

# Knowledge and Awareness among Dental Students about Choice of Complete Denture Occlusion in Edentulous Patient

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## Abstract:-

### ➤ *Purpose:*

**The purpose of this study is to evaluate the knowledge and awareness about choice of complete denture occlusion in edentulous patient among dental students. It is a cross sectional study.**

### ➤ *Materials and methods:*

**100 subjects were selected for the study. The study was conducted in Thai Moogambigai Dental College and Hospital of Dr.MGR Educational and Research Institute Deemed to be University, Mogappair, Chennai. The subjects were asked to answer 22 questions which is of multiple choice type. Comparative graphs are made and discussed. These graphs helps in evaluating the knowledge and awareness among dental students about choice of complete denture occlusion in edentulous patient.**

### ➤ *Conclusion:*

**This study shows that dental students are more aware of bilateral balanced occlusion when compared to the monoplane and lingualized occlusion.**

**Keywords:- Complete Denture, Occlusal Concepts, Ridge Relationship, Arch Form.**

## I. INTRODUCTION

Although complete dentures might not be a substitute for natural dentition, they remain a staple treatment for edentulous patient. Masticatory efficiency is higher in natural dentition than in complete denture wearers. Several advances were made in the complete denture prosthodontics in these recent years. Dentate status might affect nutritional status, and general health. Many occlusal concepts were proposed over years. Some authors consider bilateral balanced occlusion in complete denture as a successful treatment for more years. Recent researches proved successful complete denture occlusion can be made even without balanced occlusion. Ideally, the forces from mastication should be transferred to supporting tissues. Numerous concepts, techniques and philosophies are concerned with complete denture occlusion. [1]

## II. MATERIALS AND METHODS

This is a cross sectional study. A total of 100 UG students were selected from Thai Moogambigai dental college and Hospital of Dr.MGR Educational and Research Institute Deemed to be University, Chennai. The subjects were briefed about the study and an informed consent was obtained from them. Ethical committee approval were obtained.

There are 22 questions which are based on the occlusal schemes like balanced occlusion, lingualized occlusion and monoplane occlusion, ridge relations and anatomy of artificial teeth.

1. Which of the following represent characteristic of natural teeth occlusion?
  - a) Second molar is favoured area for mastication
  - b) Bilateral balanced occlusion does not exist
  - c) Teeth respond individually to forces of occlusion
  - d) All of the above
2. Which one of the statement is suitable for complete denture occlusion?
  - a) All teeth respond as one unit & move on bases
  - b) Non-vertical forces are well tolerated
  - c) Incising with anterior does not affect posteriors
3. Which one of the following is not the type of complete denture occlusion?
  - a) Bilateral balanced occlusion
  - b) Monoplane occlusion
  - c) ~~lingualized~~ occlusion
  - d) canine guided occlusion
4. Do you know the main diagnostic ~~criteria~~ that decide the types of complete denture occlusion?
  - a) Mandibular bone height & maxillomandibular relationship
  - b) Maxillary residual ridge morphology & muscle attachments
  - c) Both a & b
  - d) None of the above
5. What are the consequences will the patient face if the right choice of occlusion is not given?
  - a) Forces of mastication that compromise the stability of base
  - b) It traumatizes the oral supporting tissues
  - c) ~~accelerate~~ the rate of bone resorption
  - d) All of the above
6. Which is the most commonly advised type of occlusion in complete denture?
  - a) Balanced occlusion
  - b) Monoplane occlusion

Fig.1

- c) Lingualized occlusion
7. Do you think the type of teeth used plays a vital role in prescribing right type of occlusion?
  - a) Yes
  - b) No
  - c) May be
8. What factor that does not affect Hanau's quint?
  - a) Condylar guidance, incisal guidance
  - b) Plane of occlusion, compensating curves
  - c) Cuspal inclination
  - d) ~~None~~ of the above
9. What are all advantages gained by giving bilateral balanced occlusion?
  - a) Bilateral posterior centric contact
  - b) Centralized forces
  - c) To minimize tipping
  - d) ~~All~~ of the above
10. Do you agree, curvature of the occlusal plane of dentures created to permit balanced occlusion & compensate the path of mandible moves from centric to eccentric position?
  - a) Agree
  - b) Disagree
11. ~~In~~ compensating curves, which curve involves the anteroposterior movement of complete denture?
  - a) Curve of spee
  - b) Curve of monson
  - c) Curve of Wilson
12. What is pleasure curve?
  - a) Curve of monson
  - b) Anti-monson curve
  - c) Combination of monson & anti-monson curve
  - d) ~~None~~ of the above
13. In which of the following condition that monoplane occlusion can be given?
  - a) Abnormal closure, imbalance, trauma, neuromuscular disturbances

Fig.2

- b) Posteriorly displaced mucosa, chewing pattern is milling type
- c) Tortuous ridge with an excessive denture space
- d) All of the above
14. What are the advantages of monoplane occlusion?
  - a) Adaptable to usual jaw relation such as class I & II
  - b) Centric relation is developed to an area instead of a point
  - c) Both a & b
  - d) None of the above
15. What is the type of teeth that is used in monoplane occlusion?
  - a) Semi-anatomic teeth
  - b) Anatomic teeth
  - c) Non-anatomic teeth
16. What are the disadvantages of monoplane occlusion?
  - a) ~~Lack~~ of positive intercuspation position
  - b) Occlude in three dimension
  - c) No shearing during mastication
  - d) None of the above
17. A monoplane occlusion can be given when the inter-ridge distance is \_\_\_\_\_.
  - a) Close ideal & average
  - b) Excessive
  - c) Large
  - d) Close
18. What type of teeth that is used in lingualized occlusion?
  - a) Maxillary – anatomic & mandible – non anatomic teeth
  - b) Maxilla – non anatomic & mandible – anatomic teeth
19. What are the requirements for among lingualized occlusion?
  - a) High priority on aesthetics but oral conditions indicates a non-anatomic occlusal scheme

Fig.3

- b) More favorable stress distribution is desired in patients with para functional habits
  - c) Both a & b
  - d) None of the above
20. What are the advantages of lingualized occlusion?
  - a) Additional stability is imparted to denture during para functional movements
  - b) Good penetration of food bolus possible
  - c) Requiring less precise records than fully balanced occlusion
  - d) All of the above
21. What are the disadvantages of lingualized occlusion?
  - a) Wearing away of maxillary cusp & mandibular fossa
  - b) Increase likelihood of lateral displacement
  - c) Both a & b
  - d) None of the above
22. What is neutro-centric occlusion?
  - a) Occlusal plane is parallel to the mean plane of the denture foundation
  - b) One dimensional contact between two opposing posterior teeth
  - c) Both a & b
  - d) None of the above

Fig.4

**III. RESULTS**

The data's are obtained and it is tabulated as graphs based on the answers.

➤ *Responses obtained from question no1*

Which of the following represents characteristics of natural teeth occlusion?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	18	18.0	18.0	18.0
2	21	21.0	21.0	39.0
Valid 3	13	13.0	13.0	52.0
4	48	48.0	48.0	100.0
Total	100	100.0	100.0	

Table 1:- 48% of subjects responded all of the above

➤ *Responses obtained from question no2*

Which one of the statement is suitable for complete denture occlusion?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	49	49.0	49.0	49.0
2	26	26.0	26.0	75.0
Valid 3	25	25.0	25.0	100.0
Total	100	100.0	100.0	

Table 2:- 49% of subjects responded all teeth respond as one single unit and move on bases

➤ *Responses obtained from question no3*

Which one of the following is not the type of complete denture occlusion?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	13	13.0	13.0	13.0
2	13	13.0	13.0	26.0
Valid 3	27	27.0	27.0	53.0
4	47	47.0	47.0	100.0
Total	100	100.0	100.0	

Table 3:- 47% of subjects responded as canine guided occlusion

➤ *Responses obtained from question no4*

Do you know the main diagnostic criterias that decide the type of complete denture occlusion?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	20	20.0	20.0	20.0
2	14	14.0	14.0	34.0
Valid 3	54	54.0	54.0	88.0
4	12	12.0	12.0	100.0
Total	100	100.0	100.0	

Table 4:- 54% of subjects responded as both a and b

➤ *Responses obtained from question no5*

What are the consequences will the patient face if the right choice of occlusion is not given?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	38	38.0	38.0	38.0
2	2	2.0	2.0	40.0
Valid 3	9	9.0	9.0	49.0
4	51	51.0	51.0	100.0
Total	100	100.0	100.0	

Table 5:- 51% of subjects responded as all of the above

➤ *Responses obtained from question no6*

Which is the most commonly advised type of occlusion in complete denture?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	68	68.0	68.0	68.0
2	12	12.0	12.0	80.0
Valid 3	14	14.0	14.0	94.0
4	6	6.0	6.0	100.0
Total	100	100.0	100.0	

Table 6:- 68% of subjects responded as balanced occlusion

➤ *Responses obtained from question no7*

Do you think the type of teeth used plays a vital role in prescribing right type of occlusion?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	58	58.0	58.0	58.0
2	21	21.0	21.0	79.0
3	21	21.0	21.0	100.0
Total	100	100.0	100.0	

Table 7:- 58% of subjects responded yes

➤ Responses obtained from question no8  
What factor that does not affect Hanau’s quint?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	20	20.0	20.0	20.0
2	18	18.0	18.0	38.0
3	11	11.0	11.0	49.0
4	51	51.0	51.0	100.0
Total	100	100.0	100.0	

Table 8:- 51% of subjects responded as none of the above

➤ Responses obtained from question no9  
What are all advantages gained by giving bilateral balanced occlusion?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	18	18.0	18.0	18.0
2	16	16.0	16.0	34.0
3	15	15.0	15.0	49.0
4	51	51.0	51.0	100.0
Total	100	100.0	100.0	

Table 9:- 51% of subjects responded as all of the above

➤ Responses obtained from question no10  
Do you agree, curvature of the occlusal plane of dentures created to permit balanced occlusion & compensate the path of mandible moves from centric to eccentric position?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	74	74.0	74.0	74.0
2	19	19.0	19.0	93.0
3	7	7.0	7.0	100.0
Total	100	100.0	100.0	

Table 10:- 74% of subjects responded as agree

➤ Responses obtained from question no11  
In compensating curves, which curve involves the anteroposterior movement of complete denture?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	69	69.0	69.0	69.0
2	26	26.0	26.0	95.0
3	4	4.0	4.0	99.0
4	1	1.0	1.0	100.0
Total	100	100.0	100.0	

Table 11:- 69% of subjects responded as curve of spee

➤ Responses obtained from question no12  
What is pleasure curve?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	31	31.0	31.0	31.0
2	29	29.0	29.0	60.0
3	35	35.0	35.0	95.0
4	5	5.0	5.0	100.0
Total	100	100.0	100.0	

Table 12:- 35% of subjects responded as combination of monson and anti-monson

➤ Responses obtained from question no13  
In which of the following condition that monoplane occlusion can be given?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	16	16.0	16.0	16.0
2	31	31.0	31.0	47.0
Valid 3	14	14.0	14.0	61.0
4	39	39.0	39.0	100.0
Total	100	100.0	100.0	

Table 13:- 39% of subjects responded as all of the above

	Frequency	Percent	Valid Percent	Cumulative Percent
1	31	31.0	31.0	31.0
2	29	29.0	29.0	60.0
Valid 3	25	25.0	25.0	85.0
4	15	15.0	15.0	100.0
Total	100	100.0	100.0	

Table 16:- 31% of subjects responded as lack of positive intercuspation

➤ Responses obtained from question no14

What are the advantages of monoplane occlusion?

➤ Responses obtained from question no17

A monoplane occlusion can be given when the inter-ridge distance is \_\_\_\_\_

	Frequency	Percent	Valid Percent	Cumulative Percent
1	25	25.0	25.0	25.0
2	27	27.0	27.0	52.0
Valid 3	41	41.0	41.0	93.0
4	7	7.0	7.0	100.0
Total	100	100.0	100.0	

Table 14:- 41% of subjects responded both a and b

	Frequency	Percent	Valid Percent	Cumulative Percent
1	26	26.0	26.0	26.0
2	37	37.0	37.0	63.0
Valid 3	18	18.0	18.0	81.0
4	19	19.0	19.0	100.0
Total	100	100.0	100.0	

Table 17:- 37% of subjects responded as excessive

➤ Responses obtained from question no15

What is the type of teeth that is used in monoplane occlusion?

➤ Responses obtained from question no 18

What type of teeth that is used in lingualized occlusion?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	40	40.0	40.0	40.0
2	16	16.0	16.0	56.0
Valid 3	44	44.0	44.0	100.0
Total	100	100.0	100.0	

Table 15:- 44% of subjects responded monoplane occlusion

	Frequency	Percent	Valid Percent	Cumulative Percent
1	47	47.0	47.0	47.0
2	49	49.0	49.0	96.0
Valid 3	3	3.0	3.0	99.0
4	1	1.0	1.0	100.0
Total	100	100.0	100.0	

Table 18:- 47% of subjects responded as maxillary-anatomic and mandible-non-anatomic teeth

➤ Responses obtained from question no16

What are the disadvantages of monoplane occlusion?

➤ Responses obtained from question no19

What are the requirements for among lingualized occlusion?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	20	20.0	20.0	20.0
2	27	27.0	27.0	47.0
Valid 3	44	44.0	44.0	91.0
4	9	9.0	9.0	100.0
Total	100	100.0	100.0	

Table 19:- 44% of subjects responded as both a and c

➤ Responses obtained from question no20

What are the advantages of lingualized occlusion?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	10	10.0	10.0	10.0
2	31	31.0	31.0	41.0
Valid 3	13	13.0	13.0	54.0
4	46	46.0	46.0	100.0
Total	100	100.0	100.0	

Table 20:- 46% of subjects responded as all of the above

➤ Responses obtained from question no21

What are the disadvantages of lingualized occlusion?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	24	24.0	24.0	24.0
2	21	21.0	21.0	45.0
Valid 3	48	48.0	48.0	93.0
4	7	7.0	7.0	100.0
Total	100	100.0	100.0	

Table 21:- 48% of subjects responded as both a and b

➤ Responses obtained from question no22

What is neutro-centric occlusion?

	Frequency	Percent	Valid Percent	Cumulative Percent
1	25	25.0	25.0	25.0
2	24	24.0	24.0	49.0
Valid 3	37	37.0	37.0	86.0
4	14	14.0	14.0	100.0
Total	100	100.0	100.0	

Table 22:- 37% of subjects responded as both a and b

**IV. DISCUSSION:**

➤ Natural Teeth and Complete Denture Occlusion:

Occlusion is a factor that is common to all branches of dentistry. Teeth, whether natural or artificial, are not immobile; so occlusion can never be considered a purely static relationship [2]. Natural teeth move in their sockets and change perceptibly from day to day. They move under load into their sockets and return to position when the load is removed. 48% of subjects are aware about the natural teeth occlusion. Artificial occlusion discloses even more apparent movement, since the teeth move as a group on a common base because of the nature of the supporting structures. 49% of subjects responded as all teeth respond as single unit and move on bases. 54% of subjects have knowledge about diagnostic criterias for complete denture occlusion. Only 51 % of subjects aware of choosing right choice of occlusion.

➤ Bilateral Balanced Occlusion:

Bilateral balanced occlusion is the most commonly preferred type of occlusion. It is a distinctive type of occlusion. It provides higher masticatory efficiency than other type of occlusion [3]. Anatomic teeth are preferred for balanced occlusion with cuspal angulation of 33 degrees. Balanced occlusion transfers forces to the supporting tissues preventing resorption of bone [4]. 68% of subjects responded bilateral balanced occlusion is the most commonly preferred type of occlusion. 51% of subjects are well known about the factors affecting and advantages of balanced occlusion.

➤ Monoplane Occlusion:

Monoplane posterior teeth are generally used in bruxers, and patients with arch discrepancies, poor neuromuscular control and with poor residual ridges. Monoplane occlusion can be given in conditions like flat-firm ridge, Excessive interridge distance and normal ridge relation [4]. Only around 35% of subjects are aware of indications, advantages and disadvantages of monoplane occlusion.

➤ *Lingualized Occlusion:*

Alfred Gysi is the one who designed lingualized occlusion for complete denture. In this type of occlusion, the upper palatal cusps occludes with the lower occlusal surfaces. This occlusion is mainly preferred where esthetics is more concerned. The main advantage of anatomic and non-anatomic teeth in lingualized occlusion is esthetics can be maintained with the functional relations [5]. 47% of subjects responded maxillary - anatomic and mandible - non-anatomic teeth are preferred in lingualized occlusion. More than 50% of subjects are not aware of lingualized occlusion.

## V. CONCLUSION

This study shows that dental students are more aware of bilateral balanced occlusion when compared to the monoplane and lingualized occlusion. As occlusal concepts are individualized for each edentulous patients, dental students should enrich their knowledge on selecting complete denture occlusion for edentulous patients.

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