

**BODY IMAGE PERCEPTION IN NON-SYNDROMIC  
CLEFT LIP AND PALATE**

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## Abstrak

**Pengenalan:** Kecacatan sumbing bibir dan langit (CL/P) adalah dinamik dari segi rupa dan fungsi serta merangkumi pelbagai bidang perubatan. Walau usaha yang terbaik diberi bagi memulihkan kecacatan CL/P, impak psikososial, terutamanya imej sendiri dan keyakinan diri jarang diatasi secara berkala di dalam model rawatan pelbagai rawatan yang tipikal. Kajian ini bertujuan untuk menilai persepsi imej sendiri dan korelasinya dengan harga diri di kalangan pesakit CL/P yang telah menjalani rawatan lengkap bagi kecacatan utama sumbing bibir dan langit.

**Metodologi:** Kajian *cross-sectional* ini melibatkan pesakit CL/P yang telah menjalani rawatan lengkap bagi kecacatan utama di Hospital Kuala Lumpur dan Hospital Universiti Sains Malaysia. Versi sah dan dalam terjemahan bahasa Melayu soal-selidik *Body Image Disturbance Questionnaire* dan *Rosenberg Self-Esteem Scale* digunakan dalam kajian ini. Bergantung kepada corak taburan data, analisa *Pearson's correlation* atau *Spearman's rank order* digunakan untuk mengira korelasi antara markah soal selidik, manakala analisis varians *ANOVA* atau ujian *Kruskal-Wallis H* berserta ujian *post-hoc Dunn-Bonferroni* digunakan untuk membandingkan perbezaan markah antara subkumpulan.

**Keputusan:** Kajian ini meliputi 109 peserta yang terdiri daripada 78% (n=85) Melayu, 13.5% (n=15) Cina, 7.3% (n=8) India dan 0.9% (n=1) lain-lain. 63.3% (n=69) adalah wanita dan 36.5% (n=40) adalah lelaki. Purata umur peserta adalah 22.8 tahun (SP 5.8). Purata markah BIDQ peserta adalah 2.0 (SP 0.79), manakala purata markah RSES peserta adalah 16.8 (SP 3.18). Kekejasan imej sendiri adalah tidak berbeza apabila dibandingkan diantara jenis CL/P ( $P>0.01$ ). Terdapat korelasi negatif diantara kekejasan imej sendiri

dan harga diri ( $P < 0.01$ ). Peserta yang melaporkan kecacatan hidung dan bibir mempunyai purata markah BIDQ yang lebih tinggi berbanding dengan peserta yang lain ( $P < 0.1$ ).

Kesimpulan: Kajian ini menunjukkan terdapat kejejasan imej sendiri di kalangan pesakit CL/P, dan kejejasan tersebut tidak berbeza apabila dibandingkan di antara pelbagai jenis CL/P. Imej sendiri mempunyai korelasi negatif sederhana dengan harga diri. Kecacatan sekunder hidung dan bibir akibat CL/P adalah punca umum kejejasan imej sendiri. Walaupun kejejasan imej sendiri di kalangan pesakit CL/P adalah tidak ketara untuk memerlukan penilaian psikologi rutin, pesakit seharusnya ditawarkan khidmat kaunseling atau dipertimbangkan penilaian psikologi semasa dalam tempoh perawatan. Impak penyakit CL/P dari perspektif psikososial perlu dipertimbangkan semasa keputusan dibuat bagi melanjutkan rawatan pembedahan pembetulan di penghujung protokol rawatan.

Abstract:

Introduction: Cleft lip and palate (CL/P) poses a dynamic anatomical and functional challenges that spans across multiple medical disciplines. While best effort is put in restoring normal appearance and function, the psychosocial impact of CL/P, specifically towards body image and self-esteem is not routinely addressed in the typical multi-disciplinary team approach. This study aims to assess the body image perception and its correlation to self-esteem in patients with CLP who has completed treatment for their primary deformities.

Methodology: Non-syndromic CL/P patients who have completed treatment for primary deformities fulfilling the study criteria were invited to participate in the study. Malay-language translated and validated version of the Body Image Disturbance Questionnaire (BIDQ) and the Rosenberg Self-Esteem Scale (RSES) were used for this study. Based on distribution pattern of data gathered, Pearson's correlation or Spearman's rank-order analysis were utilised to correlate between mean scores of the tools, meanwhile differences between subgroups were evaluated using the one-way analysis of variance or Kruskal-Wallis H test with post-hoc Dunn-Bonferroni test.

Result: There were 109 participants in this study comprising of 78% (n=85) Malays, 13.5% (n=15) Chinese, 7.3% (n=8) Indian and 0.9% (n=1) indigenous. Females made up 63.3% (n=69) of the participants while the remainder 36.5% (n=40) were males. The average age of participants were 22.8 years old (SD 5.8). The mean BIDQ score of the participants was 2.0 (SD 0.79), while the mean RSES score of the participants was 16.8 (SD 3.18). There was no statistically significant difference in the mean BIDQ scores between participants with different types of CL/P ( $P>0.01$ ). There was a moderate,

negative correlation between body image dissatisfaction and self-esteem ( $P < 0.01$ ). Participants who cited nose and lips deformities had higher body image dissatisfaction scores ( $P < 0.1$ ) than other participants.

Conclusion: This study demonstrated the presence of body image dissatisfaction among patients with CL/P, and the degree of dissatisfaction does not differ between types of CL/P. There is a moderate, negative correlation between body image dissatisfaction and self-esteem. Secondary nasal and lip deformity are the common cause of body image dissatisfaction in patients with CL/P. While the degree of dissatisfaction does not warrant a routine psychological assessment, patients with CL/P should be offered counselling or considered for psychological assessment while under treatment for CL/P. The psychosocial perspective of the impact of CL/P must be considered during decision making for further corrective surgery during advanced stage of treatment protocol.

# **CHAPTER 1**

## **INTRODUCTION**

While the prevalence varies between populations around the world, cleft lip and palate (CL/P) is still regarded as one of the commonest forms of congenital deformities. The reported incidence ranges from 0.3 to 1.64 for every 1000 live births(1,2). With a multiracial population of 32.66 million and growth rate of 1.1%(3), the incidence of CL/P in Malaysia is reported between 1.24 to 1.56 per 1000 births(4), forming a sizable portion of the population.

CL/P poses a dynamic anatomical and functional challenges as the bearer age to adulthood. The most obvious deformity presents immediately after birth as an incomplete fusion of the upper lip, alveolus or the palate, along with the associated distortion of the nose and maxilla. The anatomical deformities cause difficulties in feeding and speech due to the absence of separation between the nasal and oral cavity. As a child with CL/P undergoes treatment, the impact of CL/P becomes less obvious. Advances in surgical techniques have allowed cleft surgeons to achieve a near-normal anatomical and functional outcome, it is still not well understood as to whether the psychological burden of CL/P is concomitantly relieved with a successful surgical outcome. Furthermore, secondary cleft deformities – deformities following repair of initial defects such as lip notching, collapsed columella, hooding of alar and hypoplastic maxilla, among others, may present too subtly to warrant surgical correction, however, could have as comparable psychological impact as with an obvious deformity. In the race to achieve the best cosmetic and functional outcome, the psychological impact of CL/P has been put to a lesser priority in cleft care and this is evident by the absence of routine psychological assessments in most multi-disciplinary team protocols(5,6).

As CL/P affects the most obvious cosmetic unit of the face, namely the lip and the nose, as well as the base where it sits at – the maxilla, it is without reasonable doubt that the condition would affect the body image of the bearer(7). Body image is a multidimensional construct consisting of, among others, body shape perception, bodyweight satisfaction, size perception accuracy and appearance satisfaction(8). It is best described as a multifaceted psychological experience of embodiment, especially but not exclusively physical appearance and is recognised as one of the domains of psychosociology(9). Dissatisfaction or a negative body image may lead to psychological distress, including anxiety, depression and low self-esteem(8).

The first study on body image perception in CL/P was published in 1963(9), however, due to the rapidly evolving definition of body image compounded by a wide variety of assessment tools, the limited amount of available literature has demonstrated conflicting results. Brantley and Clifford(10) and Marcusson (2002a)(11) reported that patients with CLP are generally satisfied with their body image. However, when the focus is set upon specific anatomical features related to CL/P, studies demonstrated some level of dissatisfaction among patients (11,12).

While there are no reports on body image perception in the Malaysian population of CL/P patients, there were studies on its overall psychosocial impact. Self-esteem was found to be negatively affected in Malaysian population of CL/P patients, along with behaviour and school performance. Teasing by peers was found to be the main attribute to poor self-esteem(13–15).

With an interest to provide holistic care to CL/P patients, this study aims to assess the body image perception among patients with CL/P, to determine the correlation between the types of CL/P and perception of body image and the correlation between body image perception and self-esteem in CL/P patients. We also aim to determine the most significant secondary deformity of CL/P that contributes to body image dissatisfaction. Participants recruited into this study consists of non-syndromic CL/P patients who has completed treatment for their primary defect and under follow-up at the Reconstructive Sciences Unit, Hospital Universiti Sains Malaysia as well as with the Department of Plastic and Reconstructive Surgery, Hospital Kuala Lumpur. Ethical approval was obtained from the Medical Research and Ethics Committee, Ministry of Health Malaysia (NMRR-19-2154-49201 IIR) as well as from the Human Research Ethics Committee, Universiti Sains Malaysia (USM/JEPeM/19070434).

## **CHAPTER 2**

### **OBJECTIVES OF STUDY**

## **2.1 GENERAL OBJECTIVE**

To study the body image perception among patients with CLP and its effect on self-esteem as well as secondary cleft deformity contributing to body image perception.

## **2.2 SPECIFIC OBJECTIVE**

- 2.2.1 To determine the correlation between body image dissatisfaction and self-esteem in CLP patients
- 2.2.2 To compare the degree of body image dissatisfaction between types of CL/P
- 2.2.3 To determine the most significant secondary deformity of CLP contributing to body image dissatisfaction

## **CHAPTER 3**

## **MANUSCRIPT**

## **TITLE PAGE**

### **TITLE: BODY IMAGE PERCEPTION IN NON-SYNDROMIC CLEFT LIP AND PALATE**

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### 3.2 ABSTRACT

**Introduction:** Cleft lip and palate (CL/P) poses a dynamic anatomical and functional challenges that spans across multiple medical disciplines. While best effort is put in restoring normal appearance and function, the psychosocial impact of CL/P, specifically towards body image and self-esteem is not routinely addressed in the typical multi-disciplinary team approach. This study aims to assess the body image perception and its correlation to self-esteem in patients with CLP who has completed treatment for their primary deformities.

**Methodology:** Non-syndromic CL/P patients who have completed treatment for primary deformities fulfilling the study criteria were invited to participate in the study. Malay-language translated and validated version of the Body Image Disturbance Questionnaire (BIDQ) and the Rosenberg Self-Esteem Scale (RSES) were used for this study. Based on distribution pattern of data gathered, Pearson's correlation or Spearman's rank-order analysis were utilised to correlate between mean scores of the tools, meanwhile differences between subgroups were evaluated using the one-way analysis of variance or Kruskal-Wallis H test with post-hoc Dunn-Bonferroni test.

**Result:** There were 109 participants in this study comprising of 78% (n=85) Malays, 13.5% (n=15) Chinese, 7.3% (n=8) Indian and 0.9% (n=1) indigenous. Females made up 63.3% (n=69) of the participants while the remainder 36.5% (n=40) were males. The average age of participants was 22.8 years old (SD 5.8). The mean BIDQ score of the participants was 2.0 (SD 0.79), while the mean RSES score of the participants was 16.8 (SD 3.18). There was no statistically significant difference in the mean BIDQ scores

between participants with different types of CL/P ( $P>0.01$ ). There was a moderate, negative correlation between body image dissatisfaction and self-esteem ( $P<0.01$ ). Participants who cited nose and lips deformities had higher body image dissatisfaction scores ( $P<0.1$ ) than other participants.

**Conclusion:** This study demonstrated the presence of body image dissatisfaction among patients with CL/P, and the degree of dissatisfaction does not differ between types of CL/P. There is a moderate, negative correlation between body image dissatisfaction and self-esteem. Secondary nasal and lip deformity are the common cause of body image dissatisfaction in patients with CL/P. While the degree of dissatisfaction does not warrant a routine psychological assessment, patients with CL/P should be offered counselling or considered for psychological assessment while under treatment for CL/P. The psychosocial perspective of the impact of CL/P must be considered during decision making for further corrective surgery during advanced stage of treatment protocol.

### **3.3 HIGHLIGHTS**

1. There is a degree of body image dissatisfaction among patients with cleft lip and palate.
2. The severity of body image dissatisfaction does not differ between patients with different types of cleft lip and palate.
3. There is a negative, moderate correlation between body image dissatisfaction and self-esteem.
4. CL/P related deformities are the major contributing factor in body image dissatisfaction among patients with cleft lip and palate.

### 3.4 INTRODUCTION

While the prevalence varies between populations around the world, cleft lip and palate (CL/P) is still regarded as one of the commonest forms of congenital deformities. The reported incidence ranges from 0.3 to 1.64 for every 1000 live births(1,2). With a multiracial population of 32.66 million and growth rate of 1.1%(3), the incidence of CL/P in Malaysia is reported between 1.24 to 1.56 per 1000 births(4), forming a sizable portion of the population.

CL/P poses a dynamic anatomical and functional challenges as the bearer age to adulthood. The most obvious deformity presents immediately after birth as an incomplete fusion of the upper lip, alveolus or the palate, along with the associated distortion of the nose and maxilla. The anatomical deformities cause difficulties in feeding and speech due to the absence of separation between the nasal and oral cavity. As a child with CL/P undergoes treatment, the impact of CL/P becomes less obvious. Advances in surgical techniques have allowed cleft surgeons to achieve a near-normal anatomical and functional outcome, it is still not well understood as to whether the psychological burden of CL/P is concomitantly relieved with a successful surgical outcome. Furthermore, secondary cleft deformities – deformities following repair of initial defects such as lip notching, collapsed columella, hooding of alar and hypoplastic maxilla, among others, may present too subtly to warrant surgical correction, however, could have as comparable psychological impact as with an obvious deformity. In the race to achieve the best cosmetic and functional outcome, the psychological impact of CL/P has been put to a lesser priority in cleft care and this is evident by the absence of routine psychological assessments in most multi-disciplinary team protocols(5,6).

As CL/P affects the most obvious cosmetic unit of the face, namely the lip and the nose, as well as the base where it sits at – the maxilla, it is without reasonable doubt that the condition would affect the body image of the bearer(7). Body image is a multidimensional construct consisting of, among others, body shape perception, bodyweight satisfaction, size perception accuracy and appearance satisfaction(8). It is best described as a multifaceted psychological experience of embodiment, especially but not exclusively physical appearance and is recognised as one of the domains of psychosociology(9). Dissatisfaction or a negative body image may lead to psychological distress, including anxiety, depression and low self-esteem(8).

The first study on body image perception in CL/P was published in 1963(9), however, due to the rapidly evolving definition of body image compounded by a wide variety of assessment tools, the limited amount of available literature has demonstrated conflicting results. Brantley and Clifford(10) and Marcusson (2002a)(11) reported that patients with CLP are generally satisfied with their body image. However, when the focus is set upon specific anatomical features related to CL/P, studies demonstrated some level of dissatisfaction among patients (11,12).

While there are no reports on body image perception in the Malaysian population of CL/P patients, there were studies on its overall psychosocial impact. Self-esteem was found to be negatively affected in Malaysian population of CL/P patients, along with behaviour and school performance. Teasing by peers was found to be the main attribute to poor self-esteem(13–15).

With an interest to provide holistic care to CL/P patients, this study aims to assess the body image perception among patients with CL/P, to determine the correlation between the types of CL/P and perception of body image and the correlation between body image perception and self-esteem in CL/P patients. We also aim to determine the most significant secondary deformity of CL/P that contributes to body image dissatisfaction. Participants recruited into this study consists of non-syndromic CL/P patients who has completed treatment for their primary defect and under follow-up at the Reconstructive Sciences Unit, Hospital Universiti Sains Malaysia as well as with the Department of Plastic and Reconstructive Surgery, Hospital Kuala Lumpur. Ethical approval was obtained from the Medical Research and Ethics Committee, Ministry of Health Malaysia (NMRR-19-2154-49201 IIR) as well as from the Human Research Ethics Committee, Universiti Sains Malaysia (USM/JEPeM/19070434).

### **3.5 MATERIALS AND METHODS**

This is a cross-sectional study of patients with CL/P who have completed treatment for primary defect under follow-up with the Department of Plastic and Reconstructive Surgery, Hospital Kuala Lumpur and Reconstructive Sciences Unit, Hospital Universiti Sains Malaysia. Inclusion criteria are patients with all types of CL/P aged between 13 and 45 years old. Patients whom CL/P were associated with syndromic or other craniofacial condition or are mentally challenged or unable to complete the research tool without external assistance were excluded from this study. Patients who fulfilled the study criteria were identified during their clinic visit as well as through operative records. They were then invited to participate in the study either during their routine follow-up visit or via telephone. Informed consent was obtained from patients or their legal caretaker before participation. A link to an online, self-administered questionnaire was subsequently given to participants at which demographic data, including age, race, gender, level of education and type of CL/P was recorded. Participants were then required to complete the Body Image Disturbance Questionnaire (BIDQ) and Rosenberg Self-Esteem Scale before submitting their response. As the study population comprised of wide variety of social background, participants were given a choice of English or Malay version of questionnaires to fill in.

#### **Research Tools**

##### Body Image Disturbance Questionnaire – English and Malay version

The Body Image Disturbance Questionnaire (BIDQ) was published by Thomas Cash in 2004(16) to evaluate the presence of body image disturbances and its effect in psychosocial functioning. It is internally consistent for both men and women with

Cronbach alpha of 0.89 and is relatively free of response bias. The BIDQ has a total of 7 items which is scored on a 5-point Likert scale (0 to 5). A higher mean score (maximum of 5) denotes a higher degree of body image dissatisfaction. Five of the items is followed by an open-ended question, which allows the respondent to elaborate on their initial response. This feature is particularly useful in this study as it allows participants to elaborate on which aspect of their appearance that contributes to their perception of body image, therefore serving as a tool to determine which aspect of their appearance that is most bothersome. An individual user license was obtained from the author to utilise the BIDQ for this study. Following which, translation of the original English version of BIDQ to Malay language was done by the Language Centre, Universiti Sains Malaysia Health Campus and subsequently refined by the author to accurately reflect the context of the English version. Backward translation was then performed by an independent bi-lingual language teacher. The end-product of the translation process was reviewed by the Hospital Research Review Committee, Clinical Research Centre, Hospital Kuala Lumpur. Further refinement was done following the committee review, after which, a pilot study involving 30 healthy young adults confirmed the validity and reliability of the Malay-translated BIDQ with a closely matched pre-ample score (1.69, SD 0.6) and Cronbach alpha (0.84) as the original English version.

#### Rosenberg Self-Esteem Scale – English and Malay version

The Rosenberg Self-Esteem Scale (RSES), developed by Morris Rosenberg in 1965, is a widely accepted, reliable and valid tool to measure self-esteem in sociology. It is a 10-item questionnaire, with each item scored on a 4-point Likert scale (0 to 3) with a total score of 0 to 30. A score of 15 or less indicates significantly low self-esteem. A validated

Malay version of the RSES(17) was acquired from its original author and is used along with the openly available English version.

### Data Analysis

All data were recorded in SPSS 25 software. Demographic data and the measures of the research tool (BIDQ, RSES) were analysed in a descriptive manner. Data were tested for normality, following which, the one-way analysis of variance (ANOVA) or Kruskal-Wallis H test with post-hoc Dunn-Bonferroni test were utilised to evaluate the correlation between types of CL/P and mean BIDQ scores. The correlation between concerning secondary cleft deformities and mean BIDQ scores were evaluated in similar fashion. Pearson's correlation or Spearman's rank-order analysis were utilised to evaluate the correlation between mean BIDQ score and RSES score.

### 3.6 RESULTS

A total of 109 participants with CL/P were recruited throughout the study. The mean age of the participants was 22.8 years old (SD 5.8). Females made up 63.3% (n=69) of the participants while the remainder 36.5% (n=40) were males. The ethnicities of the participants were as follows; 78% (n=85) were Malays, 13.8% (n=15) Chinese, 7.3% (n=8) Indian and 0.9% (n=1) indigenous. Majority of the participants (53.2%, n=58) completed or undergoing tertiary education, 39.4% (n=43) completed or undergoing secondary education while 7.3% (n=8) had other forms of education. Left unilateral cleft lip and palate (UCLP) was the commonest type of CL/P in the study (35.8%, n=39), followed by bilateral UCLP (31.2%, n=34) and right UCLP (12.8%, n=14). The demographics and proportions of types of CL/P are detailed in Table 1.

The mean BIDQ and RSES score were evaluated according to gender, types of CL/P and secondary cleft deformities of concern (Table 2). The mean BIDQ score for the participants was 2.0 (SD 0.79), while the mean RSES score was 16.9 (SD 3.18). Spearman's rank-order correlation was utilised to determine the relationship between the participants mean BIDQ score and RSES score (Figure 1). There was a moderate, negative correlation between the mean BIDQ score and RSES score, which was statistically significant ( $r_s = -0.426$ ,  $P < 0.01$ ,  $N = 108$ ). Participants were then grouped into unilateral CL/P, bilateral CL/P, cleft primary palate and cleft secondary palate and mean scores for BIDQ and RSES was further calculated for respective groups. Kruskal-Wallis test was conducted to examine the differences in mean BIDQ scores and RSES scores according to types of CL/P (Figure 2, 3). No significant differences in mean BIDQ scores

( $X^2 = 5.16$ ,  $P=0.16$ ,  $df = 3$ ) and RSES scores ( $X^2 = 0.741$ ,  $P=0.864$ ,  $df =3$ ) were found across unilateral CL/P, bilateral CL/P, cleft primary palate and cleft secondary palate.

Out of 109 participants, 64 (58.7%) disclosed specific secondary cleft deformities that contributed to their appearance dissatisfaction. The nose was the most commonly cited area of concern (40.4%,  $N=44$ ), followed by lip (11%,  $N=12$ ), gum (6.3%,  $N=4$ ) and scar (1.8%,  $N=2$ ). Palate and combinations of multiple areas each were cited once by the participants (0.9%). Participants were sorted according to the cited anatomical area of concerns and mean BIDQ and RSES score is calculated for the respective groups. Kruskal-Wallis test demonstrated a statistically significant difference in BIDQ score ( $X^2 = 34.1$ ,  $P<0.01$ ,  $df = 6$ ) (Figure 4) however there were no statistically significant difference in RSES score ( $X^2 = 7.4$ ,  $P=0.286$ ,  $df = 6$ ) between the groups (Figure 5). Post-hoc Dunn-Bonferoni test (Table 3) showed statistically significant mean BIDQ scores for participants who cited nose and lip when compared against the group who did not disclose any area of concerns ( $P<0.1$ ).

### **3.7 DISCUSSION**

As the mean BIDQ score of the participants of this study is greater than the reported score in healthy population(16), we have demonstrated the presence of body image dissatisfaction among patients with CL/P. This is also in agreement with report utilising the same tool on adolescents with facial clefts(18). Evaluating the cause of the body image dissatisfaction can done from two perspectives(19); the “external view”, the point which evaluate the impact of appearance via social interactions and perception (i.e., how a person reacts to one’s appearance) and by the internal point of view, which assess how appearance affects an individual’s self-concept, emotional well-being and quality of life. While evaluating internal point of view is beyond the scope of this study, it is apparent that external factors, mainly the negative social interaction with the society(13–15) plays a role in body image dissatisfaction among CL/P patients. Constant teasing may cause internalisation of poor body image which leads to duress such as seeking for mildly indicated corrective surgeries.

Contrary to other reports(20,21), this study has shown no difference in body image perception across the spectrum of CL/P severity. While considering that this finding may be due to the different assessment tools utilised, it brings us to the question of whether the social perception (external view) towards cleft deformities is indiscriminate to types of CL/P, hence negative social experience is similar across all CL/P patients of varying severity, or the internal view by the CL/P patients of their appearance plays an equally major role in body image perception.

This study has also shown a negative correlation of body image dissatisfaction with self-esteem. While the finding of low self-esteem among the study participants is in line with the majority of psychosocial studies in CL/P patients(22), there are no reports, to our knowledge, that demonstrate its correlation to body image dissatisfaction. Similar to its influence on body image perception, we hypothesised that the internalisation of negative social encounter has an equal effect on self-esteem and therefore explains the correlation.

Nasal and lip deformities were the main contributors to body image dissatisfaction among the participants in this study. This further reinforces the high aesthetic value of the nose and lips due to its central location on the face as minute deformity could draw attention towards the region as proven in an eye-tracking study(23). It is of note that none of the study participants who disclosed anatomical deformities of concern highlighted an area that is not in relevance to CL/P (i.e., body weight, body shape) despite the open-ended nature of the questionnaire item. Considering that participants who did not disclose any area of concerns have lower mean BIDQ scores, this suggests that the body image dissatisfaction observed in this study is contributed mainly by CL/P deformities.

As the degree of body image dissatisfaction among the participants in this study is relatively mild when compared to other forms of body image disorders(24), it cannot be determined if routine psychological assessments are warranted in all CL/P patients. Our recommendation for a safe practice is that all CL/P patients should at least be considered for psychological assessment or offered counselling during the course of their treatment.

The gender distribution captured in this study closely resembles to that was reported in the local population of CL/P patients(25). Females made up the majority of the local CL/P patients with two thirds in proportion as compared to one third in males. However, the proportion between race was different than was reported 30 years ago(4) as Malays made up the majority of the participants (78%), followed by Chinese (13.8%) and Indian (7.3%) in this study. This otherwise reflects the racial composition of the current Malaysian population(26). There are no current data on the prevalence of CL/P adjusted to the racial proportion in Malaysia to be compared with and therefore is a subject of high interest. Over half of the participants (53.2%) received tertiary education and a large proportion completed secondary education. This reflects on the success of the local CL/P multi-disciplinary team protocol and support groups in incorporating CL/P patients into the general society.

The functional and anatomical outcome following treatment of CL/P can be objectively assessed by observing the return of function and comparing cephalometric measurements. However, assessing the improvement of psychological burden in CL/P poses a challenge as there is no widely accepted method of assessment(27). Moreover, it is influenced by multiple factors, including cultural attitude towards clefts, socioeconomic status, education and coping mechanisms, among others(28). One cannot correlate improvement in anatomical and functional outcome (and thus appearance) with what is perceived internally by an individual. Therefore, as most treatment protocols for CL/P spans well into adulthood, having the psychosocial perspective, i.e., body image perception, may help in deciding if one requires further surgical treatment or otherwise.

Among the limitations noted in this study is the apparent bias in the sampling of subjects. Majority of the participants in this study were recruited in the last stage of their treatment regime during which they present with various forms of secondary cleft deformities. Difficulties were faced in getting hold of CL/P patients who were otherwise without any concerns relating to their condition due to changes in contact details and lost to follow-up. While the minimum calculated sample size was reached, the number of participants were far less than anticipated due to poor response rate and exclusion of a number of participants from analysis due to contradicting straight-line responses.

While addressing the limitations above, our suggestion for future study is to utilise the recently published CLEFT-Q treatment outcome assessment tool as well as other cleft care centres for comparison of local cleft care protocols and its effect on psychosocial burden of CL/P patients.

### **3.8 CONCLUSION**

This study demonstrated a degree of body image dissatisfaction among patients with CL/P, and the degree of dissatisfaction does not differ between types of CL/P. There is a moderate, negative correlation between body image dissatisfaction and self-esteem. Secondary nasal and lip deformity are the common cause of body image dissatisfaction in patients with CL/P. While the degree of dissatisfaction does not warrant a routine psychological assessment, patients with CL/P should be offered counselling or considered for psychological assessment while under treatment for CL/P. The psychosocial perspective of the impact of CL/P must be considered when deciding for further corrective surgeries during the advanced stage of treatment protocol.

### **3.9 AUTHORS CONTRIBUTION**

1. Mohamad Jeremi Jeffrey: Conceptualization, Methodology, Formal analysis, Investigation, Resources, Writing – Original Draft,
2. Ahmad Sukari Halim – Supervision, Conceptualization, Writing – Review & Editing
3. Wan Azman Wan Sulaiman – Supervision, Project administration

### 3.10 REFERENCES

1. Vanderas AP. Incidence of cleft lip, cleft palate, and cleft lip and palate among races: a review. *Cleft Palate J.* 1987;24(3):216–25.
2. Mastroiacovo P, Maraschini A, Leoncini E, Mossey P, Bower C, Castilla EE, et al. Prevalence at birth of cleft lip with or without cleft palate: Data from the International Perinatal Database of Typical Oral Clefts (IPDTC). *Cleft Palate-Craniofacial J.* 2011;48(1):66–81.
3. Department of Statistic Malaysia. Taburan penduduk dan ciri-ciri asas demografi. 2011. p. 1–134.
4. Boo N., Arshad A. A Study Of Cleft Lip And Palate In Neonates Born In A Large Malaysian Maternity Hospital Over A 2 -Year Period. *Singapore Med J.* 1990;31:59–62.
5. Oberoi S, Sinha M, Devgon D, Vargervik K. Team Care Protocols for Individuals with Cleft Lip and Palate and Modified Protocols for Developing Countries. *J Indian Orthod Soc [Internet].* 2018;52:14–22. Available from: [www.jios.in](http://www.jios.in)
6. de Ladeira PRS, Alonso N. Protocols in Cleft Lip and Palate Treatment: Systematic Review. *Plast Surg Int.* 2012;2012:1–9.
7. De Lima Ramos S, Hochman B, Gomes HC, Abla LEF, Veiga DF, Juliano Y, et al. Effect of nasal deviation on quality of life. *Plast Reconstr Surg.* 2011;128(1):132–6.
8. Bailey KA, Gammage KL, van Ingen C. How do you define body image? Exploring conceptual gaps in understandings of body image at an exercise facility. *Body Image [Internet].* 2017;23:69–79. Available from: <http://dx.doi.org/10.1016/j.bodyim.2017.08.003>

9. Cash TF. *Body Image. A Handbook of Theory, Research and Clinical Practice.* Cash TF, Pruzinsky T, editors. New York: The Guilford Press; 2011. xv.
10. Brantley HT, Clifford E. Cognitive, Self-Concept, and Body Image Measures of Normal, Cleft Palate, and Obese Adolescents. *Cleft Palate J.* 1979;
11. Marcusson A, Paulin G, Östrup L. Facial appearance in adults who had cleft lip and palate treated in childhood. *Scand J Plast Reconstr Surg Hand Surg.* 2002;36(1):16–23.
12. Tyl J, Dytrych Z, Helclová H, V S, Z M, A B. Psychic and social stress of children with cleft lip and palate. *Cesk Pediatr.* 1990;45:532–536,.
13. Khariul Bariah Chi Adam, Siti Mazlipah Ismail, Mohd Haikal Halil NAH. Psychosocial Effects of Cleft Lip and Palate Patients Aged 12 Years and Above in Malaysia. *Int J Stud Child Women, Elder Disabl.* 2018;4:150–6.
14. Yousif S, Shah A, Mirani SA, Sahito MA, Shahid D, Mirani A. Investigating Psychosocial Impact of Cleft Lip and Palate on Patients and Parents. *Pakistan Oral Dent J.* 2016;36(1):42–4.
15. Noor SFM, Musa S. Assessment of patients' level of satisfaction with cleft treatment using the cleft evaluation profile. *Cleft Palate-Craniofacial J.* 2007;44(3):292–303.
16. Cash TF, Phillips KA, Santos MT, Hrabosky JI. Measuring “negative body image”: Validation of the Body Image Disturbance Questionnaire in a nonclinical population. *Body Image.* 2004;1(4):363–72.
17. Swami V. Further Examination Of The Psychometric Properties Of A Malay Version Of The Rosenberg Self-Esteem Scale. In: Wals S De, Meszaros K, editors. *Handbook on Psychology of Self-Esteem.* Nova Science Publisher; 2011. p. 1–10.