Psychological Effects and Coping Strategies after Major Surgery in Adults

Divaasini, D.[1]
Zhooriyati, S. M.[2]

Department of Psychology,
Faculty of Social Sciences and Liberal Arts,
UCSI University Kuala Lumpur

[2]Corresponding e-mail: [zhooriyati@ucsiuniversity.edu.my]

This qualitative phenomenological was conducted to explore the psychological experiences and coping strategies utilized by surgical patients who developed psychological effects after major surgery. To meet the objectives of this study, five participants aged between 45 to 63 years old were recruited though purposive and snowball sampling across Klang Valley, Malaysia. The participants who underwent various major surgeries (Hemicolectomy, Craniotomy, Mastectomy, total knee replacement, and brain aneurysm repair) were interviewed using semi-structured questions on different days and places. Thematic Analysis was used to analyze the data gathered through the interviews with participants. This research found that individuals who undergo major surgeries display strong dependency on their families, anxiety about hospital and illness, negative emotional experiences, insecurity and isolation towards society as well as dissatisfaction due to lifestyle changes. To overcome the psychological effects faced after major surgery, this study found that adults utilize adaptive coping strategies such as seeking for social and professional help, practicing self-management, spirituality and optimism as well as giving and receiving support from loved ones. Through the findings of this research, awareness regarding familial role towards post-surgery recovery can be increased and steps such as introducing psychological screening for surgical patients could be implemented in Malaysia.

Keywords: psychological effects, coping strategies, major surgery, adults

Surgery has been one of the most performed medical procedures worldwide with an estimate of 266 to 359 million operations performed in 2012 and an increase of 38 percent recorded over the past eight years (Weiser, Haynes, Molina, Lipsitz, Esquivel, Uribe-Leitz, & Gawandeb, 2016). However, the issue on psychological effects that arise after surgery has not been researched until late 1980s. One of the first researches that focused on the relationship between psychological effects and surgery was a study done on the natural course of anxiety before and after surgery using the State–Trait Anxiety Inventory by Johnston (1980) where the findings suggested that high levels of anxiety were experienced by patients prior to their admission to the hospital as well as the period before and after their surgery.

Psychological effects in the context of this research is psychological experiences of adults who exhibit depression, anxiety and stress symptoms after their major surgery, with regards to the emotional, physical and social challenges faced. Previous literature on psychological effects in an adult surgery discuss several factors that psychological experiences.

Manner of operation is one of the factors that affect the severity of psychological

effects after surgery. For instance, a study done established that patients who underwent a laparoscopy surgery, which is essentially minimally invasive, had lower levels of anxiety as opposed to patients who underwent a conventional operation (Sedlak, Lorenc, Majewski, Krawczyk, & Kowalska, 2016).

Besides manner of operation, there is a suggested association between the formation of psychological effects and external factors like the environment the patient is in. As noted by Myhren, Ekeberg, Toien, Karlsson, and Stokland (2009), the mean level of posttraumatic stress symptoms in patients one year following ICU treatment was high and predictors of posttraumatic stress symptoms were mainly experiences during hospital stay and pessimism.

Literature also shows a significant number of researches done on the pre-surgical psychological effects and its consistency or effect on the formation of post-surgical psychological effects that is often translated into self-harming behaviour. A study by Lagerros, Brandt, Hedberg, Sundbom, and Bodén (2017) in Sweden investigating risk of self-harm, hospitalization for depression and death due to suicide after gastric bypass surgery (GBP) by evaluating patients two years preceding surgery and two years after surgery, found that the increased risk of post-surgical self-harm and hospitalization for depression is mainly attributable to patients who have a diagnosis of self-harm or depression before surgery.

There have also been studies done post-surgical psychological affects and their effects on the patients' mortality and morbidity. A study done by Ghoneim and O'Hara (2016) which stated depressive disorders cause the suppression of the immune system, expose the patients to increased rates of postoperative infections, increased mortality and acute postoperative pain by lowering the chronic pain threshold. Besides mortality, there is also a correlation between post-surgery psychological effects and morbidity, which essentially means the unhealthy state of an individual. A study conducted on coronary artery bypass graft (CABG) surgery patients affected by depression in Beijing highlighted an association between depression, anxiety and an increased risk of morbidity in the short and longer term, independent of medical factors (Tully & Baker, 2012).

From a cognitive standpoint, psychological effects have been associated with perception of life satisfaction. One of the factors that contribute to a patient's satisfaction after surgery is their perceived pain and psychological effects have been associated with altering or influencing one's perception of pain. For instance, a study done in the USA reported difference between pain perception of depressed post-surgical patients showcasing less life satisfaction and the ones without depression (Brander, Gondek, Martin, & Stulberg, 2007). Another study done by Roth, Lowery, Davis, and Wilkins (2007) reported that affective distress negatively influences patient satisfaction about both aesthetic and general outcomes of post-mastectomy breast reconstruction.

Literature on psychological effects showcase behavioral (Lagerros et.al, 2017), emotional (Sedlak et.al, 2016; Myhren et.al, 2009; Ghoneim et.al, 2016; Tully et.al, 2012) and cognitive effects (Brander et.al, 2007; Roth et.al, 2007) faced by post-surgical patients and this led to the study of emotional, physical and emotional challenges or experiences faced by participants of this research.

Besides psychological effects, coping strategies used by participants were studied. Coping strategies in the context of this research is defined as adaptive coping strategies that patients utilize to overcome

psychological effects faced following major surgery. Previous literature on coping strategies demonstrate various effective coping techniques. A longitudinal quantitative study that was conducted to examine the role of coping strategies and positive psychological changes on the psychological adjustment of breast cancer patients and findings showed that adaptive coping strategies like seeking social support, facilitates psychological adjustments in patients along with post-traumatic growth (Silva, Crespo, & Canavarro, 2012).

Certain studies also focused on the association between depressive symptoms and coping strategies whereby, a quantitative study conducted by Trevizan, Miyazaki, Silva, and Roque (2017) suggested the correlation between the usage of problem-focused coping strategies and symptoms of depression whereby, patients with lesser symptoms of depression were more likely to use problem-focused strategies, noting that social support was critical for patient's coping. Coping styles were also researched in the context on religion whereby, a longitudinal quantitative study by Ai, Park, Huang, Rodgers and Tice (2007) showed that positive religious coping styles were associated with less post-operative distress while negative religious coping styles were associated with greater post-operative distress.

The current study

The prevalence of surgery and the proven existence of psychological effects after surgery through literature leads to the discussion of social problems that stem from psychological effects after surgery. The literature on Schroeder (2016) has highlighted that depression rates are 20 to 40 percent after someone has had a heart attack or heart surgery United States of America. Suicidal thoughts afflict 1 in 5 patients after heart surgery and even medical practitioners who had underwent a cardiac surgery quit their practice as a physician because of the inability to cope with the mental stress post-surgery (Kotz, 2010).

Despite the prevalence of psychological effects after surgery, there is a lack of importance given to it. Szabo (2015) stated that the Medicaid law that specifies a higher allocation of funds to treat physical conditions and discriminates against patients with mental illnesses. For instance, by limiting the number of days patients can receive inpatient psychiatric care and therapy. Supporting this article, is a report by Hoffman (2013) in which a psychiatrist stated that attention is given to how weak the patient is physically rather than to whether they have post-surgical stress or low mood.

In Malaysia, surgery was reported as one of the more prevalent medical procedures in this country by The World Bank (2012). However, based on the Ministry of Health (2011) report, there is a lack of psychological rehabilitation for surgical patients. Basing off these facts, the problem here is the lack of awareness and importance given to psychological effects after surgery.

In this study, surgery has been narrowed to major surgery which is essentially the medical procedure an adult undergoes that involved hospitalization and administration of general anesthesia. The objective of this research was to discover and explore possible solutions to the primary research question "what are the psychological effects an adult undergoes after major surgery?" and to the secondary research question "what are the coping strategies used by adults who have undergone psychological effects after major surgery?" This encompasses the fundamental core of this study and highlights that the focus of the study is to understand the thoughts, behaviourisms

and emotions of surgical patients after surgery.

Theories like locus of control theory and transactional model of stress was applied to better understand the actions of patients after surgery during their recuperation. The locus of control theory by Rotter (1966) was utilized to explain one's behavior or perception towards difficulties after surgery in regards to psychological effects faced. Patients with an internal locus of control will suggest that positive health results and challenges faced root from one's own doing, willpower or sustained efforts. In contrast, a patient with an external locus of control will belief in the influence of fate, influential individuals, or supernatural occurrences upon one's health (Brincks, Feaster, Burns & Mitrani, 2010).

The Transactional Model of Stress by Lazarus and Folkman (1984) was applied to understand the coping strategies utilized by the participants. According to this model, patients can either practice meaning-based coping, whereby they induce positive emotion to perform problem-or-emotion focused coping or dispositional coping, whereby they exhibit generalized ways of behaving that affects their emotions and actions.

.

Method

Participants

This study implemented a qualitative research design with phenomenological approach. To reach the objectives of this study, open-ended questions were used in semi-structured interviews because it allows the researcher to explore deeper into sensitive piece of information and clarify the topics shared by the participant (Barriball & While, 1994). A total of six Malaysian –citizens aged between forty to sixty-five years old who have been through psychological effects after major surgery and are actively coping out of psychological effects, were recruited through purposive sampling has participated in this research. As middle adulthood is a stage where adults focus on giving back to the society, productivity at work and engaged in community activities (Erikson, 1994). Therefore, it was intriguing to observe and document perspectives from these participants having undergone life-altering surgeries.

Besides being within the middle adulthood age bracket, participants were required to have had a maximum of two years gap between the interview and their surgery to ensure the participants have sufficient memory of their psychological experiences post-surgery (Székely, Balog, Benkö, Breuer, Székely, Kertai, & Thayer, 2007). To obtain a diverse set of experiences, participants who underwent various types of major surgeries such as colon cancer surgery (*hemicolectomy*), brain tumor (*meningioma*) surgery, breast cancer surgery (*mastectomy*), total knee arthroplasty (*TKA*) and brain aneurysm surgery, were studied. Social networking sites such as Instagram, Facebook, WhatsApp and Twitter were used as tools in purposive sampling to gather participants that meet the criteria.

Instruments

The interview questions in this study were adapted and modified based on two questionnaires. To investigate psychological effects faced by participants, the short form- 36 health survey (Bunevicious, 2017) which contains eight subscales that represent World Health Organization (WHO) definition of health. The eight domains that the SF-36 measures are physical functioning, role limitations due to physical health, role limitations due to emotional problems, energy or fatigue, emotional well-being, social functioning, pain and general health.

To study coping strategies used by participants, Coping Strategies Questionnaire (Rosenstiel & Keefe, 1983) is used to assess for pain coping strategies.

The two instruments adapted by modifying questions to better suit this research and its' objectives. This aided in the preparation of semi-structured interview questions which were then asked during interviews with the participants in this research. To investigate psychological effects, questions like "What was your experience after surgery" with follow up questions on emotional state during the period of admission and post-surgery, were asked. Information regarding coping strategies was obtained by asking questions like "What were the practices you had to cope after your surgery". The gathered data was analyzed using Thematic Analysis as it was the most suitable method for extracting data to produce in-depth accounts that answer the research questions in this study (Joffe & Yardley, 2004).

Results

There was a derivation of five themes to answer primary research question "what are the psychological experiences faced by adults after major surgery" and four themes to answer secondary research question "what are the coping strategies used to overcome psychological effects after major surgery". The table below shows the conclusion of the themes found in this research:

Table 1
Themes

Research Questions	Themes
What are the psychological effects faced by adults after major surgery?	(i) Strong dependency towards family, (ii) Negative emotional experiences, (iii) Lifestyle changes induced stress, (iv) Insecurity and isolation towards society (v) Anxiety about hospital and illness.
What are the coping strategies used to overcome psychological effects after major surgery?	(i) Seeking social and professional help, (ii) Spirituality and optimism, (iii) Self-management (iv) Giving and receiving support

Psychological Effects

Psychological effects were determined through understanding the experiences faced by adults after major surgery. Strong dependency towards family highlights the participants' dependence on their families and how it influences their emotions and actions. The sub themes under this theme which were familial support, drive to provide for family, guilt due to familial concern and withdrawal from family, show both positive and negative emotions that arise consequently from patients' dependence on their families. Some participants claimed that familial support enabled them to survive through the pain, attend some events and one participant interestingly claimed that the need to provide for her family motivated her to work from home after the surgery. *"I had family all around me when I gained consciousness and that was helpful for me to deal with the pain I felt when the anesthetics were wearing of."* However, the same dependency towards family induced negative emotions such as guilt and led to actions like participants' withdrawal from their families in instances. *"Sometimes I stopped confiding*

in family because I was worried they would find me annoying."

Negative emotional experiences focuses on negative emotions experienced by participants that are directly associated with the surgery that they had undergone. The sub themes under this theme were distress after surgery, discomfort due to wound and unsatisfactory surgery outcomes. Distress after surgery showcases patients feeling nervous and stressed whilst recovering after the surgery. Some participants were stressed due to medical procedures such as removal of stitches and inability to distract themselves from their pain. For example, "*I was nervous after my surgery because I wasn't sure how I was going to recover and how long I was going to take to recover to lead the life I had prior to surgery",* whilst some participants faced negative emotions like discomfort due to the wound they had after the surgery. For instance, a participant felt *"frightened by the smell and sight of dried blood"* of the wound on her head after her brain tumor surgery.

Lifestyle change induced stress was identified in all five participants displaying sub themes such as affected by physical limitations, frustrated with nutritional changes, disliking house arrest and dependence on others for assistance. The participants' responses regarding nutritional changes were negative as some were frustrated with limited choices while others had to deal with changes like eating meat after years of being vegetarian. Additionally, the participants disliked the house arrest they were under after surgery. They described it as *"suffocating and frustrating to stay at home constantly"*. Besides that, participants were affected deeply by their physical limitations after surgery like being bed ridden for a few days, the inability to walk a distance before becoming breathless, the inability to move like they did prior to surgery and the difficulty to perform to daily tasks.
"*I used to be a very active lady. I was very depressed because I couldn't move like I did before."*

The participants were also stressed about their dependence on others for assistance after surgery. Some participants stated that this dependence took an emotional toll on them while some expressed it was frustrating because they weren't used to depending on people.
"What disheartened me was the fact I was dependent on people around me to go anywhere because before this I handled things on my own."

Insecurity and isolation towards society showed that at least for 6 months after surgery, most participants showcased behavior that isolated themselves from the society. Some participants only kept in touch occasionally with their close friends and select few attended events but were unhappy. Besides that, participants were insecure about the public opinion regarding their condition after surgery. Participants were conscious about how the society viewed their condition and were afraid to be judged by society and those who underwent major physical changes were insecure about their looks. One participant was insecure due to becoming bald after a brain tumor surgery and another was self-conscious due to new clothing after her breast cancer surgery. Insecurity and isolation towards society was also consistent with the sub theme of withdrawal from people, which encased the believe of the participant that no one could understand their condition.
"Yes, there have been times I sit quietly by myself because I feel that no one can understand my pain".

Anxiety about hospitals and illness exhibits how the participants' emotions and behaviors were affected by their fear of hospitals and fear of morbidity. In the

context of fear towards hospitals, participants accounted how certain hospital experiences make them nervous, how the thoughts of hospitals frightened them and one participant even chose to discontinue chemotherapy in order to avoid hospitals.

"I felt constantly afraid and the idea of hospitals traumatized me. I always made my husband or my daughter to accompany me throughout the treatment."

There was also a case of prolonged anxiety from prior the operation to after the surgery in one participant. Some participants also showed the fear of morbidity whereby participants were afraid that they were going to be ill again or that something bad would happen to them after the surgery.

"Even when I'm driving now, I have a fear of my aneurysm rupturing."

Coping Strategies

Seeking social and professional help expands on the participants sourcing out help from external parties in order to cope from their psychological effects. The participants received support from their family and friends and they also communicated their thoughts and feelings to close ones as a means of coping. *"My family was incredibly important in my coping process. I talk to them whenever I need some support."*

Besides that, participants sought help from professionals and support groups in order to better cope after surgery. For instance, a participant had a support group before and after surgery. Most participants consulted their doctors after surgery and one even consulted a nutritionist due to dietary changes. However, none of the participants consulted a psychologist despite recommending it in the interviews.

Spirituality and optimism showcases the more faith and hope driven coping styles of the participants. The sub themes under this theme are dependence on faith, positive thinking and affirmative speech. Dependence on faith was exhibited when the participants mentioned that religious praying or prayer cope aided them a lot in coping out of the negative experiences. The participants also practiced affirmative speech whereby they use more positive sentences to themselves. For instance, one participant tells herself sentences like "I can do it" and "I can get over this" which in turn encourages hope to overcome challenges faced. Besides that, the participants practiced positive thinking through various approaches like practicing a sense of humor and motivational thoughts.

Self-management in the form of self-love and self-control aided participants' process of coping. Firstly, participants showcased love for themselves which encouraged them to be more proactive in coping. Extending this, the participants were involved in mostly indoor activities and stress-reduction activities. Despite the frustration of staying at home, some participants turned their pain into a means to cope by adopting habits like reading, listening to music and watching television. One participant interestingly learned a new skill, namely knitting through the internet whilst she was on house arrest. Some of them practiced stress-reduction activities like meditation to calm themselves.

Participants also showcased self-management by practicing self-control and channeling willpower to recover from their illness as well as cope out of their negative state of mind. In light of this, participants acquired more knowledge to better cope with their condition and even practiced good attributes like discipline to facilitate the coping process. For instance, they read more about their condition and took efforts like exercise, to overcome their condition the best they can.

"I also learnt techniques to lengthen and straighten my left arm and looking

forward to a day when I could lift my arm higher."

Giving and receiving support illustrates how a two-way exchange of support between others and the participants boosts their confidence due to a sense of purpose. The sub themes under this theme are contributing to family, surrounding oneself with positivity and good recovery environment. The participants stated that contributing to the family made them happy and increased their resilience to overcome challenges faced. *"I looked after mum, having the sense of looking after a loved one although you aren't fully healed gives you a certain type of strength, like you cross hurdles not only for yourself but also for them"*. Under this theme, participants also highlighted the importance of a good recovery environment to one's coping journey. For instance, a participant stated that her doctors and hospital staff played an important role for her to cope faster after surgery. One of the actions that the participants actively practiced was surrounding themselves with positivity.

Discussion

Primarily, the sociodemographic statistics of the participants provide a perspective on working life after surgery especially in female adults, as all participants were middle aged females. Through this research, it was discovered that majority of participants chose retirement after surgery. Besides that, it is critical to note that all samples underwent different major surgeries; colon cancer surgery (hemicolectomy), brain tumor (meningioma) surgery, brain aneurysm surgery, breast cancer surgery (mastectomy) and total knee arthroplasty (TKA).

As certain themes are consistent across all participants like strong dependency on family, negative emotional experiences and dissatisfaction due to lifestyle changes, this research findings contrast with the study which states the location, side and site of surgery affects the formation of psychological effects as well as the behavior of patients (Prayson, Floden, Ferguson, Kim, Jehi & Busch, 2017). In this study, despite a difference of surgical locations in the body, all participants displayed symptoms of psychological effects and certain behaviorisms were consistent across all participants

Other findings of this research like negative emotional experiences, anxiety about hospitals and illnesses as well as insecurity and isolation towards society further support previous literature and established a trend of distress after major surgery. Participants were undergoing distress due to wounds as well as bad hospital experiences which was suggested in researches done by Verdonck-de and colleagues (2007) as well as Myhren and colleagues (2009). Fear of morbidity which exhibits participants' fear of falling ill is found to be related to episodes of rushing back to the hospital after surgery due to infections, sharp pains and high fever and these episodes of rushing back to the hospital supports the findings of Ghoneim and O'Hara (2016) that depressive disorders cause the suppression of the immune system and exposes patients to increased rates of postoperative infections, increased mortality and acute postoperative pain.

Participants who underwent open-skull surgery and mastectomy exhibited insecurity of their looks and this further

supports the findings that distress negatively influences patient satisfaction with both aesthetic and general outcomes whereby, feelings of distress after mastectomy surgery affects how the patients rate their satisfaction of their looks and their life (Roth, et.al, 2007).

Lifestyle change induced stress was a new theme that was derived from this research due to its composition of sub-themes which are physical limitations, frustrated with nutritional changes, disliking house arrest and dependence on others for assistance. Although it was in support of the study done of how life satisfaction is affected post-surgery (Brander et.al, 2007), this theme doesn't limit the measure of reduced life satisfaction to pain perception. Instead, the theme explores how behavioral changes occur and emotional conflict arises after surgery.

Seeking social and professional help is a theme that contains elements of pursuing social support and professional advice to cope after surgery. Social support has been a recurring factor in literature in the context of coping strategies used medical patients. Findings showed that adaptive coping strategies like seeking social support, facilitates psychological adjustments in patients along with post-traumatic growth (Silva et.al, 2012).

Social support is also found to be one of the factors that drive patients to make clear-minded decisions like seeking for professional help. Actions of participants who actively communicate their thoughts and feelings to their friends, family, support groups as well as obtaining professional help in the form of doctors, nutritionists and physiotherapists when necessary supports the study done by Trevizan and colleagues (2017) which found that social support aids in adequate management of emotions, affective, cognitive and feedback orientations, hence, helping to increase the patient's adaptive skills.

Spiritualism and optimism is a theme that combines elements of faith and positivity. Participants that mentioned using prayers as a means to cope also practiced positive thinking and affirmative speeches to themselves like *"I can do it"*. These findings show a bridging between spirituality and optimism. This finding further supports previous literature which displayed that prayer coping led to positive surgery outcomes whilst mediated by optimism (Ai et.al, 2007), showcasing the effectiveness of spirituality and optimism together as coping strategies.

Lastly, the theme of giving and receiving support showcased a coping strategy that was grounded in values especially to give back to the society. Contributing to their family gave the participants a sense of importance and boosted their confidence leading to an effective coping process. According to Erikson (1994), middle adulthood is a stage in life where people want to contribute to their families, societies and settle down in life. As the participants in this research fell under the middle adulthood age bracket (Erikson, 1994), this theme highlights the importance of engaging in a two-way exchange of support for a middle aged surgical patient, whereby the participant receives support and more importantly, has an opportunity to provide support to loved ones.

All themes were derived to illustrate adaptive coping strategies of adults after surgery. Participants practiced problem-focused strategies that aimed at lessening their stressor like seeking social and professional support as well as meaning-based strategies like spirituality and optimism. Although some participants are still coping, it is evident that their coping strategies have helped them overcome

their psychological effects after major surgery.

Future researchers can focus on conducting more face-to-face interviews with participants and obtaining a more balanced number of female and male participants to be studied. This will ensure sufficient representation from both genders and increase the impact of the findings. Longitudinal studies of this topic is suggested to obtain more information and patterns of challenges faced and coping strategies utilized by post-surgical patients.

Research can also be conducted on certain non-specific to research objective issues that materialized through this research. Through general findings, disparities between public and private hospital service satisfaction was found. Based on the responses given by the participants, there was a relationship between hospital type and satisfaction towards services. Participants who were under semi-government hospitals were dissatisfied with the service while participants who were admitted in private hospitals commended the service and even acknowledged that their hospital stay played a role in their coping process. Therefore, further research can be done on this subject area to catalyze medical reform.

The practical implications of this research include awareness regarding the importance of mental healthcare along with physical healthcare. Besides that, this study provides a point of discussion with the information collected, for policy makers to induce change in the mental healthcare system in regards to surgery. This research also offered various areas that could be further researched, especially in the Malaysian context.

References

Ai, A. L., Park, C. L., Huang, B., Rodgers, W., & Tice, T. N. (2007). Psychosocial mediation of religious coping styles: A study of short-term psychological distress following cardiac surgery. *Personality and Social Psychology Bulletin*, 33(6), 867-882.

Barriball, K., & While, A. (1994). Collecting data using a semi-structured interview: a discussion paper. *Journal Of Advanced Nursing*, 19(2), 328-335. doi: 10.1111/j.1365-2648.1994.tb01088.x

Brander, V., Gondek, S., Martin, E., & Stulberg, S. D. (2007). The John Insall Award: Pain and Depression Influence Outcome 5 Years after Knee Replacement Surgery. *Clinical orthopaedics and related research*, 464, 21-26.

Brincks, A. M., Feaster, D. J., Burns, M. J., & Mitrani, V. B. (2010). The influence of health locus of control on the patient–provider relationship. *Psychology, health & medicine*, 15(6), 720-728.

Bunevicius, A. (2017). Simple Preoperative Patient-Reported Factors Predict Adverse Outcome After Elective Cranial Neurosurgery. *Neurosurgery*.

Erikson, E. H. (1994). *Identity: Youth and Crisis* (No.7) WW Norton & Company

Ghoneim, M. M., & O'Hara, M. W. (2016). Depression and postoperative complications: an overview. *BMC surgery*, 16(1), 5.

Haggman, S., Maher, C. G., & Refshauge, K. M. (2004). Screening for symptoms of depression by physical therapists managing low back pain. *Physical therapy*, 84(12), 1157-1166.

Hoffman, J. (2013). Nightmares After the I.C.U. *New York Times* Retrieved November 12, 2017, https://well.blogs.nytimes.com/2013/07/22/nightmares-after-the-i-c-u/?mcubz=3

Johnston, M. (1980). Anxiety in surgical patients. *Psychological medicine*, 10(1), 145-152.

Joffe, H., & Yardley, L. (2004). Content and thematic analysis. *Research methods for clinical and health psychology*, 56, 68.

Kotz, D. (2010). Recuperating From Heart Surgery: An 8-Step Comeback Plan. *U.S. News Health*. Retrieved October 4, 2017, from https://health.usnews.com/health-news/managing-your-healthcare/heart/articles/2010/07/20/recuperating-from-heart-surgery-an-8-step-comeback-plan

Lazarus, R. S., & Folkman, S. (1984). Coping and adaptation. *The handbook of behavioral medicine*, 282-325.

Lagerros, Y. T., Brandt, L., Hedberg, J., Sundbom, M., & Bodén, R. (2017). Suicide, self-harm, and depression after gastric bypass surgery: a nationwide cohort study. *Annals of surgery*, 265(2), 235-243.

Malaysia, M. O. H., & Kerajaan, P. P. (2011). *Ministry of Health Malaysia*. Psychiatric and mental health services operational policy

Myhren, H., Tøien, K., Ekeberg, Ø., Karlsson, S., Sandvik, L., & Stokland, O. (2009). Patients' memory and psychological distress after ICU stay compared with expectations of the relatives. *Intensive care medicine*, 35(12), 2078.

OBrien, L. V., Berry, H. L., & Hogan, A. (2012). The structure of psychological life satisfaction: insights from farmers and a general community sample in Australia. *BMC public health*, 12(1), 976.

Number of surgical procedures per 100,000 population (n.d.). *The World Bank*. Retrieved November 12, 2017, from https://data.worldbank.org/indicator/SH.SGR.PROC.P5\

Pinto, A., Faiz, O., Davis, R., Almoudaris, A., & Vincent, C. (2016). Surgical complications and their impact on patients' psychosocial well-being: a systematic review and meta-analysis. *BMJ open*, 6(2), e007224.

Prayson, B. E., Floden, D. P., Ferguson, L., Kim, K. H., Jehi, L., & Busch, R. M. (2017). Effects of surgical side and site on psychological symptoms following epilepsy surgery in adults. *Epilepsy & Behavior*, 68, 108-114.

Rosenstiel, A. K., & Keefe, F. J. (1983). The use of coping strategies in chronic low back pain patients: relationship to patient characteristics and current adjustment. *Pain*, 17(1), 33-44.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological monographs: General and applied*, 80(1), 1.

Roth, R. S., Lowery, J. C., Davis, J., & Wilkins, E. G. (2007). Psychological factors predict patient satisfaction with post-mastectomy breast reconstruction. *Plastic and reconstructive surgery*, 119(7), 2008-2015.

Schroeder, M. O. (2016). Depression Can Threaten Recovery After a Heart Attack. *U.S. News Health*. Retrieved October 4, 2017, from https://health.usnews.com/health-news/patient advice/articles/2016-02-25/depression-can-threaten-recovery-after-a-heart-attack

Sedlak, B., Lorenc, Z., Majewski, E.,

Krawczyk, W., & Kowalska, M. (2016). Quality of life and level of anxiety in patients after gallbladder surgery. *Journal of Surgery Jurnaul de chirurgie*, 12, 13-8.

Sharma, S. (2012). The highs and lows of bariatric surgery. *Hindustan Times.* Retrieved October 04, 2017, from https://www.hindustantimes.com/columns/the-highs-and-lows-of-bariatric-surgery/story-OmVC6h0YiKMLM8QcQCuzNI.html

Silva, S. M., Crespo, C., & Canavarro, M. C. (2012). Pathways for psychological adjustment in breast cancer: A longitudinal study on coping strategies and posttraumatic growth. Psychology & health, 27(11), 1323-1341

Sorensen, E. A., & Wang, F. (2009). Social support, depression, functional status, and gender differences in older adults undergoing first-time coronary artery bypass graft surgery. *Heart & Lung: The Journal of Acute and Critical Care*, 38(4), 306-317.

Stoll, C., Schelling, G., Goetz, A. E., Kilger, E., Bayer, A., Kapfhammer, H. P., & Peter, K. (2000). Health-related quality of life and post-traumatic stress disorder in patients after cardiac surgery and intensive care treatment. *The Journal of thoracic and cardiovascular surgery*, 120(3), 505-512.

Szabo, L. (2015). Cost of not caring: Stigma set in stone. *USA Today*. Retrieved October 04, 2017, from https://www.usatoday.com/story/news/nation/2014/06/25/stigma-of-mental-illness/9875351/

Székely, A., Balog, P., Benkö, E., Breuer, T., Székely, J., Kertai, M. D., & Thayer, J. F. (2007). Anxiety predicts mortality and morbidity after coronary artery and valve surgery—a 4-year follow-up study. *Psychosomatic medicine*, 69(7), 625-631.

Trevizan, F. B., Miyazaki, M. C. D. O. S., Silva, Y. L. W., & Roque, C. M. W. (2017). Quality of Life, Depression, Anxiety and Coping Strategies after Heart Transplantation. *Brazilian journal of cardiovascular surgery*, 32(3), 162-170.

Tully, P. J., & Baker, R. A. (2012). Depression, anxiety, and cardiac morbidity outcomes after coronary artery bypass surgery: a contemporary and practical review. *Journal of geriatric cardiology:* JGC, 9(2), 197.

Verdonck- de Leeuw, I. M., Eerenstein, S. E., Van der Linden, M. H., Kuik, D. J., de Bree, R., & Leemans, C. R. (2007). Distress in spouses and patients after treatment for head and neck cancer. *The Laryngoscope*, 117(2), 238-241.

Weiser, T. G., Haynes, A. B., Molina, G., Lipsitz, S. R., Esquivel, M. M., Uribe-Leitz, T., & Gawandeb, A. A. (2016). Size and distribution of the global volume of surgery in 2012. World Health Organization. *Bulletin of the World Health Organization*, 94(3), 201.