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Orthopedic Surgeries: Review of Psychological Effect Pre and Post-Surgical Treatments

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ABSTRACT

Patient satisfaction with treatment is an important outcome measure and is associated with increased adherence to that treatment. The role of psychological factors with regard to successful surgical outcomes has been highlighted previously. This is orthopedic literature for the psychological traits that are relevant to surgical outcomes as well as an overview of options for psychologically optimizing a patient for surgery and ways to address problems encountered in the postoperative period in pandemic or non-pandemic before. A literature review was conducted in the electronic database PubMed using the keywords "Psychological", and "Orthopedic Surgeries". All type of studies were included for this study, such as controlled trials, systematic reviews, literature reviews, and pilot studies published between 2015 and 2021. Articles which not written in English were excluded from the study. This search resulted in 6 papers. All of the papers discuss the psychological effect on pre and post-surgical treatment. Satisfaction with surgery was closely associated with physical function and anxiety before surgery. Our analysis provides low levels of evidence supporting the use of psychological interventions, particularly with regard to anxiety and mental components of quality of life. Pre-operative anxiety, depression and low self-efficacy are consistently associated with worse physiological surgical outcomes and quality of life. However, there is currently insufficient evidence to be sure that pre-operative psychological interventions are of benefit, or which interventions are most effective.

1. Introduction

Nowadays, orthopedic surgeries still remain patients who are dissatisfied, even these procedures are largely beneficial overall. According to the Australian National Joint Registry, the number of total hip arthroplasties (THA) per year has increased by 96.2%, and total knee arthroplasties (TKA) by 101.5% since 2003.¹ Between 7% and 15% of THA patients⁵ and approximately 20% of TKA patients are dissatisfied post-operatively. With the increasing number of procedures, the burden of patients with poor outcomes will also continue to increase. This in turn impacts the cost-effectiveness and clinical impact

of these procedures. It is possible that psychological factors such as the patient's anxiety level and catastrophic thinking which negatively captures pain experience in addition to depression may also be affect the surgical outcomes. The evaluation and pre-operative optimisation of comorbidities is increasingly recognised as an important element of the pre-operative pathway. Classically, these efforts have focused on physical comorbidities such as diabetes and anaemia, and optimization of diet and physical activity/exercise. However, evidence suggests that psychological factors have an impact on both

physiological and psychological surgical outcomes in both the short and long term. Although Taiwan has achieved successful results in limiting the spread of COVID-19, the comprehensive epidemic prevention strategy has seriously affected its economy (Shih C et al, 2021). Moreover, before entering hospitals, everyone had to visit outdoor quarantine stations, and have their overseas travel history checked and updated on the National Health Insurance card.¹⁻⁵

Elective orthopedic surgeries are symptom relief or a return to a high level of function, the surgeon is frequently required to conduct a careful preoperative assessment to determine whether a given patient is an appropriate surgical candidate. In addition to a basic determination of morbidity and mortality risk, the surgeon must consider how much surgery is likely to benefit the patient compared with nonsurgical management. Many factors, including current symptoms, anticipated lifestyle demands, and identification of a correctable physiologic deficit, are used to synthesize a general impression of whether a given patient will have a satisfactory surgical outcome. However, mental health challenges such as making impossible decisions and working under extreme pressures are expected to be faced by frontline healthcare workers who are directly involved in the care of COVID-19 patients.³⁻⁶

2. Methods

This review was reported in accordance with PRISMA guidelines. A pre-established search strategy and protocol, registered with the International Prospective Register of Systematic Reviews. The papers was searched in the electronic database PubMed using the keyword “Psychological”, and “Orthopedic Surgeries”. All type of studies were included for this study, such as controlled trials, systematic reviews, literature reviews, and pilot studies published between 2015 and 2021. Articles which not written in English were excluded from the study.

3. Results and Discussion

According to Felice et al (2019), A total of 19 studies met the inclusion criteria (n = 1893 patients). Meta-analyses were performed for pain, anxiety and quality of life. Analysis did not find enough evidence to confirm reduction in post-operative pain (seven studies, 666 patients; $g = -0.15$ (95% CI-0.42, 0.13), $P = 0.305$). Pooled data from six studies on acute post-operative anxiety (589 patients) showed a moderate statistically significant benefit ($g = -0.26$ (-0.49, -0.03), $P = 0.024$). There was an improved quality of life (mental component) at longer term follow-up ($g = 0.25$ (0.02, 0.49), $P = 0.034$).¹

According to Khai Cheong Wong (2020), The average age of the population was 40 years with 45 (72.6%) female participants and with the majority race being Chinese (33.9%). Other races include Malay, Indian, Sikh, Javanese, Boyanese, and Pakistani. 62.9% of the study population were married with 96.8% living with family. Most participants (45.2%) were patient service associates, with the remaining made up of healthcare assistants (6.5%), nurses (21.0%), technicians (4.8%), and doctors (22.6%). The average number of years in their current vocation was 10.7 years, and they work an average of 8.5 h per day.³

In the preoperative psychological evaluation, the average total PCS and PASS-20 scores were higher in patients than in healthy people. Preoperatively, patients in this cohort showed evidence of high pain catastrophizing, anxiety, and fear. The expectation VAS was average of patients planning to receive an operation.²

Among the 17,039 outpatients analyzed, 7308 visited during the study period (43%) and 9731 during the control period (57%). The number of outpatients reduced by 29% and 20% in March and April 2020, respectively, compared with that in the control period. Among the 2541 hospital admissions analyzed, 1032 occurred during the study period (41%) and 1509 during the control period (60%). The number of patients reduced by 27% and 37% in March and April 2020, respectively, compared with that in the control period. Among the analyzed 619 patients who

underwent all types of surgery, 261 did so during the study period (42%) and 358 during the control period (58%). The number of patients reduced by 35% and 18% in March and April 2020, respectively, compared with that in the control period.⁴

Psychological factors are involved in the initiation, maintenance, and deterioration of symptoms in patients with low back pain. Therefore, evaluation of psychological factors may be helpful in the diagnosis and treatment of patients with low back pain. There is no relationships between patient satisfaction, as measured by the two questions about their satisfaction and whether they would undertake the surgery again, and depressive status. both the VAS scores for the questions about the patient's satisfaction with surgery and whether the patient would undertake the same surgery again were influenced by pre-operative anxiety. People who are strong anxiety were reluctant to undergo the same surgery again and led to a decrease in satisfaction. Severe anxiety might decrease patient satisfaction with surgery. This suggests that acknowledging the patient's anxiety and about pain, and possibly modifying the pain before surgery, may help the patient to feel more secure about the surgery. It was found that there is a tendency to be reluctant to undergo the same operation again if the tendency to catastrophizing for pain or magnification the pain (Overreact to pain) is high. Preoperative factors in orthopedics, including psychological factors, have been researched to a lesser degree. In the spinal surgery literature, psychology is well established as a predictor of outcome. As the pre-operative psychological state is acknowledged to impact post-operative outcomes, the impact of preoperative interventions is of interest, even the main finding from this study is that increased stressors are not only found in healthcare personnel working in intensive care units or the emergency department. As people were afraid of being infected with COVID-19 in hospitals, these factors reduced their willingness to visit hospitals for non-acute diseases. This could explain why the number of outpatients reduced

significantly. This may have had a stronger effect on orthopedic surgery admissions at the university hospital than that at the community teaching hospital. Moreover, the reduction in the number of patients who underwent all types of surgery at the university hospital was significantly larger than that at the community hospital. However, the reduction in the total number of hospital admissions at the university hospital was not greater than that at the community hospital. These findings suggest that the pandemic may have had a more serious impact on scheduled surgeries at the university hospital than it did at the community hospital.¹⁻⁶

However, the quality of evidence was low, with a high risk of bias in the majority of studies. It is clear that there is a need for further prospective well-controlled trials to evaluate pre-operative psychological interventions. In particular, baseline evaluation of psychological state, including anxiety and depression and self-efficacy levels, is important, as is the use of standardized physiological and psychological outcomes. Rehabilitation following major orthopedic surgery is a daunting, time-intensive task, and satisfactory orthopedic outcomes are often contingent on good rehabilitation compliance and effort. Perhaps not surprisingly, a consistent relationship has been demonstrated between psychological traits, such as self-confidence, optimism, and motivation to recover from injury, and orthopedic surgical outcomes.¹⁻⁶

4. Conclusion

Pre-operative anxiety, depression, and low self-efficacy are consistently associated with worse physiological surgical outcomes and quality of life. However, there is currently insufficient evidence to be sure that pre-operative psychological interventions are of benefit, or which interventions are most effective.

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