THE PSYCHOLOGICAL IMPACT OF FACIAL TRAUMA

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Ahmad Rizal Bin Abdul Hamid

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ABSTRAK

Pengenalan: Luka pada bahagian muka adalah antara kecederaan yang kerap dihadapi oleh pakar bedah plastik dan rekonstruktif . Luka yang sembuh akan meninggalkan parut dan boleh mengubah rupa paras seseorang malah berkemungkinan boleh memberikan impak psikologi terhadap individu tersebut. Kajian ini bertujuan untuk menilai impak psikologi akibat dari kecederaan pada bahagian muka yang meninggalkan parut dan sama ada terdapat hubungan antara penilaian parut oleh pesakit dan impak psikologi yang dihadapi.

Metodologi: Ini adalah satu kajian *cross-sectional* yang melibatkan pesakit yang dimasukkan ke Hospital Universiti Sains Malaysia dan Hospital Kuala Lumpur yang telah mengalami luka pada bahagian muka dan memerlukan intervensi pembedahan oleh Jabatan Bedah Plastik dan Rekonstruktif. *Hospital Anxiety and Depression Scale (HADS)* versi Bahasa Melayu digunakan untuk menilai aspek psikologi pesakit. *Patient and Observer Scar Assessment Scale* digunakan untuk menilai parut muka yang melibatkan penilaian parut oleh pemerhati dan juga pesakit.

Keputusan: Kajian ini melibatkan jumlah pesakit seramai 63 orang. Purata umur pesakit adalah 26 tahun dengan kebanyakan dari mereka berumur antara 18 hingga 40 tahun. Terdapat peratusan lebih tinggi pesakit lelaki (n=40, 63.5%) Pesakit Melayu menunjukkan jumlah paling ramai, sebanyak 90.5% dari populasi kajian ini dengan penyebab utama kecederaan adalah disebabkan oleh kemalangan jalan raya (87.3%). Purata panjang parut pada bahagian muka sepanjang 4.68 sentimeter. Untuk penilaian psikologi, 17.4% pesakit menunjukkan tahap kecemasan ringan ke sedang sebanyak dan

sebnayak 20.7% pesakit dengan tahap kemurungan ringan ke sedang. Nilai min penilaian parut pesakit adalah 25.14(SD 13.06) manakala untuk penilaian parut oleh pemerhati adalah 20.38(SD 9.31). Pesakit juga mempunyai nilai penilaian parut keseluruhan yang lebih tinggi dibandingkan dengan pemerhati di mana nilai min untuk pesakit adalah 5.59 (SD 2.79) dan pemerhati 3.67 (SD 1.78). Penilaian parut keseluruhan antara pesakit dan pemerhati tidak mempunyai nilai korelasi statistik yang signifikan ($r=0.234$, $n=63$, $p=0.065$). Korelasi antara skor kecemasan dan skor penilaian parut pesakit mempunyai nilai statistik signifikan yang lemah ($r = 0.257$, $n=63$, $p< 0.05$). Korelasi antara skala kemurungan dan penilaian parut pesakit juga mempunyai nilai statistik yang signifikan yang lemah ($r= 0.278$, $n=63$, $p< 0.05$).

Kesimpulan: Kajian in menunjukkan luka parut kecil pada muka boleh mengakibatkan efek psikologi dalam bentuk kecemasan dan kemurungan ringan hingga sedang pada satu-per lima pesakit dalam kajian ini. Penilaian parut oleh pesakit dan penilaian parut keseluruhan menunjukkan terdapat skor yang lebih buruk dibandingkan dengan pemerhati untuk kedua-dua parameter. Kajian kami juga menunjukkan terdapat korelasi lemah antara kecemasan dan kemurungan dengan penilaian parut oleh pesakit berdasarkan analisis statistik yang dilakukan. Sebagai rumusan, adalah penting untuk melibatkan saringan psikologi dan juga mengambil tahu input pesakit terhadap parut mereka untuk mengenal pasti pesakit yang berisiko untuk mengalami efek psikologi. Pengesanan awal boleh membantu dalam memberikan rawatan optimum untuk kualiti kehidupan yang lebih baik.

ABSTRACT

Introduction: Facial wounds are among the common injuries dealt by plastic and reconstructive surgeons. A healed wound will leave a scar which may alter the facial appearance of an individual dan could possibly have a psychological impact on the individual. This study aims to assess the psychological impact as a result of traumatic facial scars and determine the correlation between subjective patient assessment of their scars and their psychological status.

Methodology: This is a cross-sectional study involving patients admitted to Hospital Universiti Sains Malaysia and Hospital Kuala Lumpur who had sustained facial injuries and underwent surgical intervention by the Plastic and Reconstructive Surgery Department. The Malay version of the Hospital Anxiety and Depression Scale (HADS) was used to assess the psychological aspects of patient. The Patient and Observer Scar Assessment Scale (POSAS) was used to assess the facial scar which consisted of and observer and patient rated scar severity component.

Results: This study involved 63 patients. The mean age of patients was 26 years old with the majority of patients in the age group of 18 to 40 years old. There was a higher percentage of male patients (n=40, 63.5%). Malay patients were the most predominant group, accounting for 90.5% of the study population with main aetiology of injury was caused by road traffic accidents (87.3%). The mean scar length over the face measured 4.68 centimetres (cm). For psychological assessment, 17.4% of patients showed to have mild to moderate levels of anxiety while 20.7% of patients showed mild to moderate levels of depressive symptoms. Mean scar rating severity for patients was 25.14 (SD

13.06) while observer rated scar severity was 20.38 (SD 9.31). Patients also had a higher overall scar opinion as compared to the observer in which the mean score for patient overall scar opinion was 5.59 (SD 2.79) and observer 3.67(SD 1.78). There was no statistically significant correlation between the patient and observer overall scar opinion ($r=0.234$, $n=63$, $p=0.065$). There was statistically significant but weak correlation between anxiety score and patient rated scar severity score ($r = 0.257$, $n=63$, $p< 0.05$). There was statistically significant but weak correlation between the depression score and the patient rated scar severity score ($r= 0.278$, $n=63$, $p< 0.05$).

Conclusion: This study indicates minor facial trauma patients developed mild to moderate psychological effects in the form of anxiety and depression in one-fifth of the study population. Patient rated scar severity and patient overall opinion of the scar was shown to have higher scores compared to the observer rating for both parameters. Our study also suggests that there is a weak correlation between anxiety and depressive symptoms and self-reported facial scar severity based on the results of the statistical analysis. Therefore, it is important to incorporate a psychological screening as well as to take into account the patients input on their scar to identify any possible patients at risk of psychological distress. Early detection may help in providing optimal treatment for a better quality of life.

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Facial trauma may result from any physical injury to the face. Injuries may range from simple lacerations to extensive soft issue injuries or facial bone fractures resulting in scarring or facial disfigurement. The face being an aesthetic concern results in facial trauma cases being frequently referred to plastic and reconstructive surgeons for initial repair and subsequent scar management. A healed wound may leave a non-visible or visible scar which may alter the facial appearance of an individual. In addition, individuals may look upon their scar or disfigurement differently to others based on their own perception of the scar. This could therefore possibly leave a psychological effect on the individual due to appearance concerns and the unique functional importance of the face in social interaction.

Studies in this field have shown mixed results on the effect of facial trauma on an individual's psychological state. Tebble et. al have shown that even such minor injuries may act as a powerful trigger for psychological symptoms. (Tebble *et al.*, 2006). Rahtz et al suggested facial injury does not carry a psychological burden, instead psychological process in individuals with high level of appearance concern plays a stronger role compared to physical changes (Rahtz *et al.*, 2018) . Several other previous studies have also reported that patients with acquired facial trauma were more likely to report symptoms of depression, anxiety and hostility when compared to matched normal control group for a period of up to 1 year post trauma (Bisson, Shepherd and Dhutia, 1997).

Studies on facial trauma in the Malaysian population meanwhile have largely emphasized on descriptive studies on the distribution ,pattern and type of injury instead of its psychological impact. (Hussaini *et al.*, 2007; Rahman *et al.*, 2007, 2010; Nordin *et al.*, 2015) . These local studies have shown that young adults have the highest rate of maxillofacial trauma therefore puts them as the most vulnerable group of patients with a potential of suffering from psychological distress. Psychological assessment is not incorporated or may be overlooked in our practice due to the lack of knowledge and awareness in this field as we are more inclined to address the aesthetic aspect of the resulting scar and its treatment. By exploring the psychological aspect of facial trauma, we may open up a new dimension for research and gain knowledge on the impact of facial trauma in the Malaysian population.

Scar assessment is an important aspect of our patient care, especially for scars which involve the facial region. The patient and observer scar assessment scale (POSAS) was developed and published by Draaijers et. al in 2004 and subsequently modified to develop POSASv2.0 by Van de Kar et al.(Draaijers *et al.*, 2004; van de Kar *et al.*, 2005) This scale gave an extra dimension compared to other scar scales present then and also currently by adding a patient component which allows the patient to rate their scar severity. This scale has shown to have good internal consistency and reliability and is suitable to be used on either linear or burn scars. (Draaijers *et al.*, 2004; van de Kar *et al.*, 2005). Previous studies have shown that patient-rated scar severity or disfigurement is related to psychosocial distress, however these studies did not use a validated scar assessment tool that was developed for patient and observer, thus giving us a knowledge gap to explore in this field.(Brown *et al.*, 2010; Rahtz *et al.*, 2018).

To our knowledge, previous research has not used a patient-reported scar severity measure, which might be relevant in measuring its relation to anxiety and depressive symptoms facial trauma patients. This leaves a gap of knowledge that can be explored further on the subject with the implementation of this study. Therefore, the aim of this study is to investigate the psychological impact of facial trauma in the form of anxiety and depression and to assess correlation between patient reported scar severity measure and psychological effects of facial trauma. This study has been approved by the Human Research Ethics Committee USM (USM/JEPeM/18080375) and Medical Research and Ethics Committee, Ministry of Health of Malaysia (NMRR-18-3063-40976).

CHAPTER 2

OBJECTIVES OF STUDY

2.1 GENERAL OBJECTIVE

To evaluate the psychological impact of anxiety and depression in individuals who sustain facial trauma which result in facial scarring in Hospital Universiti Sains Malaysia and Hospital Kuala Lumpur.

2.2 SPECIFIC OBJECTIVES

2.2.1 To determine the proportion of anxiety and depression in facial trauma among facial trauma patients based on the Hospital Anxiety and Depression Scale (HADS)

2.2.2 To determine the scar quality severity rating of facial trauma patients based on the Patient and Observer Scar Assessment Scale (POSAS)

2.2.3 To determine the correlation between anxiety and depression score based on the Hospital Anxiety and Depression Scale (HADS) and patient scar quality score based on the Patient and Observer Scar Assessment Scale (POSAS)

CHAPTER 3

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3.2 ABSTRACT

Introduction: Facial wounds are among the common injuries dealt by plastic and reconstructive surgeons. A healed wound will leave a scar which may alter the facial appearance of an individual and may have a psychological effect on the individual. This study aims to assess the psychological effect as a result of facial traumatic scars and determine the correlation between subjective patient assessment of their scars and their psychological status.

Methodology: This is a cross-sectional study involving patients admitted to Hospital Universiti Sains Malaysia and Hospital Kuala Lumpur who had sustained facial injuries and underwent surgical intervention by the Plastic and Reconstructive Surgery Department.

Results: The mean age of patients was 26 years old with the majority of patients in the age group of 18 to 40 years old. There was a higher percentage of male patients (63.5%) enrolled in this study due to the traumatic nature of the injuries in which the majority of injuries were due to road traffic accidents (87.3%). The mean scar length over the face sustained in patients measured 4.68 cm (SD 2.26). For psychological assessment, the majority of patients did not display any evidence of anxiety and depression. A minority of patients accounting for 17.4% of patients showed to have mild to moderate levels of anxiety while 20.7% of patients showed mild to moderate levels of depressive symptoms. Patients also scored worse scar rating compared to observers, in which patients scored higher 25.14 (SD 13.06) as compared to observers 20.38 (SD 9.31). Patients also showed a poorer overall scar opinion as compared to the observer. There was no statistically

significant correlation between the patient and observer overall scar opinion (r=0.234, n=63, p=0.065). There was statistically significant but weak correlation between anxiety score and patient rated scar severity score (r = 0.257, n=63, p< 0.05). There was statistically significant but weak correlation between the depression score and the patient rated scar severity score (r= 0.278, n=63, p< 0.05).

Conclusion: This study indicates minor facial trauma patients developed mild to moderate psychological effects in the form of anxiety and depression in one-fifth of the study population. Patient rated scar severity and overall opinion of the scar was shown to have higher scores compared to the observer rating for both parameters. Our study also suggests there is a weak correlation between anxiety and depressive symptoms and self-reported facial scar severity. Therefore, it is important to incorporate a psychological screening as well as to take into account the patients input on their scar to identify any possible patients at risk of psychological distress. Early detection may help in providing optimal treatment for a better quality of life.

3.3 HIGHLIGHTS

1. Minor facial injury may lead to psychological effects in the form of mild to moderate levels of anxiety and depression in a minority of patients.
2. Facial trauma patients show a higher rating of patient rated scar severity and poorer overall scar opinion in comparison to observer rating.
3. In this study, there is a weak correlation between patient rated scar severity of their traumatic facial scars with their level of anxiety and depression.

3.4 INTRODUCTION

Facial trauma may result from any physical injury to the face. Injuries may range from simple lacerations to extensive soft issue injuries or facial bone fractures resulting in scarring or facial disfigurement. The face being an aesthetic concern results in cases being frequently referred to plastic surgeons for initial repair and subsequent scar management. A healed wound may leave a non-visible or visible scar which may alter the facial appearance of an individual. This could possibly have a psychological effect on the individual due to the unique functional importance of the face in social interaction.

Studies in this field have shown mixed results on the effect of facial trauma on an individual's psychological state. Tebble et. al have shown that even such minor injuries may act as a powerful trigger for psychological symptoms. (Tebble *et al.*, 2006). Rahtz et al suggested facial injury does not carry a psychological burden, instead psychological process in individuals with high level of appearance concern plays a stronger role compared to physical changes (Rahtz *et al.*, 2018) . Other previous studies have also reported that patients with acquired facial trauma were more likely to report symptoms of depression, anxiety and hostility when compared to matched normal control group for a period of up to 1 year post trauma (Bisson, Shepherd and Dhutia, 1997).

Studies on facial trauma in the Malaysian population meanwhile have largely emphasized on descriptive studies on the pattern of injuries as compared to its psychological impact. (Hussaini *et al.*, 2007; Rahman *et al.*, 2007, 2010; Nordin *et al.*, 2015) Psychological assessment is not incorporated in our practice due to the lack of knowledge and awareness in this field as we are more focused and concerned on the

aesthetic value of the resulting scar and its treatment. Scar assessment is an important part of our patient care, especially for scars which involve the facial region. The patient and observer scar assessment scale (POSAS) was developed and published by Draaijers et. al in 2004 and subsequently modified to develop POSASv2.0 by Van de Kar et al.(Draaijers *et al.*, 2004; van de Kar *et al.*, 2005) This scale gave an extra dimension compared to other scar scales at the time by adding a patient component which allows the patient to rate their scar severity. This scale has shown to have good internal consistency and reliability and is suitable to be used on either linear or burn scars. (Draaijers *et al.*, 2004; van de Kar *et al.*, 2005). Previous studies have shown that patient-rated scar severity or disfigurement is related to psychosocial distress, however these studies did not use a validated scar assessment tool that was developed for patient and observer, thus giving us a knowledge gap to explore in this field.(Brown *et al.*, 2010; Rahtz *et al.*, 2018).

To our knowledge, previous research has not used a patient-reported scar severity measure, which might be relevant in measuring its relation to anxiety and depressive symptoms facial trauma patients. This leaves a gap of knowledge that can be explored further on the subject with the implementation of this study. Understanding the relationship between scar severity with anxiety and depressive symptoms with facial trauma may be crucial to the identification of patients at risk and therefore may assist in clinical practice to improve patient care and treatment. This study has been approved by the Human Research Ethics Committee USM (USM/JEPeM/18080375) and Medical Research and Ethics Committee, Ministry of Health of Malaysia (NMRR-18-3063-40976).

3.5 MATERIALS AND METHODS

This is a cross-sectional study involving patients referred to the Plastic and Reconstructive Surgery Department of Hospital Universiti Sains Malaysia and Hospital Kuala Lumpur between 2018 and 2019. Patients with traumatic facial scars between ages 18 to 55 years old were included in this study. Patients with known diagnosed psychiatric illness, diabetes mellitus, on corticosteroid treatment and facial trauma resulting in facial bone fractures and facial nerve injuries were excluded from this study. Patients with underlying diabetes mellitus, and on ongoing corticosteroid treatment were not included as these factors could cause alteration in the wound healing process. Patients with facial bone fractures may result in contour deformities of the face, while those with facial nerve injuries may result in facial asymmetry and this have an effect of the overall psychological scoring and scar assessment. Patients seen during their routine follow-up clinic date or were identified through electronic and manual database and contacted to schedule for an appointment in our clinic. The study was conducted on a voluntary basis and informed consent were obtained from all respondents who agreed to take part in the study. Epidemiological data, information on mechanism of injury, insurance coverage during trauma, type of facial injury and scar length were recorded. A one-time assessment was performed by answering the Hospital Anxiety and Depression Scale (HADS) and the Patient and Observer Scar Assessment Scale (POSAS) questionnaire administered by the principal investigator. The primary investigator was the only assessor for the POSAS observer scale to reduce any discrepancies between measurements of scar properties and is well versed in the management of facial lacerations and scars.

Research Tools

Hospital Anxiety and Depression Scale (HADS)- Malay version

The Hospital Anxiety and Depression Scale (HADS) was originally designed by Zigmond and Snaith in 1983 to measure affective status independent of physical symptoms .(Zigmond and Snaith, 1983) The HADS scale has been widely used as a screening instrument for anxiety and depression and studies have found it to be a robust and effective screening tool.(Bjelland *et al.*, 2002). The HADS consists of two separate subscales for anxiety and depression, with seven items on each subscale. Each item is scored on a 4-point Likert scale from 0 to 3, with the result of a scale score that may range from 0 to 21 for each subscale. The HADS has been translated and validated into the Malay language and is used in this study.(Othman, 2015). The interpretation of the HADS-Malay version scores can be as follows : 0-7 (normal), 8-10 (mild), 11-14 (moderate) and 15-21(severe).(Yusoff, Low and Yip, 2011)

Patient and Observer Scar Assessment Scale (POSAS)

The first publication on the POSAS (Version 1.0) was in 2004 by Draaijers et al.(Draaijers *et al.*, 2004) With one extra item for the Observer Scale and minor textual modifications POSAS v2.0 was tested on linear scars and published in 2005 by Van de Kar et al.(van de Kar *et al.*, 2005) This POSAS scale consist of an observer component and a patient component. The patient and observer assesses the scar on six-different characteristics. Both patient and observer use a numerical 10-point scale in which 1 represents a scar comparable with 'normal skin' while 10 represents the 'worst scar imaginable'. The patient assesses the scar on pain, pruritus, colour, thickness, surface roughness and

pliability. The observer assesses the scar based on vascularity, pigmentation, thickness, relief, pliability and surface area. The total score for each assessor. The sum of all questions will bring to a score for each observer and patient between 10 to 60 with a higher value indicating a worst scar. However, the is no categorical grouping to interpret this scale. The total score for each observer and patient will be presented as a mean score. This scale has shown to have good internal consistency and reliability and is suitable to be used on either linear or burn scars. (Draaijers *et al.*, 2004; van de Kar *et al.*, 2005). The POSAS was chosen to be used in this study instead of other available scar scales is due to the availability of a patient rating component which are not available in other scales such as the Vancouver Scar Scale (VSS), Visual Analog Scale, Manchester Scar Scale or the Stony Brook Scar Evaluation Scale. Currently, there is no validated Malay language translation of the POSAS. The patient scale questionnaire was translated with backward forward translation by a linguistic and bilingual person. After translation, a face validation was conducted to 10 respondents which consisted of patients with non-facial trauma scars who agreed to participate. We did not detect any ambiguity of words, misinterpretation of questionnaires and any sensitive question. The observer scale did not require translation as it is understood by the primary investigator.

3.6 RESULTS

The mean age of patients was 26 years old. Majority of patients were in the age group of 18 to 25 years old. There was a higher percentage of male patients (63.5%) compared to female patients (36.5%). In relation to ethnic groups, Malay patients were shown to be the most predominant group, accounting for 90.5% of the study population.

The main aetiology of injury was caused by road traffic accidents (87.3%). The majority of patients did not have any health insurance coverage during the incident, which accounted for 77.8% of the study population. On the other hand, at least one third of the patients were employed (69.8%), while students accounted for 14.3% and the unemployed 15.9%. 63.5% of patients were reported to be single. The mean scar length over the face measured 4.68 cm (SD 2.26).

For the assessment of the psychological effect of facial trauma, 11 patients (17.4%) showed mild to moderate degree of anxiety while 13 patients (20.7%) showed mild to moderate degree of depression levels. Scar assessment was based on the sum of six scar characteristics for each patient and observer with a total score for each assessor ranging between 6 to of 60 based on the POSAS which were presented as mean scores. Patients rated their scars more severe as compared to the observers. Patient rated scar severity mean score was 25.14 (SD 13.06) and the observer rated scar severity mean score of 20.38 (SD 9.31). Patients also rated their overall scar more poorly compared to the observer with a mean score of 5.59 (SD 2.79) as compared to the observer with a mean score of 3.67 (SD 1.78). There was no statistically significant correlation between the patient and observer overall scar opinion ($r=0.234$, $n=63$, $p=0.065$)

The Pearson's correlation test was run to determine the relationship between anxiety and depression with the patient rated scar severity. The relationship was statistically significant but weakly correlated between anxiety and patient rated scar severity ($r = 0.257$, $n=63$, $p= 0.042$). There was also weak correlation between depression score and the patient rated scar severity ($r= 0.278$, $n=63$, $p=0.027$). There was no correlation between patient overall opinion of the scar with anxiety ($r=0.206$, $n=63$,

p=0.105) and depression (r=0.04, n=63, p= 0.753). However, it could be seen that females rated their scars more severe as compared to males, and their overall scar opinion was worse compared to the male counterparts.

3.7 DISCUSSION

Facial trauma encompasses a wide spectrum of injuries, from minor lacerations to major facial injuries resulting in facial fractures, facial nerve injuries and amputation among others. In this study, we only included patients with minor injuries who only sustained facial lacerations and only require toilet and suturing of the wounds. Major facial trauma patients included those who sustained degloving injuries of the face, facial amputations, facial bone fractures or facial nerve injuries were beyond the scope of this study. Scar quality is an important outcome in injuries affecting the face as healed wounds may be visible or non-visible thus assessments are usually performed to guide treatment decisions. Scar quality assessment can be performed by a variety of tools, either objectively or subjectively. In our practice, scar assessment can be performed by assessing the characteristics of the scar clinically which can be done by using currently available scar scales such as the Vancouver Scar Scale (VSS), Manchester Scar Scale (MSS) or the Patient and Observer Scar Assessment Scale (POSAS).(Fearmonti *et al.*, 2010)

The commonest facial soft tissue injuries sustained in this study was due to road traffic accidents (RTA) which accounted for 87.3% of the study sample. A study by Nordin et.al showed that maxillofacial injuries are one of the most common injuries among RTA cases in Malaysia in which 68.9% of injuries were due to soft tissue injuries

to the face alone followed by dento-alveolar injury and facial fractures.(Nordin *et al.*, 2015). Due to the nature of injuries which were mostly traumatic in nature from road traffic accidents, the patients were mostly composed of men. Demographically, young Malay men between the age of 18-25 years old consisted of the most patient with facial injuries.

Our analysis on anxiety and depression in this group of patients showed 17.4% of the patients were suggestive of having mild to moderate levels of anxiety. For depression subscale, 20.7% of patients were suggestive of having mild to moderate levels of depressive symptoms. The figures in our study yielded pretty similar results with studies conducted in the United Kingdom and Australia in which cases of anxiety were between 15 % to 20% and depression between 11.5% to 20%. (Islam, Ahmed, Gary M. Walton, *et al.*, 2010; Islam *et al.*, 2012) These studies used the Hospital Anxiety and Depression by Zigmond & Snaith,(Zigmond and Snaith, 1983) however did not reveal if facial injuries sustained were minor or major injuries. A study by Tebble et.al suggested that minor facial scars may have a significant psychological impact on some people and based on our findings we can agree that there is some mild to moderate degree psychological effects related to traumatic facial scars .(Tebble *et al.*, 2006) It is also worth noting, the female patients did show higher anxiety and depression mean scores compared the male patients even though not significantly. This finding is consistent with other similar studies which shows female tend to have higher anxiety and depression scores following facial injury.(Islam, Ahmed, Gary M Walton, *et al.*, 2010) There may be a difference in the psychological and emotional process or the interpretation of traumatic events which puts the female gender more at risk to have psychological effect. In this study, patients who

were screened to have any degree of anxiety or depression were given an option of a referral to an appropriate healthcare specialty for further consultation if they agreed to it.

To our knowledge, this study is the first that assessed the possible correlation between patient-rated facial scar severity in relation to anxiety and depressive symptoms in people with facial trauma. Studies have shown significant correlation between patients self-perception of facial disfigurement with appearance, anxiety and depression.(Islam, Ahmed, Gary M Walton, *et al.*, 2010; Rahtz *et al.*, 2018). However, the scales utilized which were not as comprehensive as the POSAS score which allows the patient to identify specific scar characteristics. The POSAS scores in this study shows that patients rated their scar worse as compared to the observer. In the overall scar opinion section, patient's opinion of the scars was also worse compared to the observers, however there was no statistically significant correlation between patient and observer scores.

In a society which emphasizes on beauty and aesthetics, females in particular may have a more negative perception of their scar as they have been shown to have more concerns about their physical appearance as compared to men. (Harris and Carr, 2001) In our study we did not explore the appearance concerns, however we found that females rated their scars more poorly and showed poorer overall scar opinion compared to the male patients. This coupled with higher anxiety and depression scores among females shows the effects of facial trauma may not be the same between genders. Despite this study only involved patients with minor facial lacerations, we can probably predict females may have worse outcomes when it involves major facial trauma.

We set out to determine if anxiety and depression is associated with poor patient rated scar severity. However, when tested statistically, results showed weak correlation between the psychological effects and how patients rated their scar. By using the Pearson's correlation test, correlation between anxiety and patient self -rated scar severity was weak ($r = 0.278$, $n=63$, $p = 0.027$). The correlation between patient self-rated scar severity with depression was also significant but weak ($r = 0.257$, $n=63$, $p< 0.042$). Studies have shown there is significant correlation between patients self-perception of facial disfigurement and psychological distress.(Islam, Ahmed, Gary M. Walton, *et al.*, 2010; Rahtz *et al.*, 2018) However, we could argue that the previous studies did not use a validated scar assessment scale to assess the correlation thus making it difficult make a comparison between the results.

We encountered a few obstacles in conducting this study. Firstly, currently there is no Malay language translation of the Patient and Observer Scar Assessment Scale (POSAS). The patient scale questionnaire required translation and was translated with backward forward translation by a linguistic and bilingual person. The observer scale was not translated as there was no problem for the observer to understand the English language. After translation, a face validation was conducted to 10 respondents which consisted patients with non-facial trauma scars who agreed to participate. Any issues pertaining to the questionnaire was rectified before using the finalized version after approval by the ethical committee.

The number of participants recruited was also lower than expected for several reason. We lost around 70 potential patients due to difficulty in contacting patients as the registered phone numbers were no longer in use especially in Kelantan. A large majority

of patients also defaulted their follow-up one-week post-trauma for suture removal and subsequent follow-ups. Other reasons given were that they were not interested in enrolling in the study as the scar has healed well thus did not deem it troublesome. The majority of the subjects were Malays meant we were unable to assess the heterogeneity of responses between ethnic groups. A future study with bigger size of samples should be conducted to give a better overall picture to analyse the psychological impact of facial trauma in the Malaysian population.

3.8 CONCLUSION

This study indicates minor facial trauma patients developed mild to moderate psychological effects in the form of anxiety and depression in one-fifth of the study population. Patient rated scar severity and patient overall opinion of the scar was shown to have higher scores compared to the observer rating for both parameters. Our study also suggests there is a weak correlation between of anxiety and depressive symptoms and self-reported facial scar severity based on the results of the statistical analysis. Therefore, it is important to incorporate a psychological screening as well as to taking into account the patients input on their scar to identify any possible patients at risk of psychological distress. Early detection may help in providing optimal treatment for a better quality of life.

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3.11 TABLES AND FIGURES

Table 1 Baseline characteristics of the study sample (n=63)

Variable	Number (n)	Percentage (%)
Age (years)	Mean 25.98, range (18-46)	-
Age group		
18-25 years	32	50.8
26-40 years	29	46.0
>40 years	2	3.2
Gender		
Male	40	63.5
Female	23	36.5
Race		
Malay	57	90.5
Indian	5	7.9
Chinese	0	0
Others	1	1.6
Employment		
Employed	44	69.8
Student	9	14.3
Unemployed	10	15.9
Marital Status		
Married	22	34.9
Single	41	65.1
Mechanism of injury		
Road Traffic Accident	55	87.3
Assault	1	1.6
Sports	2	3.2
Industrial (workplace)	4	6.3