن تكون هناك فائدة مباشرة لك. ولكن تبادل خبراتكم سيساعد في تحسين تخطيط وتنفيذ برامج التعليم في المستقبل.

هل سيكون من الممكن التعرف علي من خلال المشاركة في هذه الدراسة؟

سيتم التعرف عليكم من قبل الباحث فقط. حيث سيتم إزالة أي معلومة ترجع اليك وسيتم حفظ بياناتك في الملف محفوظ على جهاز كمبيوتر محمي بكلمة سر ومتاح فقط للباحث الوصول إليه. لن يتم ربط اجوبتكم اليكم مباشرة. ولن يتم نشر أي معلومات تكشف عن هويتك من قبل الباحث.

هل هناك أي مخاطر أو مضايقات إذا كنت مشاركا؟

يتوقع الباحث مخاطر قليلة من مشاركتكم في هذه الدراسة. ومع ذلك نظرا لطبيعة المشروع بعض المشاركين يمكن أن يعانون من الانزعاج العاطفي/ المعنوي. إذا كان هناك أي انزعاج عاطفي/معنوي يرجى الاتصال بطبيبك العام للحصول على الدعم / المشورة. إذا كان لديك أي مخاوف بشأن المخاطر المتوقعة أو الفعلية أو عدم الراحة، يرجى رفعها الى الباحث.

كيف أوافق على المشاركة؟

للمشاركة، سوف تحتاج إلى أن تكون أكثر من 18 سنة، تم تشخيصكم سابقا بداء السكري من النوع 2 وخضعتم لعملية جراحية لفقدان الوزن خلال 6-12 اشهر الماضية

يرجى إرسال بريد إلكتروني إلى grad.dip.res.bst2dm@outlook.com مع كتابة عنوان الموضوع للبريد الالكتروني (مرض السكري والجراحة) ارسالك للبريد الالكتروني يعبر عن اهتمامك بالمشاركة. المشاركة طوعية. لكن يمكنك الرد على "لا تعليق" أو رفض الإجابة على أيا من الاسئلة . لك مطلق الحرية في الانسحاب من مقابلة البريد الإلكتروني في أي وقت دون التأثير على خطة علاجك في المستشفى أو أي عواقب غيرها. إذا وافقت على المشاركة، فإن موافقتك ضمنية عند استلام رسالة إلكترونية تحتوي على ردودك. ويمكن القيام بذلك باستخدام وظيفة "الرد" في البريد الإلكتروني الخاص بك، ادخال/وضع إجاباتك تحت كل سؤال وارسالها إلى الباحث عن طريق النقر على خيار "إرسال".

كيف أتلقى تعليقات؟

سيتم تقديم تعليقات حول نتائج المشروع عند الطلب.

نشكرك على تخصيص الوقت لقراءة ورقة المعلومات هذه ونأمل أن تقبل دعوتنا للمشاركة

وقد تمت الموافقة على هذا المشروع البحثي من قبل لجنة الأخلاق البحوث الاجتماعية والسلوكية جامعة فليندرز (مشروع رقم 7730). لمزيد من المعلومات حول الموافقة الأخلاقية للمشروع يمكن الاتصال بالموظف التنفيذي للجنة عن طريق الهاتف على 61882013116+، عن طريق الفاكس على 61882012035+ أو عن طريق البريد الإلكتروني human.researchethics@flinders.edu.au

inspiring achievement

Appendix 5: Letter of Introduction (translated form included)

Dr Wendy Abigail
School of Nursing and Health Sciences
Flinders Drive, Bedford Park SA 5042
GPO Box 2100
Adelaide SA 5001
Tel: +61 08 82015433
wendy.abigail@flinders.edu.au
CRICOS Provider No. 00114A

LETTER OF INTRODUCTION
(Jaber Alahmed Armed Forces Hospital - Kuwait)

Dear Sir,
This letter is to introduce Alanoud Alobaidly who is a nursing research student in the College of Nursing and Health Sciences.

She is undertaking research leading to the production of a thesis or other publications on the subject of the experiences of people with type 2 diabetes mellitus after weight loss surgery.

She would like to invite you to assist with this project by agreeing to be involved in an email interview which covers certain aspects of this topic. No more than 15 minutes on 2 occasions would be required.

Be assured that any information provided will be treated in the strictest confidence and none of the participants will be individually identifiable in the resulting thesis, report or other publications. You are, of course, entirely free to discontinue your participation at any time or to decline to answer particular questions.

Since she intends to use the translated transcriptions in preparing the thesis, report or other publications, on condition that your name or identity is not revealed or made available to any other person. It may be necessary to make the transcriptions available to a third person for validation of the translation, in which case you may be assured that such persons will be blinded to your name and identity, and will be asked to sign a confidentiality agreement and that the confidentiality of the material is respected and maintained.

Any enquiries you may have concerning this project should be directed to me at the address given above or by telephone on (+61 8 82015433) e-mail (wendy.abigail@flinders.edu.au)

Thank you for your attention and assistance.

Yours Sincerely,

[redacted]

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This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project number 7730). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au

الدكتورة ويندي أبيغيل
كلية التمريض والعلوم الصحية
فليندرس دريف، بيدفورد بارك
س ا 5042
غبو بوكس 2100
أديليد س ا 5001
هاتف: 82015433 (08) 61+
البريد الإلكتروني:
wendy.abigail@flinders.edu.au
CRICOS Provider No. 00114A

Flinders UNIVERSITY
ADELAIDE • AUSTRALIA

مقدمة خطاب

(مستشفى جابر الاحمد للقوات المسلحة - الكويت)

الى رئيس مستشفى جابر الأحمد للقوات المسلحة المحترم

اقدم لكم السيدة العنود العبيدلي وهي طالبة أبحاث تمريض في كلية التمريض والعلوم الصحية حيث انها حاليا تجري بحوثا لانتاج دراسة علمية أو منشورات حول التجارب الشخصية للمصابين بداء السكري من النوع الثاني بعد اجراء احد العمليات الجراحية لانقاص الوزن (التكميم او تحويل المسار... ألخ).

تود السيدة العنود أن تدعوكم لمساعدتها في هذا البحث العلمي وذلك بمنحها الموافقة على اجراء مشروعها حيث انها تود في مقابلة المشتركين عبر البريد الإلكتروني حتى تتمكن من تغطية جوانب معينة لبحثها العلمي. الرسائل الالكترونية لن تستسرق أكثر من 15 دقيقة على فترتين كحد اقصى.

علما بأن أي معلومات مقدمة سيتم التعامل معها بأقصى قدر من الخصوصية والسرية، ولن يتم التعرف على أي من المشاركين بشكل فردي في البحث العلمي أو التقارير أو منشورات أخرى. كما نود ان نعلمكم بان لكم الحرية المطلقة في الرفض عن الإجابة على أسئلة معينة أو الوقف عن المشاركة في أي وقت.

ستقوم الباحثة باستخدام النسخ المترجمة في إعداد البحث العلمي أو تقرير أو منشورات أخرى، بشرط عدم الكشف عن اسمائكم أو هوياتكم أو إتاحتها لأي شخص آخر. قد يكون من الضروري جعل النسخ متاحة لشخص ثالث للتحقق من الترجمة، وفي هذه الحالة يمكنكم أن تتأكدوا من أن هذا الشخص (المترجم) سوف يكون غير قادر من الاطلاع على أي معلومة شخصية للمشاركين، وسوف يطلب منهم التوقيع على اتفاقية الخصوصية والسرية وأن يتم احترام سرية المعلومات والحفاظ عليها.

يرجى توجيه أي استفسارات لديكم بشأن هذا المشروع الي على العنوان المذكور أعلاه أو عن طريق الهاتف على (82015433 618+) او البريد الالكتروني(wendy.abigail@flinders.edu.au)

شكرا لاهتمامكم ومساعدتكم.

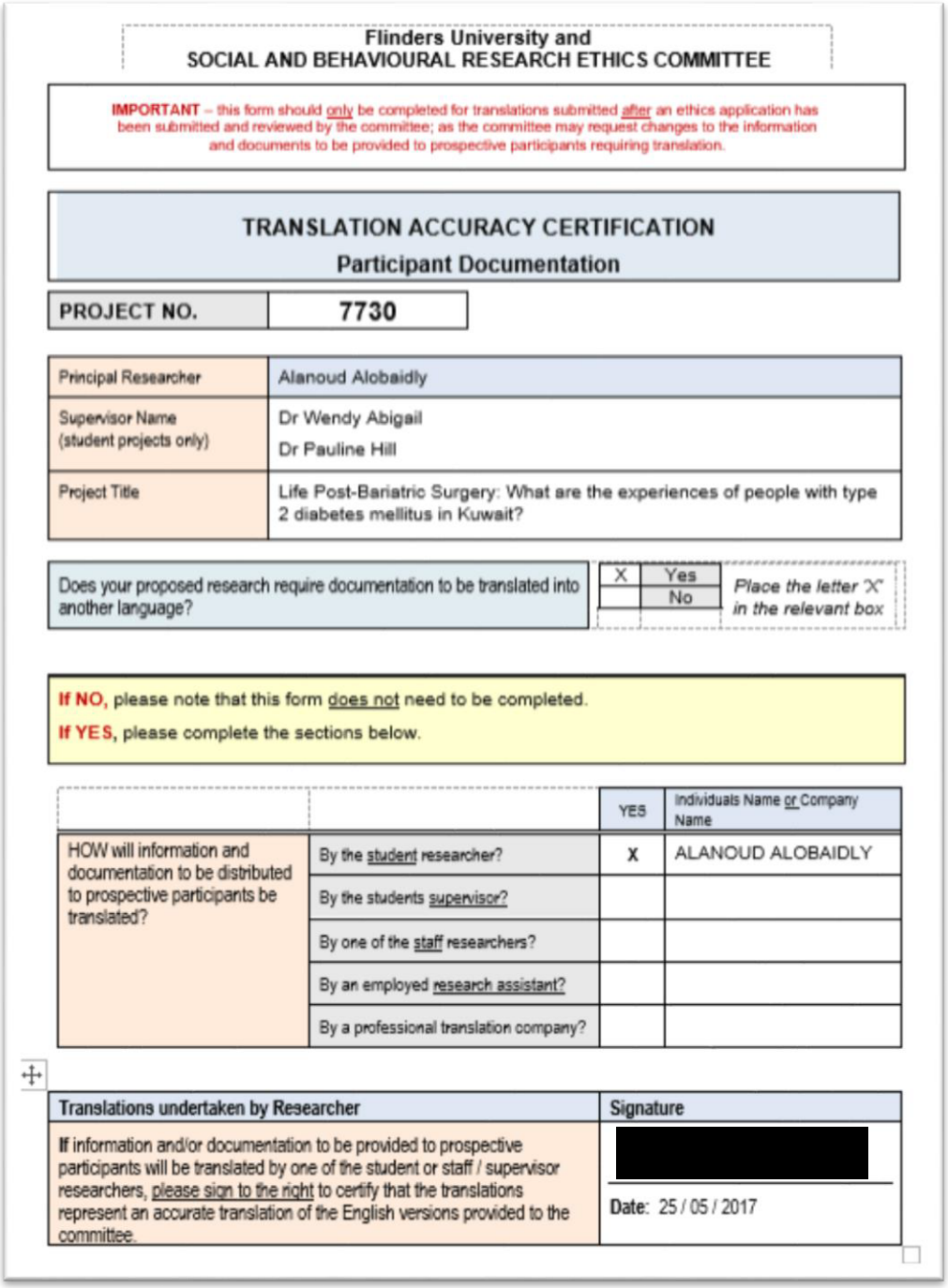
تفضلوا مني فائق الاحترام

ويندي ابيغيل

وقد تمت الموافقة على هذا المشروع البحثي من قبل لجنة الأخلاق البحوث الاجتماعية والسلوكية جامعة فليندرز (مشروع رقم 7730). لمزيد من المعلومات حول الموافقة الأخلاقية للمشروع يمكن الاتصال بالموظف التنفيذي للجنة عن طريق الهاتف على 8201 3116، عن طريق الفاكس 8201 2035 أو عن طريق البريد الإلكتروني human.researchethics@flinders.edu.au

inspiring achievement

Appendix 6: Researchers' Accuracy Certification



Flinders University and
SOCIAL AND BEHAVIOURAL RESEARCH ETHICS COMMITTEE

IMPORTANT – this form should only be completed for translations submitted after an ethics application has been submitted and reviewed by the committee; as the committee may request changes to the information and documents to be provided to prospective participants requiring translation.

TRANSLATION ACCURACY CERTIFICATION
Participant Documentation

PROJECT NO.	7730

Principal Researcher	Alanoud Alobaidly
Supervisor Name (student projects only)	Dr Wendy Abigail Dr Pauline Hill
Project Title	Life Post-Bariatric Surgery: What are the experiences of people with type 2 diabetes mellitus in Kuwait?

Does your proposed research require documentation to be translated into another language?	X	Yes	*Place the letter 'X' in the relevant box*
		No	

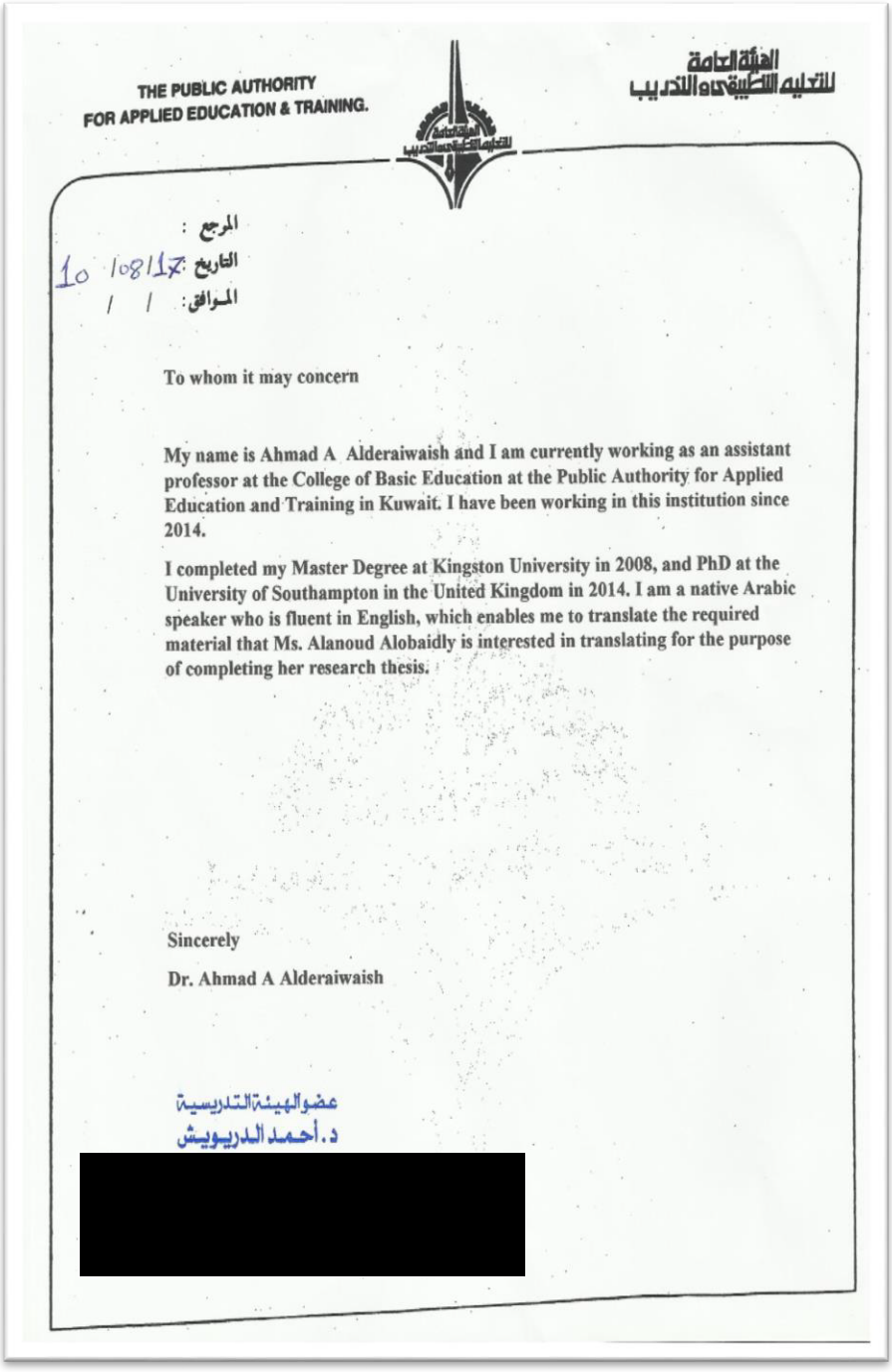
If NO, please note that this form does not need to be completed.

If YES, please complete the sections below.

		YES	Individuals Name or Company Name
HOW will information and documentation to be distributed to prospective participants be translated?	By the student researcher?	X	ALANOUD ALOBAIDLY
	By the students supervisor?		
	By one of the staff researchers?		
	By an employed research assistant?		
	By a professional translation company?		

Translations undertaken by Researcher	Signature
If information and/or documentation to be provided to prospective participants will be translated by one of the student or staff / supervisor researchers, please sign to the right to certify that the translations represent an accurate translation of the English versions provided to the committee.	[redacted] Date: 25 / 05 / 2017

Appendix 7: Translator's Approval



THE PUBLIC AUTHORITY
FOR APPLIED EDUCATION & TRAINING.

الهيئة العامة
للتعليم التطبيقي والتدريب

المرجع :
التاريخ: 10/08/17
الموافق: / /

To whom it may concern

My name is Ahmad A Alderaiwaish and I am currently working as an assistant professor at the College of Basic Education at the Public Authority for Applied Education and Training in Kuwait. I have been working in this institution since 2014.

I completed my Master Degree at Kingston University in 2008, and PhD at the University of Southampton in the United Kingdom in 2014. I am a native Arabic speaker who is fluent in English, which enables me to translate the required material that Ms. Alanoud Alobaidly is interested in translating for the purpose of completing her research thesis.

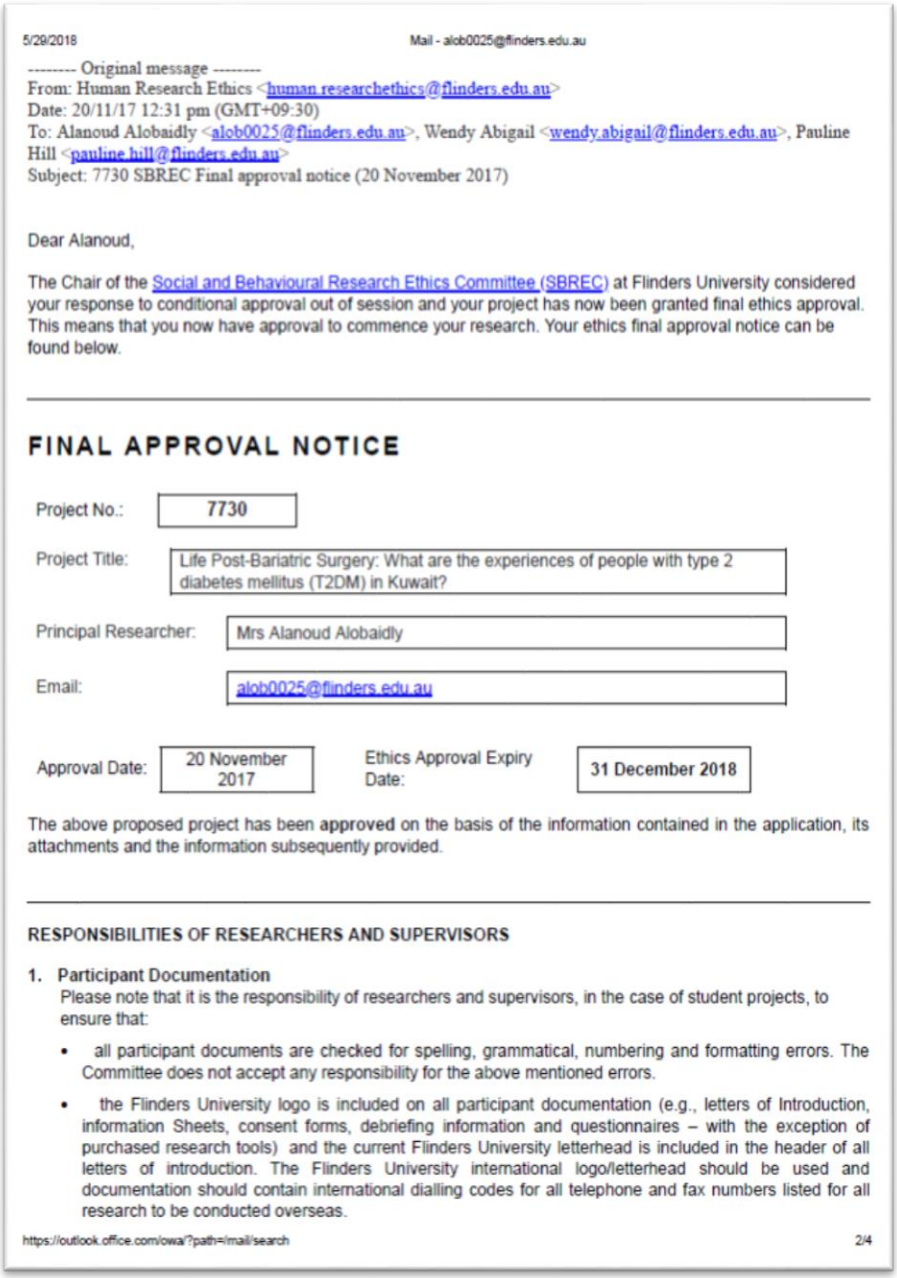
Sincerely

Dr. Ahmad A Alderaiwaish

عضو الهيئة التدريسية
د. أحمد الدريويش

[redacted]

Appendix 8: Approval from Social and Behavioural Research Ethics Committee (SBREC)



5/29/2018 Mail - alob0025@flinders.edu.au

-------- Original message --------
From: Human Research Ethics <human.researchethics@flinders.edu.au>
Date: 20/11/17 12:31 pm (GMT+09:30)
To: Alanoud Alobaidly <alob0025@flinders.edu.au>, Wendy Abigail <wendy.abigail@flinders.edu.au>, Pauline Hill <pauline.hill@flinders.edu.au>
Subject: 7730 SBREC Final approval notice (20 November 2017)

Dear Alanoud,

The Chair of the Social and Behavioural Research Ethics Committee (SBREC) at Flinders University considered your response to conditional approval out of session and your project has now been granted final ethics approval. This means that you now have approval to commence your research. Your ethics final approval notice can be found below.

FINAL APPROVAL NOTICE

Project No.:	7730
Project Title:	Life Post-Bariatric Surgery: What are the experiences of people with type 2 diabetes mellitus (T2DM) in Kuwait?
Principal Researcher:	Mrs Alanoud Alobaidly
Email:	alob0025@flinders.edu.au
Approval Date:	20 November 2017
Ethics Approval Expiry Date:	31 December 2018

The above proposed project has been **approved** on the basis of the information contained in the application, its attachments and the information subsequently provided.

RESPONSIBILITIES OF RESEARCHERS AND SUPERVISORS

1. **Participant Documentation**
   Please note that it is the responsibility of researchers and supervisors, in the case of student projects, to ensure that:
   - all participant documents are checked for spelling, grammatical, numbering and formatting errors. The Committee does not accept any responsibility for the above mentioned errors.
   - the Flinders University logo is included on all participant documentation (e.g., letters of Introduction, information Sheets, consent forms, debriefing information and questionnaires – with the exception of purchased research tools) and the current Flinders University letterhead is included in the header of all letters of introduction. The Flinders University international logo/letterhead should be used and documentation should contain international dialling codes for all telephone and fax numbers listed for all research to be conducted overseas.

https://outlook.office.com/owa/?path=/mail/search 2/4

- the SBREC contact details, listed below, are included in the footer of all letters of introduction and information sheets.

This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project Number 'INSERT PROJECT No. here following approval'). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au

2. Annual Progress / Final Reports

In order to comply with the monitoring requirements of the *National Statement on Ethical Conduct in Human Research (March 2007)*, an annual progress report must be submitted each year on the **20 November** (approval anniversary date) for the duration of the ethics approval using the report template available from the Managing Your Ethics Approval SBREC web page. *Please retain this notice for reference when completing annual progress or final reports.*

If the project is completed *before* ethics approval has expired please ensure a final report is submitted immediately. If ethics approval for your project expires please submit either (1) a final report; or (2) an extension of time request and an annual report.

Student Projects

The SBREC recommends that current ethics approval is maintained until a student's thesis has been submitted, reviewed and approved. This is to protect the student in the event that reviewers recommend some changes that may include the collection of additional participant data.

Your first report is due on **20 November 2018** or on completion of the project, whichever is the earliest.

3. Modifications to Project

Modifications to the project must not proceed until approval has been obtained from the Ethics Committee. Such proposed changes / modifications include:

- change of project title;
- change to research team (e.g., additions, removals, principal researcher or supervisor change);
- changes to research objectives;
- changes to research protocol;
- changes to participant recruitment methods;
- changes / additions to source(s) of participants;
- changes of procedures used to seek informed consent;
- changes to reimbursements provided to participants;
- changes / additions to information and/or documentation to be provided to potential participants;
- changes to research tools (e.g., questionnaire, interview questions, focus group questions);
- extensions of time.

To notify the Committee of any proposed modifications to the project please complete and submit the *Modification Request Form* which is available from the Managing Your Ethics Approval SBREC web page. Download the form from the website every time a new modification request is submitted to ensure that the most recent form is used. Please note that extension of time requests should be submitted prior to the Ethics Approval Expiry Date listed on this notice.

Change of Contact Details

Please ensure that you notify the Committee if either your mailing or email address changes to ensure that correspondence relating to this project can be sent to you. A modification request is not required to change your contact details.

4. **Adverse Events and/or Complaints**
   Researchers should advise the Executive Officer of the Ethics Committee on 08 8201-3116 o
   human.researchethics@flinders.edu.au immediately if:
   - any complaints regarding the research are received;
   - a serious or unexpected adverse event occurs that effects participants;
   - an unforeseen event occurs that may affect the ethical acceptability of the project.

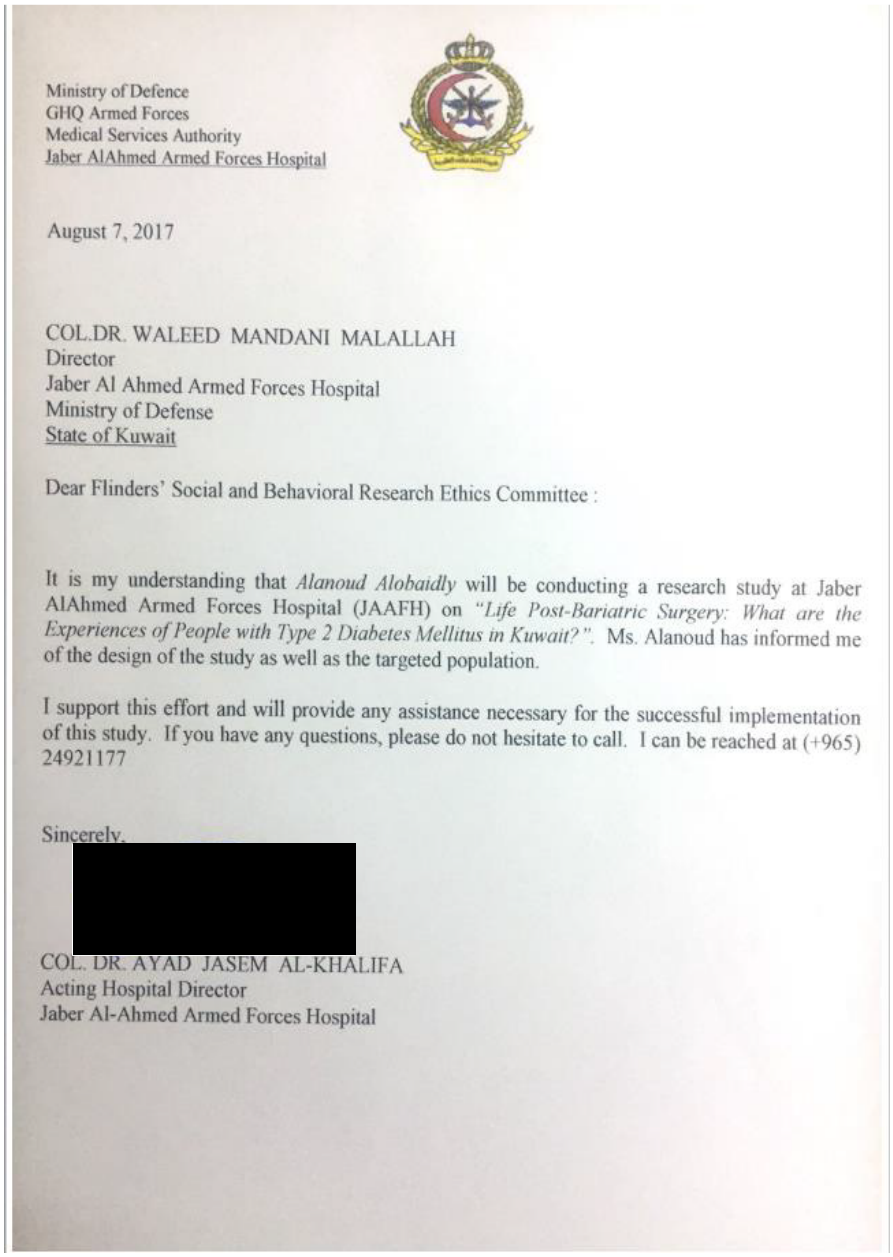
Kind regards
Rae

Mrs Andrea Fiegert and Ms Rae Tyler
Ethics Officers and Executive Officer, Social and Behavioural Research Ethics Committee
Andrea - Telephone: +61 8 8201-3116 | Monday, Tuesday and Wednesday
Rae – Telephone: +61 8 8201-7938 | Tuesday, Thursday and Friday

Email: human.researchethics@flinders.edu.au
Web: Social and Behavioural Research Ethics Committee (SBREC)

Manager, Research Ethics and Integrity – Dr Peter Wigley
Telephone: +61 8 8201-5466 | email: peter.wigley@flinders.edu.au
Research Services Office |Union Building Basement
Flinders University
Sturt Road, Bedford Park | South Australia | 5042
GPO Box 2100 | Adelaide SA 5001

Appendix 9: Approval from Director of Hospital in Kuwait



Ministry of Defence
GHQ Armed Forces
Medical Services Authority
Jaber AlAhmed Armed Forces Hospital

August 7, 2017

COL.DR. WALEED MANDANI MALALLAH
Director
Jaber Al Ahmed Armed Forces Hospital
Ministry of Defense
State of Kuwait

Dear Flinders' Social and Behavioral Research Ethics Committee :

It is my understanding that *Alanoud Alobaidly* will be conducting a research study at Jaber AlAhmed Armed Forces Hospital (JAAFH) on *"Life Post-Bariatric Surgery: What are the Experiences of People with Type 2 Diabetes Mellitus in Kuwait?"*. Ms. Alanoud has informed me of the design of the study as well as the targeted population.

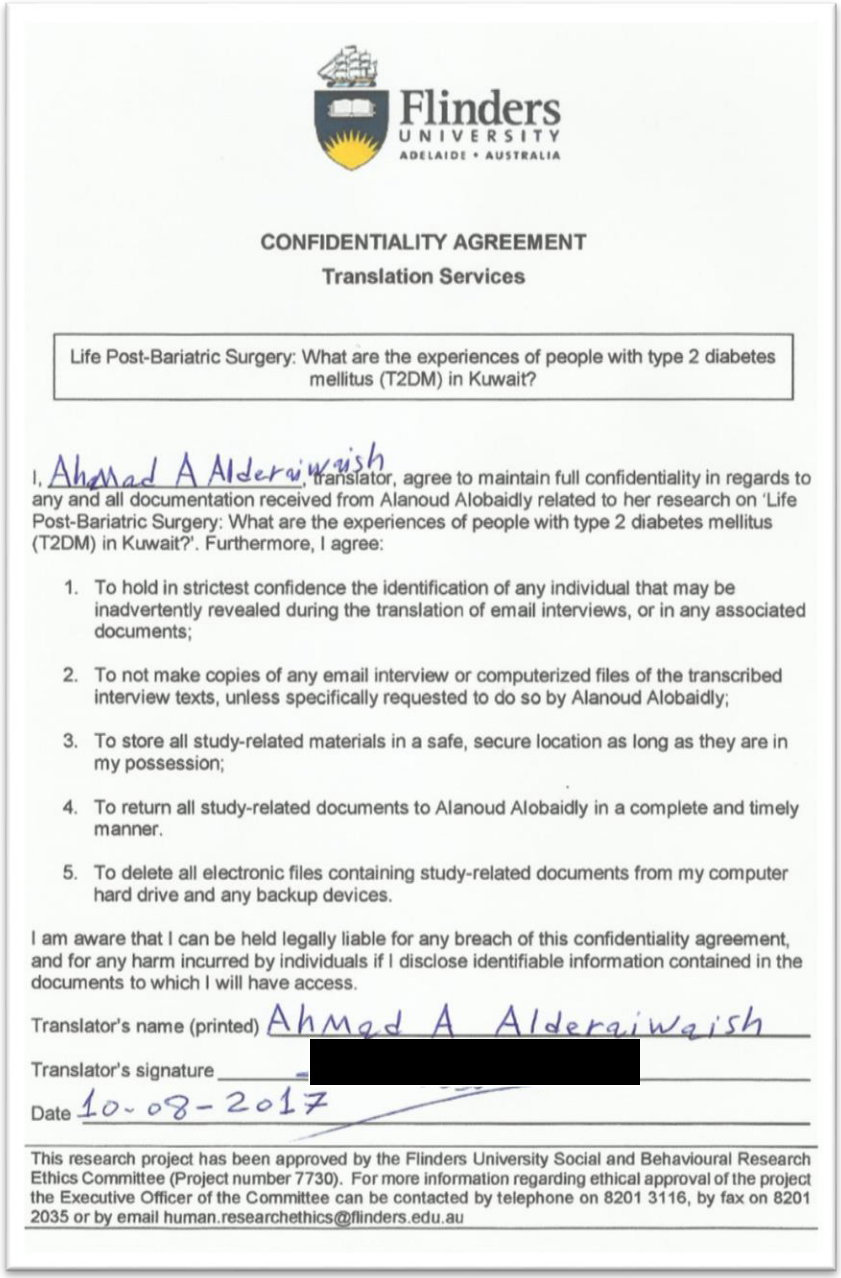
I support this effort and will provide any assistance necessary for the successful implementation of this study. If you have any questions, please do not hesitate to call. I can be reached at (+965) 24921177

Sincerely,

[redacted]

COL. DR. AYAD JASEM AL-KHALIFA
Acting Hospital Director
Jaber Al-Ahmed Armed Forces Hospital

Appendix 10: Translator's Consent



Flinders UNIVERSITY
ADELAIDE • AUSTRALIA

CONFIDENTIALITY AGREEMENT

Translation Services

Life Post-Bariatric Surgery: What are the experiences of people with type 2 diabetes mellitus (T2DM) in Kuwait?

I, Ahmad A Alderaiwaish, translator, agree to maintain full confidentiality in regards to any and all documentation received from Alanoud Alobaidly related to her research on 'Life Post-Bariatric Surgery: What are the experiences of people with type 2 diabetes mellitus (T2DM) in Kuwait?'. Furthermore, I agree:

1. To hold in strictest confidence the identification of any individual that may be inadvertently revealed during the translation of email interviews, or in any associated documents;
2. To not make copies of any email interview or computerized files of the transcribed interview texts, unless specifically requested to do so by Alanoud Alobaidly;
3. To store all study-related materials in a safe, secure location as long as they are in my possession;
4. To return all study-related documents to Alanoud Alobaidly in a complete and timely manner.
5. To delete all electronic files containing study-related documents from my computer hard drive and any backup devices.

I am aware that I can be held legally liable for any breach of this confidentiality agreement, and for any harm incurred by individuals if I disclose identifiable information contained in the documents to which I will have access.

Translator's name (printed) Ahmad A Alderaiwaish

Translator's signature [redacted]

Date 10-08-2017

This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project number 7730). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au