

Is Religiosity a Good Predictor of Psychological Health in Patients Undergoing Major Lower Limb Amputations?

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Conflict-of-interest statement: The author(s) declare(s) that there is no conflict of interest regarding the publication of this paper.

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Received: February 5, 2020

Revised: April 16, 2020

Accepted: April 22 2020

Published online: April 28, 2020

ABSTRACT

INTRODUCTION: Major lower limb amputation has a huge psychological impact on the patient and has been a concern to treating surgeons. Like with all other medical conditions, prevention is better than cure. Thereby it is of uttermost importance to identify susceptible individuals and early referral to the relevant department to minimize the suffering of these individuals. The aim of this study is to determine if religiosity is associated with psychological health in

individuals undergoing major lower limb amputation.

MATERIALS AND METHODS: This is a single centre prospective cross sectional observational study involving fifty patients seen in the outpatient department who has undergone a major lower limb amputation (above knee or below knee amputation) in the past two years. They were assessed based on Depression Anxiety Stress Scale-21 (DASS- 21), Rosenberg Self Esteem Scale and The Duke University Religion Index (DUREL).

RESULTS: Final results show that there is a significant difference between the intrinsic religiosity (IR) component of DUREL with the depression (P-value 0.001) and anxiety (P-value 0.011) component of DASS. A collective data from this study shows that these individuals suffers more from anxiety rather than depression, stress or low self- esteem. This information is an important aspect to look into, as relevant parties can do the necessary to reduce the anxiety faced by these individuals.

CONCLUSION: The conclusion from this study suggest that individuals with low intrinsic religiosity are more likely to suffer from depression and anxiety following a major lower limb amputation.

Key Words: Major lower limb amputation, psychological health, religiosity

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Charles PT Ang, Shukrimi A, Ramli M, Kumar RK, Zamzuri Z. Is Religiosity a Good Predictor of Psychological Health in Patients Undergoing Major Lower Limb Amputations? *International Journal of Orthopaedics* 2020; 7(2): 1252-1255 Available from: URL: <http://www.ghrnet.org/index.php/ijo/article/view/2795>

INTRODUCTION

The prevalence of major lower limb amputation is on the rise, even among the young. This issue if not properly addressed may have a huge impact on the growth of the country as these individuals tend to be unproductive and becomes a burden in terms of socioeconomic growth of the country. The psychological health of these individuals

is one important aspect to look into for these patients. This study is thereby designed to determine if religiosity is associated with psychological health in individuals undergoing major lower limb amputation.

To date no such study on the relation of religiosity to psychological health in individuals undergoing major lower limb amputation, prompting the author to conduct this pilot study. The treatment for individuals requiring a major lower limb amputation doesn't stop after the amputation. Their psychological health is one important aspect to look at following the amputation. It is of utter importance for the primary treating team to identify these susceptible individuals and intervene early to reduce the suffering faced. Religiosity have long been associated with the psychological health of an individual.

An epidemiological study on four cities in the United Kingdom reported 5-26.2 per 100 00 individual undergo an amputation per year. This numbers increases with age^[1]. Significant physical and psychological sequel results following a major limb amputation^[2]. Depression, anxiety, self- esteem and body image were among the psychological effects stipulated to be associated with major amputation^[3].

In the past, depression and anxiety were predicted to remain high for up to ten years following a major lower limb amputation. However with the advancement in rehabilitation, new coping technique, improved patient independence and mobility, this duration have been significantly reduced^[4]. Another study found that the incidence of depression and anxiety remains high for up to two years post amputation^[5]. Phantom limb pain associated with amputations was found to significantly affect the individual's self- esteem and the amputation itself affects their body image^[6]. Several studies have found that following a major lower limb amputation, the intensity of phantom limb pain, coping, cognition, social environment and functioning are good psychological predictor to long term adjustment^[7-9].

Religion has played a vital role in the psychological health of many individuals. To date there is no study that evaluate the relation between religiosity with the psychological health in patients that has undergone a major lower limb amputation. By looking in this area, religiosity can be used as a predictor for patients undergoing major lower limb amputation and can help detect individuals that are more likely to have a poorer outcome following major lower limb amputations. By identifying these individuals early allows early intervention and thereby improving the outcome.

MATERIAL AND METHOD

This is a single centre prospective cross sectional observational study involving fifty patients seen in the rehabilitation outpatient department from 1st May 2019 until 31st August 2019, that has undergone a lower limb major amputation (above knee or below knee amputation) in the past two years. After obtaining voluntary participation and consent they were given a set of questionnaire consisting of the Depression Anxiety Stress Scale- 21 (DASS- 21), Rosenberg Self Esteem Scale and The Duke University Religion Index (DUREL). The results was then evaluated based on the objective of this study and analyzed with SPSS v22.

The inclusion criteria were (1) All individuals that has undergone a major lower limb amputation (above knee or below knee amputation) within the past 24 months. (2) Only Malaysian citizen will be selected. Exclusion criteria includes (1) Individuals that has underlying mental health disorder. (2) Individuals that have undergone the amputation beyond 24months.

The Depression anxiety stress scale (DASS) is a set of three scales

created to measure the negative emotional states of depression, anxiety and stress. Subjects are asked to use 4-point severity scale to rate each state that they experience over the past week. Scores for Depression, Anxiety and Stress are calculated by summing the scores of each individual category. DASS interpretation is divided into three groups, depression, anxiety, stress and five categories, normal, mild, moderate, severe, extremely severe. For the depression group, a score of 0-9 is normal, 10-13 indicates mild depression, 14-20 indicates moderate depression, 21-27 severe depression and scores above 28 indicates extremely severe depression. For the anxiety group, a score of 0-7 is normal, 8-9 indicates mild anxiety, 10-14 indicates moderate anxiety, 15-19 indicates severe anxiety and scores above 20 indicates extremely severe anxiety. For the stress group, a score of 0- 14 is normal, 15-18 indicates mild stress, 19-25 indicates moderate stress, 26- 33 indicates severe stress and scores above 34 indicates extremely severe stress.

The Rosenberg self- esteem scale is a 10-item scale that measures self-worth by measuring both positive and negative feelings about one's self. All items are answered using a 4-point Likert scale format ranging from strongly agree to strongly disagree. Higher score means higher self esteem.

The Duke University religion index (DUREL) questionnaire is a five-item measure of religious involvement. It assesses the three major dimensions of religiosity, organizational religious activity (ORA), non-organizational religious activity (NORA), and intrinsic religiosity (IR). The DUREL measures each of these dimensions by a separate "sub-scale". Each sub-scale score should be evaluated independently in separate regression models when examining their relationships to health outcomes.

All these 3 sets of questionnaires (DASS, Rosenberg and DUREL) have been validated in both English and Malay language^[10].

For easy interpretation of the results the DASS and Rosenberg scores have been each divided into just two categories in this study. Those with normal and mild depression (score of 13 and below), anxiety (score of 9 and below), and stress (score of 18 and below) was categorized as "No Depression", "No Anxiety" and "No Stress" respectively. Those with moderate to extremely severe depression (score of 14 and above), anxiety (score of 10 and above) and stress (score of 19 and above) was categorized as "Depress", "Anxious" and "Stress" respectively. Likewise the Rosenberg was also divided into two category, those with score of 29 and below was categorized as "Low Self- Esteem" and those with score of 30 and above was categorized as "High Self- Esteem".

Statistics

The raw data was collected and processed accordingly. The collected data was recorded and analyzed using Statistical Packages for Social Science [SPSS][®] version 22.0 software. Demographic characteristic was analyzed descriptively. Non-parametric test is used to analysis organizational religious activity (ORA), non-organizational religious activity (NORA), and intrinsic religiosity (IR) against the outcome. The statistical analysis was done using independent t-test. *P* value < 0.05 is considered significant.

The Principal investigator in this study has obtained the Good Clinical Practice (GCP) certificate by National Committee for Clinical Research, Ministry of Health Malaysia. Investigator has also obtained ethical approval from the National Medical Research and Ethics Committee (MREC) of the ministry of health (MOH), Malaysia via the National Medical Research Registry (NMRR). All responses are confidential, documents are kept in locked locker and respondents are allowed to refuse to participate in the study at any time if they are not keen.

RESULTS

The mean age of the volunteering participants is 49.92. Seventy percent of our subjects reported their household income to be below RM 3000. Seven had the amputation as a sequel of trauma and forty three resulted from non traumatic causes (Table 1). Of the forty three non traumatic causes, thirty nine was caused by diabetic foot ulcer, three caused by peripheral vascular disease and the remaining one was due to malignancy (Table 2). Nineteen out of the fifty participants was found to be depressed, twenty seven out of the fifty participants was found to be anxious, nine out of the fifty participants was stressed and nine out of the fifty participants was found to have low self- esteem following the amputation (Figure 1).

When comparing each sub- scale of DUREL against depression, anxiety, stress and self- esteem. Organizational religious activity (ORA) against depression yields a P-value of 0.152 (not significant) with a median of 4.00 and interquartile range of 2. Non- organizational religious activity (NORA) against depression P-value 0.884 (not significant), median 4.00 and interquartile range of 2. Intrinsic religiosity (IR) against depression P-value 0.001 (significant), median 12.00 and interquartile range of 4 (Table 3).

ORA against anxiety P-value 0.056 (not significant), median 4.00 and interquartile range 2. NORA against anxiety P-value 0.746 (not significant), median 4.00 and interquartile range 1. IR against anxiety P-value 0.011 (significant), median 13.00, interquartile range 3 (Table 3).

ORA against stress P-value 0.960 (not significant), median 4.00, interquartile range 3. NORA against stress P-value 0.766 (not significant), median 4.00, interquartile range 4. IR against stress P-value 0.602 (not significant), median 14.00, interquartile range 6 (Table 3).

ORA against self- esteem P-value 0.502 (not significant), median 5.00, interquartile range 1. NORA against self- esteem P-value 0.331 (not significant), median 5.00, interquartile range 2. IR against self- esteem P-value 0.201 (not significant), median 14.00, interquartile range 1 (Table 3).

DISCUSSION AND CONCLUSION

Majority of these patients are from the low socio- economic status with 12% reporting a monthly household income of RM1000 and below, 22% reports income of RM 1001 to RM 2000, 36% reports income of RM 2001 to RM 3000, 18% reports income of RM 3001 to RM 4000, 4% reports income of RM 4001 to RM 5000 and 8% reports income of RM 5001 and above. These patients however are deemed to have fairly good family support as majority claims to always have a caretaker to assist them with their daily activities. 14% of these amputations occur as a sequel of trauma and 86% is caused by a non- traumatic cause. Among the non- traumatic causes, 90.7% was caused by diabetic foot ulcer, 7% due to peripheral vascular disease and 2.3% due to malignancy. This data have remain fairly similar over the past twenty years and is of concern as one may expect the care of diabetic foot ulcer to improve over the past twenty years and thereby the rate of amputation as a complication of diabetic foot ulcer to reduce accordingly, this however is not reflected in this statistical data.

A high percentage of these patients suffers from anxiety (54%) as compared to depression (38%), stress (18%) or low self- esteem (18%). This piece of information is important and steps must be taken to help reduce the anxiety faced by them.

Only the intrinsic religiosity component of DUREL significantly affects depression and anxiety in these individuals. Stress and self- esteem are not affected by intrinsic religiosity. As for the ORA and NORA component of DUREL, both does not affect depression, anxi-

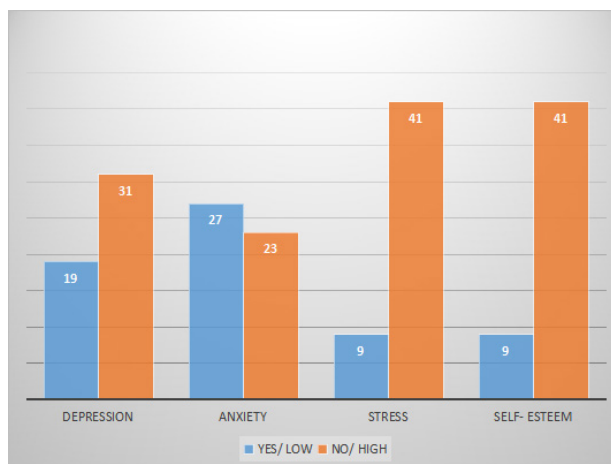


Figure 1 Statistical chart of participant’s psychological outcome.

Table 1 Demographic data of participants.

	Number	Percentage (%)	Total
Age			
10 to 20	6	12	50
21 to 30	3	6	
31 to 40	5	10	
41 to 50	5	10	
51 to 60	13	26	
61 to 70	18	36	
Household Income (RM)			
1000 and below	6	12	50
1001 to 2000	11	22	
2001 to 3000	18	36	
3001 to 4000	9	18	
4001 to 5000	2	4	
5001 and above	4	8	
Cause of Amputation			
Traumatic	7	14	50
Non- traumatic	43	86	

Table 2 Causes of non- traumatic amputation.

	Number	Percentage (%)	Total
Diabetic foot ulcer	39	90.7	43
Peripheral vascular disease	3	7	
Malignancy	1	2.3	

ety, stress nor self- esteem in these individuals. Thereby it may be important to assess the intrinsic religiosity score of these individuals during their hospitalization or during their first outpatient follow up following the amputation. Early referral for further evaluation should the individual scores a low intrinsic religiosity score. The intrinsic religiosity questionnaire is a simple three question questionnaire, less tedious and patients may be more open to answer the intrinsic religiosity score at that point of time rather than the long and tedious DASS questionnaire.

The limitation to this study is that there is no baseline assessment to the psychological health (DASS score) of these individuals prior to the amputation. This limitation however is difficult to overcome as it is hard to predict which individual will end up with a major lower limb amputation to obtain their baseline assessment. An assessment can be obtained inpatient just prior to the amputation, however their

Table 3 Results of each component of DUREL against the psychological outcome.

Null Hypothesis	P- Value	Decision
The distribution of ORA is the same across categories of depression	0.152	Retain the null hypothesis
The distribution of NORA is the same across categories of depression	0.884	Retain the null hypothesis
The distribution of IR is the same across categories of depression	0.001	Reject the null hypothesis
The distribution of ORA is the same across categories of anxiety	0.056	Retain the null hypothesis
The distribution of NORA is the same across categories of anxiety	0.746	Retain the null hypothesis
The distribution of IR is the same across categories of anxiety	0.011	Reject the null hypothesis
The distribution of ORA is the same across categories of stress	0.96	Retain the null hypothesis
The distribution of NORA is the same across categories of stress	0.766	Retain the null hypothesis
The distribution of IR is the same across categories of stress	0.602	Retain the null hypothesis
The distribution of ORA is the same across categories of self- esteem	0.502	Retain the null hypothesis
The distribution of NORA is the same across categories of self- esteem	0.331	Retain the null hypothesis
The distribution of IR is the same across categories of self- esteem	0.201	Retain the null hypothesis

psychological health is most likely to be affected already due to the hospitalization, multiple debridement and the fact that they require an amputation.

In conclusion, from this study it suggest that individuals with low intrinsic religiosity are more likely to suffer from depression and anxiety following a major lower limb amputation. A larger scale study involving multiple centers should be conducted to have a better picture if intrinsic religiosity is a good predictor to the development of depression and anxiety in individuals undergoing a major lower limb amputation.

ACKNOWLEDGEMENT

The authors would like to thank the participants for volunteering to participate and consented to the publication of this study. The authors would also like to thank Ms Lim Bee Chiu for assisting in the statistical analysis and interpretation of the data.

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