

Demographic of orthognathic cases seen in Kulliyyah of Dentistry IIUM

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Abstract

Orthognathic treatment is a combination of orthodontics and surgery, aimed to restore functional occlusion and the facial aesthetics. KOD orthognathic team has been established since 2018. There was no published demographic profile of the orthognathic patients referred. This study aimed to enumerate the demographic data and correlations for the orthognathic cases seen in KOD, IIUM from 2018 until December 2020. A total of 28 patients were referred for consultation. One patient was excluded as no referral letter was attached. Data were obtained from patients' case notes, photos and study models. Data collected were then categorized into patients' demographic profiles, clinical features, patients' psychological status and treatment. The demographic pattern and correlations were analysed using SPSS version 25.0. Out of 27 patients, most patients were females (66.7%), Malay (55.6%) and within the age group of 21 to 30 years old (44.4%) and originated from Pahang (88%). Majority of patients presented with Class III skeletal base discrepancy (66.7%), facial asymmetry (76.0%), increased vertical dimension (51.9%), shifted chin point (83.3%), Class III incisal relationship (70.4%), reversed overjet (70.4%), reduced overbite (56.0%) and crossbite (77.7%). Significant relationships were found between skeletal base discrepancy with incisal relationship, overjet, crossbite, canine relationships and right molar relationship. 57.1% agreed to orthognathic surgery, 32.1% opted for orthodontic treatment alone whilst 10.7% refused any treatment. It is hoped that this baseline demographic data may aid in the management and resource planning for this team in the future.

Received:

15 December 2022

Revised:

3 February 2023

Accepted:

7 February 2023

Published Online:

31 July 2023

How to cite this article:

Abu Bakar, N., Amat, N. A., & Nasir, S. H. (2023). Demographic of orthognathic cases seen in Kulliyyah of Dentistry IIUM. *IIUM Journal of Orofacial and Health Sciences*, 4(2), 113–125. <https://doi.org/10.31436/ijohs.v4i2.199>

Article DOI:

<https://doi.org/10.31436/ijohs.v4i2.199>

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Keywords: *demographic, orthognathic, skeletal discrepancy*

Introduction

Orthognathic surgery has been an approach in correcting skeletal defects. Usually, in cases with mild to moderate skeletal discrepancy, orthodontic treatment is sufficient to achieve a good aesthetics and function within a balanced facial harmony. However, unlike orthodontic treatment alone, orthognathic surgery assists in correcting the underlying skeletal discrepancy directly (Raposo *et al.*, 2018).

Orthognathic treatment is effective for moderate to severe facial discrepancy, be it in the antero-posterior, vertical or transverse plane. The combination of orthognathic surgery and orthodontic treatment aids in correcting both skeletal imbalance and malocclusion with the ultimate aim of achieving acceptable facial harmony with a good functional bite (Zamboni *et al.*, 2019).

Multidisciplinary collaboration in the field of orthodontics, oral maxillofacial surgery and

psychology is essential for orthognathic treatment. For the initial consultation, the psychological health of the patient must be understood (Reyneke, 2011). A clinical psychologist evaluates (Littlewood & Mitchell, 2019):

- Patients' expectation and the ability to cope with the whole life-changing treatment process.
- Patients' underlying motives or reasons in seeking for orthognathic treatment.
- Patient who are suffering from any psychological or even psychiatric disorder who needs to be managed professionally (i.e. Body Dysmorphic Disorder).

Upon psychological evaluation, a thorough joint assessment by the orthodontist and oral maxillofacial surgeon is conducted to obtain consensus of the best possible treatment options available for patient to achieve good functional occlusion with harmonious facial esthetic (Khechoyan, 2013). Amongst the records that are taken to help achieve diagnosis and treatment planning are lateral cephalogram, panoramic radiograph, posteroanterior skull radiograph, orthodontic study models with centric bite relation of the patient.

Orthognathic surgery had started way back in the early 19th century. Over the years, numerous orthognathic surgeries had been conducted with various surgical method introduced. These include vertical ramus osteotomy, distraction osteogenesis, genioplasty and many more. Today, Le Fort 1 for maxillary procedure and bilateral sagittal split osteotomy for mandibular procedure (Bagheri *et al.*, 2011) are identified to be most widely performed osteotomies. Despite various choices of surgical procedures to choose from, the implementation of pre-surgical orthodontics and post-surgical orthodontics play a great part in the success of orthognathic surgery (Graber *et al.*, 2017). Currently, orthognathic treatment has gained its reputation and

more centers have been set up globally to offer orthognathic treatment.

There are only a few studies that indulge in the epidemiological aspect of orthognathic treatment. Studying the orthognathic treatment patients' demography could aid the health care system and for clinicians to establish optimum care for patients.

IIUM orthognathic team has been established since 2018. This establishment is to systematically cater to numerous orthognathic patients from the east coast of Malaysia, especially patients from Pahang. This joint clinic is achieved with the synchronized coordination between orthodontist, oral maxillofacial surgeon, and psychologist in IIUM. To date, there was no demographic study conducted regarding all the orthognathic cases presented in this clinic. The establishment of demographic data will further facilitate the management of this joint clinic. Therefore, this study aimed to establish the demographics and correlations for orthognathic treatment cases in Kulliyah of Dentistry (KOD), IIUM since the establishment of the joint clinic from 2018 until December 2020.

Materials and Methods

This retrospective study investigated all the orthognathic treatment cases referred, consulted, and treated by the specialists at IIUM Orthognathic Joint Clinic of Kulliyah of Dentistry, IIUM Kuantan. Ethical approval was obtained from IIUM Research Ethics Committee (Reference number: IIUM/504/14/11/2/ IREC 2021-026). A total of 28 patients were referred and listed for the orthognathic joint clinic from 2018 up until December 2020. Patients who were referred to the joint clinic were included in this study.

These data were obtained and examined from patients' case notes, photos, and study models (Table 1).

Table 1. Details of data.

Patients' Case Notes	<ul style="list-style-type: none"> Patients' details were extracted from case notes such as age, gender, locality, the progress of treatment for each patient, treatment options etc.
Patients' Photos (Extra-Oral & Intra-Oral)	<ul style="list-style-type: none"> Extra-oral photos were used to assess patients' facial deformity in terms of skeletal base relationship and soft tissue features. Intra-oral photos were used to assess patients' dentoalveolar features which were integrated with the findings from patient's study models.
Patients' Study Models	<ul style="list-style-type: none"> Study models were used to measure and assess the patients' dentoalveolar features such as overjet, overbite, crowding and others.

A calibration session between researcher who extracted the data with an orthodontic specialist was carried out, to achieve a standardized agreement on data collection. After good agreement was achieved, full data collection was done. These data were categorized into few parts. The first part recorded the demographic profile of orthognathic treatment cases seen in terms of gender, age, locality, race, and patients' motivation in seeking out treatment. The next part recorded the clinical features of orthognathic patients in relation to skeletal base relationship, soft tissue feature and dentoalveolar feature. Lastly, patients' treatment and management were noted.

The data measured and collected were analyzed using the IBM SPSS system version 25.0. Descriptive analysis was used to describe and categorize the data. Crosstabulation was also used to summarize the relationship between different variables of the categorical data. At the same time, statistical analysis was conducted using Phi Correlation Coefficient to assess the significant correlation between skeletal base discrepancies and other variables.

Results

Demographic profile of orthognathic patients

A total of 28 cases included in this research were referred and presented to IIUM orthognathic joint clinic from 2018 until December 2020. One patient was excluded as the patient refused treatment and did not handover the referral letter to the team. Therefore, the detailed data of 27 orthognathic patients were collected and presented here. Table 2 demonstrated the demographic profile of these patients. Patients' age varies from as early as 15 years old up until 42 years old. The majority of the patients were within the age group of 21 to 30 years old (44.4%). In terms of gender, 66.7% were females while the rest were male patients. Malay patients were slightly higher (55.6%) compared to Chinese patients (44.4%). There were no Indian or other ethnic groups referred to IIUM orthognathic joint clinic. With regards to the locality, most patients were from the state of Pahang except for 6 of them from Terengganu (22.0%).

Table 2. Demographic profile of orthognathic cases seen in KOD IIUM.

		Number of Respondents (n)	Percentage (%)
Age Group	0 – 20 years old	9	33.3
	21 – 30 years old	12	44.4
	31 – 40 years old	5	18.5
	40 years old & above	1	3.7
Gender	Female	18	66.7
	Male	9	33.3
Race	Malay	15	55.6
	Chinese	12	44.4
Locality	Pahang	21	77.8
	Non-Pahang	6	22.2

Clinical features of orthognathic patients

All patients were assessed in view of skeletal features, soft tissue features and dento-alveolar features. Table 3 showed that most orthognathic patients presented with Class III skeletal pattern (66.7%), increased vertical dimension (51.9%) and asymmetrical transverse dimension (76.0%). As for the soft tissue features, most of the patients had competent lips (86.4%) along with an average nasolabial angle (52.2%). 83.3% of patients had chin point deviation, of which 62.5% of them deviated to the left while 20.8% deviated to the right.

Concerning dentoalveolar features, most patients that sought or were referred for orthognathic consultation had a Class III incisal relationship (70.4%), reversed overjet (70.4%), reduced overbite (56.0%). Other than that, 77.7% of patients presented with crossbite, be it anterior crossbite, unilateral right or left posterior crossbite, bilateral posterior crossbite or a generalized crossbite. Most of the patients had mild crowding on the upper arch (57.7%) and lower arch (65.5%). Most patients had proclined upper incisors (45.5%) and retroclined lower incisors (40.0%) indicating dental compensation towards Class III skeletal base.

Table 3. Clinical features of orthognathic patients.

	Clinical Features	Number of Respondents (n)	Percentage (%)
SKELETAL FEATURES	Antero-Posterior Dimension		
	• Class I	3	11.1
	• Class II	6	22.2
	• Class III	18	66.7
	Vertical Dimension		
	• Average	9	33.3
• Increased	14	51.9	
• Reduced	4	14.8	
SKELETAL FEATURES	Transverse Dimension		
	• Symmetry	6	24.0
	• Asymmetry	19	76.0
SOFT TISSUES FEATURES	Lips Competency		
	• Competent	19	86.4
	• Incompetent	3	13.6
	Nasolabial Angle		

	<ul style="list-style-type: none"> • Average • Acute • Obtuse 	12 5 6	52.2 21.7 26.1
	Chin Midpoint <ul style="list-style-type: none"> • Coincide with facial midline • Shifted to left from facial midline • Shifted to right from facial midline 	4 15 5	16.7 62.5 20.8
DENTOALVEOLAR FEATURES	Incisal Relationship <ul style="list-style-type: none"> • Class I • Class II • Class III 	1 7 19	3.7 25.9 70.4
	Overjet <ul style="list-style-type: none"> • Average overjet • Reduced overjet • Increased overjet • Reversed overjet 	5 0 3 19	18.5 0.0 11.1 70.4
	Overbite <ul style="list-style-type: none"> • Average • Increased • Reduced 	7 4 14	28.0 16.0 56.0
	Centreline <ul style="list-style-type: none"> • Coincide with upper and lower facial midline • Not-coincide with either upper or lower facial midline 	5 21	19.2 80.8
	Crossbite <ul style="list-style-type: none"> • Absent • Anterior crossbite • Unilateral posterior crossbite • Bilateral posterior crossbite • Generalized crossbite 	6 7 3 2 9	22.2 25.9 11.1 7.4 33.3
	Upper Alignment <ul style="list-style-type: none"> • Well-aligned • Spacing • Mild crowding • Moderate crowding • Severe crowding 	1 4 15 3 3	3.8 15.4 57.7 11.5 11.5
	Upper Arch Incisors Inclination <ul style="list-style-type: none"> • Average inclination • Proclined • Retroclined 	9 10 3	40.9 45.5 13.6
	Lower Arch Alignment <ul style="list-style-type: none"> • Well-aligned • Spacing • Mild crowding • Moderate crowding • Severe crowding 	2 5 16 1 2	7.7 19.2 61.5 3.8 7.7
	Lower Arch Incisors Inclination <ul style="list-style-type: none"> • Average inclination • Proclined • Retroclined 	6 6 8	30.0 30.0 40.0

Crosstabulation between skeletal base discrepancies with other variables

Table 4 showed that most patients presented with Class III skeletal base discrepancy despite being different in age group, gender, and locality. However, in terms of race, most Malays (26.7%) presented with Class II skeletal base discrepancy.

With regards to skeletal features, most patients with various vertical and transverse

dimensions also exhibited Class III skeletal base discrepancy. Similar pattern can be seen with parameters of soft tissue features.

For dentoalveolar features, the crosstabulation showed an apparent number of patients with Class III skeletal base discrepancy presented with Class III incisor relationship (94.7%), reversed overjet (94.7%) and anterior crossbite (85.7%).

Table 4. Crosstabulation table between skeletal base discrepancies with other variables.

Variable	Skeletal Base Relationship			Total
	CLASS I	CLASS II	CLASS III	
DEMOGRAPHIC				
Age Group				
0 – 20 years old	11.1%	22.2%	66.7%	100.0%
21 – 30 years old	16.6%	16.7%	66.7%	100.0%
31 – 40 years old	0%	20.0%	80.0%	100.0%
41 years old & above	0%	100.0%	0%	100.0%
Gender				
Female	11.1%	22.2%	66.7%	100.0%
Male	11.1%	22.2%	66.7%	100.0%
Race				
Malay	6.6%	26.7%	16.7%	100.0%
Chinese	16.6%	16.7%	16.7%	100.0%
Locality				
Pahang	9.6%	19.0%	71.4%	100.0%
Non-Pahang	16.7%	33.3%	50%	100.0%
SKELETAL PATTERN				
Vertical Dimension				
Average	11.2%	44.4%	44.4%	100.0%
Increased	14.3%	7.1%	78.6%	100.0%
Reduced	0%	25.0%	75.0%	100.0%
Transverse Dimension				
Symmetry	16.7%	33.3%	50.0%	100.0%
Asymmetry	10.5%	21.1%	68.4%	100.0%
SOFT TISSUE FEATURE				
Lips Competency				
Competent	10.5%	21.1%	68.4%	100.0%
Incompetent	33.3%	33.3%	33.3%	100.0%
Nasolabial Angle				
Normal	8.3%	16.7%	75.0%	100.0%
Acute	20.0%	20.0%	60.0%	100.0%
Obtuse	16.7%	33.3%	50.0%	100.0%
Chin Midpoint				
Coincides	25.0%	25.0%	50.0%	100.0%

Shifted Left	13.3%	20.0%	66.7%	100.0%
Shifted Right	0%	40.0%	60.0%	100.0%
DENTO-ALVEOLAR FEATURES				
Incisal Relationship				
Class I	0%	100.0%	0%	100.0%
Class II	42.9%	57.1%	0%	100.0%
Class III	0%	5.3%	94.7%	100.0%
Overjet				
Average	40.0%	60.0%	0%	100.0%
Reduced	0%	0%	0%	100.0%
Increased	33.3%	66.7%	0%	100.0%
Reversed	0%	5.3%	94.7%	100.0%
Overbite				
Average	14.3%	0%	85.7%	100.0%
Increased	0%	50.0%	50.0%	100.0%
Reduced	14.3%	21.4%	64.3%	100.0%
Centreline				
Coincide	20.0%	20.0%	60.0%	100.0%
Not-Coincide	9.5%	23.8%	66.7%	100.0%
Crossbite				
Nil	33.3%	66.7%	0.0%	100.0%
Anterior	0.0%	14.3%	85.7%	100.0%
Unilateral Post	33.3%	33.3%	33.3%	100.0%
Bilateral Post	0.0%	0.0%	100.0%	100.0%
Generalized	0.0%	0.0%	100.0%	100.0%
Upper Arch Alignment				
Normal	0.0%	100.0%	0.0%	100.0%
Spacing	0.0%	50.0%	50.0%	100.0%
Mild	20.0%	20.0%	60.0%	100.0%
Moderate	0.0%	0.0%	100.0%	100.0%
Severe	0.0%	0.0%	100.0%	100.0%
Upper Arch Inclination				
Average	0.0%	22.2%	77.8%	100.0%
Proclined	20.0%	10.0%	70.0%	100.0%
Retroclined	0.0%	66.7%	33.3%	100.0%
Lower Arch Alignment				
Normal	0.0%	0.0%	100.0%	100.0%
Spacing	0.0%	20.0%	80.0%	100.0%
Mild	18.7%	31.3%	50.0%	100.0%
Moderate	0.0%	0.0%	100.0%	100.0%
Severe	0.0%	0.0%	100.0%	100.0%
Lower Arch Inclination				
Average	0.0%	33.3%	66.7%	100.0%
Proclined	16.7%	33.3%	50.0%	100.0%
Retroclined	0.0%	0.0%	100.0%	100.0%

Correlation between skeletal base discrepancies with other variables

Based on Table 5, there was no significant association illustrated between skeletal base discrepancies with other variables except

with incisal relationship, overjet and right canine relationship, molar relationship and crossbite. For these variables, the p-values were less than 0.05 indicating significant correlation with skeletal base discrepancies. Significant correlation coefficient

demonstrated between skeletal base discrepancies and incisal relationship (0.966), overjet (0.925), right canine relationship (0.777), left canine relationship (0.701), right molar relationship (0.715) and crossbite (0.879). Very strong correlations (Phi Correlation Coefficient: 0.80-1.00) were

found between skeletal base discrepancies with incisal relationship, overjet and crossbite. Meanwhile, strong correlations (Phi Correlation Coefficient: 0.60-0.79) found between canine relationships and right molar relationships.

Table 5. Correlation between skeletal base discrepancies and other variables.

Variable	Skeletal Pattern	
Age Group	Sig. (2-tailed)	0.583
	Phi Correlation	0.417
Gender	Sig. (2-tailed)	1.000
	Phi Correlation	0.000
Race	Sig. (2-tailed)	0.638
	Phi Correlation	0.183
Locality	Sig. (2-tailed)	0.617
	Phi Correlation	0.189
Vertical Dimension	Sig. (2-tailed)	0.285
	Phi Correlation	0.431
Transverse Dimension	Sig. (2-tailed)	0.715
	Phi Correlation	0.164
Lips Competency	Sig. (2-tailed)	0.436
	Phi Correlation	0.275
Nasolabial Angle	Sig. (2-tailed)	0.848
	Phi Correlation	0.245
Chin Midpoint	Sig. (2-tailed)	0.758
	Phi Correlation	0.280
Incisal Relationship	Sig. (2-tailed)	0.000*
	Phi Correlation	0.966
Overjet	Sig. (2-tailed)	0.000*
	Phi Correlation	0.925
Overbite	Sig. (2-tailed)	0.363
	Phi Correlation	0.416
Centreline	Sig. (2-tailed)	0.804
	Phi Correlation	0.130
Right Canine Relationship	Sig. (2-tailed)	0.003*
	Phi Correlation	0.777

Left Canine Relationship	Sig. (2-tailed)	0.047*
	Phi Correlation	0.701
Right Molar Relationship	Sig. (2-tailed)	0.014*
	Phi Correlation	0.715
Left Molar Relationship	Sig. (2-tailed)	0.066
	Phi Correlation	0.674
Crossbite	Sig. (2-tailed)	0.008*
	Phi Correlation	0.879
Upper Arch Alignment	Sig. (2-tailed)	0.307
	Phi Correlation	0.602
Upper Arch Inclination	Sig. (2-tailed)	0.176
	Phi Correlation	0.536
Lower Arch Alignment	Sig. (2-tailed)	0.739
	Phi Correlation	0.446
Lower Arch Inclination	Sig. (2-tailed)	0.183
	Phi Correlation	0.558

**Phi-Correlation Test, $p < 0.05$ (two-tailed); Correlation is significant. Phi-Correlation Coefficient: 0 to 0.19 indicate very weak correlation; 0.20 to 0.39 indicate weak correlation; 0.40 to 0.59 indicate moderate correlation; 0.60 to 0.79 indicate strong correlation; 0.80 to 1.00 indicate very strong correlation (Campbell & Swinscow, 2009)*

Patients' status on orthognathic treatment

Figure 1 illustrated that out of 28 patients listed for orthognathic consultation, 10.7% (3) patients had either failed to attend their first appointment or patient came but was suggested on treatment option other than the orthodontic and surgical intervention. Out of 25 patients that attended the consultation session, 32.1% (9) had either declined surgery and chosen to proceed with orthodontic treatment only or were advised against surgical intervention as management due to case unsuitability, motivational or financial issues.

On the other hand, 52.1% (16) of patients that attended, had agreed to proceed with orthognathic management suggested by the team of specialists. From this group of patients, only two of the patients had completed the surgical treatment. While other 9 patients were either in pre-surgical

orthodontics (fixed appliance) or in the growth stabilization monitoring process. Two patients were still contemplating the orthognathic surgery option. Unfortunately, three out of sixteen patients (18.7%) withdrew from orthognathic surgery treatment after initially agreed to it, due to a few reasons such as medical, dental, and patient factors.

Discussion

A large number of patients in this study were within the age group of twenty-one years old to thirty years old. This tallies with an orthognathic treatment study conducted in one of the dental schools in Thailand which stated that most orthognathic treatment patients were at the mean age of 22.8 years old (Aschaitrakool & Udomrat, 2014). Also similar to the United States, most of their patients were at an average age of 27.6 years old (Venugoplan *et al.*, 2012).

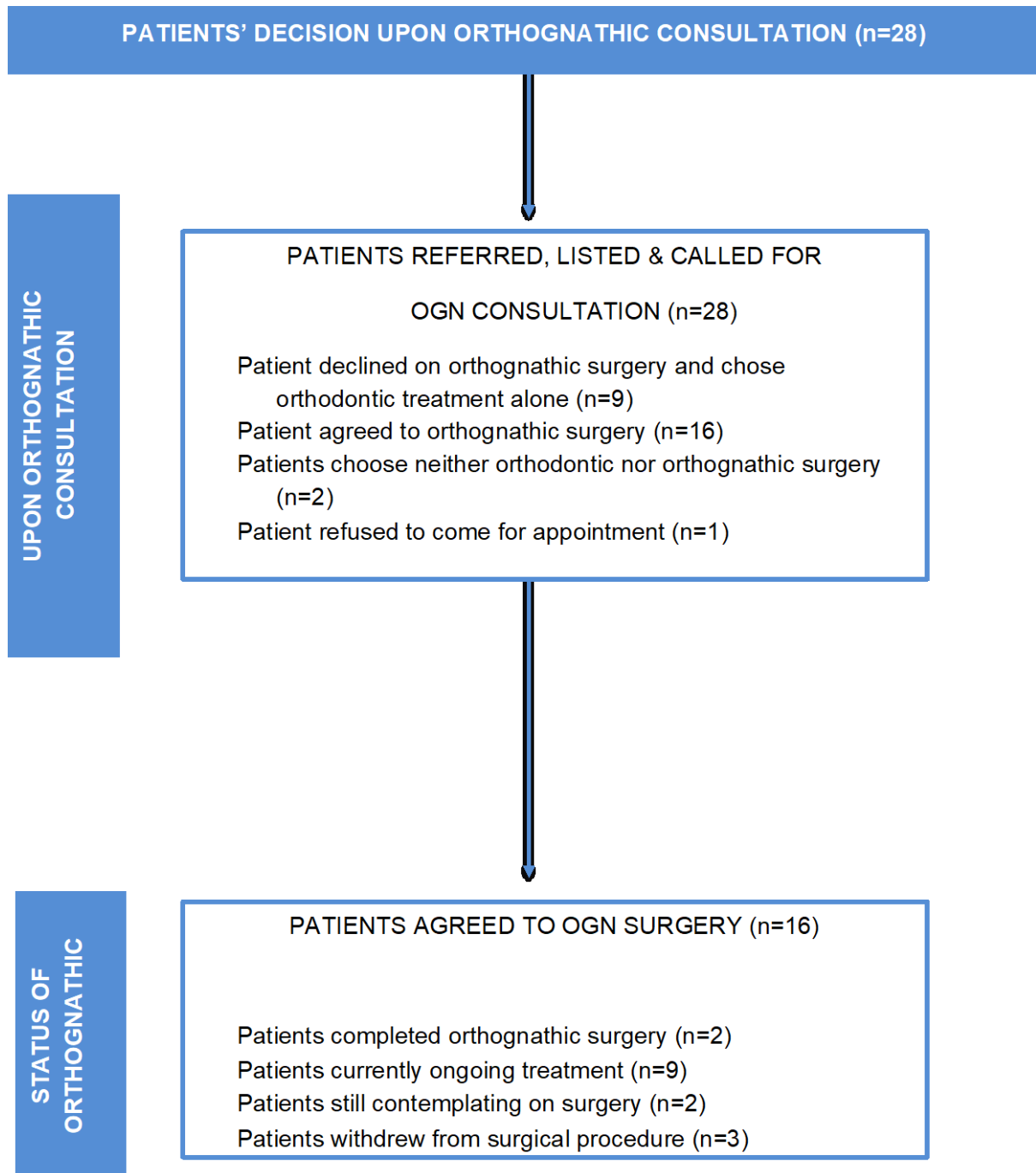


Figure 1. Patients' decision upon orthognathic consultation

In the present study, 66.7% which was more than half of the orthognathic treatment patients were females. This may be because females were more motivated and determined to do surgery than males for the sake of improving their aesthetic appearance (Ong, 2004). Females are very particular with regards to their appearances. Most Asians felt that females appear unpleasant in a community whenever they have profile of prognathic mandible (Ming, 2006). Another study also found that despite gender, both males and females had rated protrusive mandible as the least attractive profile while normal profile of maxilla and mandible as most attractive (Soh *et al.*, 2005). One is considered to have an attractive appearance when they presented with acceptable facial harmony. This is assessed by the rule of thirds, rule of fifth and smile parameters (Elsalanty *et al.*, 2007). Although beauty lies in the eyes of the beholder, studies have shown that attractiveness is more in straight profile (Lew *et al.*, 1992), thus is more acceptable by the community.

This study also recorded slightly higher Malay patients (55.6%) compared to Chinese patients (44.4%). The predominant number of Malay patients reflects the higher Malay population living in the state of Pahang followed by Chinese population. Only a small portion 4.7% are Indians and other ethnicities found in Pahang population (Department of Statistic Malaysia, 2020). Out of 27 patients that were referred to the joint clinic, 6 patients originated from out of Pahang state. As an orthognathic treatment team on the east coast of Malaysia, KOD can play a major role in consulting and treating orthognathic treatment patients both from Pahang and other states along the east coast of Malaysia.

In terms of skeletal features, demographic findings from current research correspond with findings from the literatures. Most orthognathic patients that were referred to or came to IIUM KOD orthognathic joint clinic presented with Class III anteroposterior dimension (66.7%), increased vertical dimension (51.9%) and asymmetrical transverse dimension

(76.0%). Similar features were evident in an orthognathic treatment study conducted on orthognathic treatment patients from fifty Oral Maxillofacial Surgery clinics in Sweden. Most patients presented with the discrepancy in sagittal dimension (46.9%), vertical dimension (13.0%), transversal (9.9%) or combination (30.2%) of all dimensions (Andrup *et al.*, 2015). This correlates with another study which reported that more than 10% of orthognathic treatment patients in one of the dental schools in Japan presented with facial asymmetry (Inoue *et al.*, 2019). In addition, Class III skeletal discrepancies was reported to be more dominant in Southeast Asian population. Especially for Mongoloid population which has been reported to exhibit a Class III skeletal discrepancy for more than 20% of the population (Ruslin *et al.*, 2015).

In this study, more than half of the patients had Class III skeletal discrepancy in addition to deformity of dentoalveolar features such as Class III incisal relationship, reversed overjet and crossbites. Based on Table 4, significant strong correlations were found between skeletal base relationship (Class I, Class II and Class III) and incisal relationship (Class I, Class II and Class III), overjet (average, increased and reversed), crossbite (absent, anterior, unilateral posterior, bilateral posterior and generalized crossbite), right molar relationship (Class I, Class II and Class III), right and left canine relationship (Class I, Class II and Class III). Generally, patients with Class III skeletal patterns had glenoid fossa displaced anteriorly causing the head of condylar to be positioned more anteriorly, thus leading to mandibular prognathism. This causes patients to be presented with anterior crossbites which are when one or more than one lower incisor is positioned more labially or even worse, patients might have reversed overjet when all lower incisors are positioned labially to upper incisors.

Most patients in this study had a low incidence of soft tissue deformity. The majority of patients presented with competent lips and average nasolabial angle. A small portion of patients reported with

incompetent lips (13.6%). There was also no significant association was found between skeletal discrepancy and soft tissue parameters in this study.

Orthognathic treatment has shown rapid growth throughout the world including Southeast Asia. However, the suggestion for surgical intervention may come as an extreme option to some of the patients. This study showed 12 out of 28 patients refused surgery and some of them opted for more conservative intervention instead. In addition, the remaining five that initially agreed to proceed with surgery were either still contemplating (n=2) or already withdrawn from surgical intervention (n=3). Hence, clinicians are recommended to provide some space and time for patients to make their own decisions after delivering the explanation of risks, the procedure involved, advantages, disadvantages or complications that may come with this life-changing surgical option (Reyneke, 2011).

One study conducted in 2019 had questioned some Malaysians with and without dental background to answer a questionnaire regarding the need for orthognathic surgery in the community. Less than half of respondents showed acceptance in correcting severe facial deformities with orthognathic surgery. This low in acceptance may be due to some Malaysians believing that surgery that enhances facial appearance is against their moral and religious views. This also may be due to financial problems and lack of support from close family members (Abdul Halim Chong *et al.*, 2019).

Hence, the future goal for IIUM orthognathic team should include the promotion of orthognathic consultation in providing treatment options for patients experiencing severe malocclusion with facial deformity especially for people within the location of east coast of Malaysia. Furthermore, this first organized demographic data of orthognathic patients in KOD IIUM might aid in management of the joint clinic along with improving health care access in terms of budget and resources allocations for orthognathic patients.

Limitation

The limitation of current study includes the small cumulative sample size of the orthognathic treatment patients. Hence, significant findings of this tiny sample size might not truly represent the whole population. There was also a drop of total number of cases between the end of 2019 until the end of 2020 during the hit of Covid-19 pandemic, as the Specialist Dental Clinic in KOD was forced to close during this period which eventually affect the number of orthognathic treatment cases referred or seen during this time frame.

Conclusion

To sum up, a total of 27 cases were referred, consulted, and treated in KOD IIUM orthognathic joint clinic. Majority were Malay female patients in age group between 21 to 30 years old, originated from Pahang. Most of these patients were presented with Class III skeletal discrepancy. A significant relationship was found between skeletal base discrepancy with several dentoalveolar deformities such as incisal relationship, overjet, crossbite, canine relationship and right molar relationship. 57.14% of orthognathic patients agreed to orthognathic treatment, 32.14% of them opted for orthodontic treatment alone whilst 10.7% refused any treatment. From the 57.14% (n=16), patients who initially agreed to orthognathic surgery, 10.7% (n=3) of them eventually pulled out, 7.14% (n=2) still undecided on surgery, 7.14% (n=2) completed surgery and whilst another 32.14% (n=9) ongoing treatment. This demographic hoped to give an initial description for the joint clinic for administration and future planning.

Acknowledgement

We would like to convey our deepest appreciation to the dental surgery assistants from the Department of Orthodontics for the access to patients' records and to Asst. Prof. Dr. Mohammad Syafiq bin Mohd Ibrahim for his statistical guidance.

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