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2. INTERACTING WITH PATIENTS (1): TAKING A HISTORY

Interacting with dental patients is of the utmost importance to be able to offer the best possible assistance. The first interaction, in which the dentist gets to know the clinical history of the patient and their symptoms, is crucial in order to be able to diagnose their condition accurately and provide a suitable solution.

SPEAKING WITH THE PATIENT

Exercise 1. Complete the following dialogues with the most suitable question from the box.

Are you taking any medication at the moment?	How old is the crown?
When was your last dental appointment?	Is there any swelling?
Does anyone in your family have a serious illness?	Does anything make the pain worse?

Dentist: 1. _____?

Patient: The last time I went to the dentist must have been about a year ago.

Dentist: 2. _____?

Patient: I get the feeling that it hurts more when I eat cold food and have cold drinks.

Dentist: 3. _____?

Patient: No, I do not think that the area is swollen, it just hurts.

Dentist: 4. _____?

Patient: Yes, I am on antibiotics because I had the flu last week, and I also consistently take contraceptive pills for my endometriosis.

Dentist: 5. _____?

Patient: Yes, my mum suffers from high blood pressure and arrhythmia.

Dentist: 6. _____?

Patient: I had it placed six weeks ago.

Exercise 2. Translate into English the questions provided in Spanish about a patient's drug history in the following dialogues.

Dentist: ¿Tomas algún medicamento sin receta, a base de hierbas u homeopático?
1. _____?

Patient: I occasionally resort to aromatherapy to relax, and I always take an ibuprofen whenever my back really hurts from work.

Dentist: ¿Cuántas pastillas de ibuprofeno tomas? 2. _____?

Patient: Not many, I usually only need one or two per month.

Dentist: ¿Estás tomando medicación de manera regular? 3. _____?

Patient: Yes, I have a heart condition, so I have been on medication for that since I was diagnosed three years ago.

Dentist: ¿Cuántas veces al día la tomas? 4. _____?

Patient: Just once, every evening.

Dentist: ¿Te acuerdas siempre de tomártela? 5. _____?

Patient: I only forgot once, at the very beginning, when I still was not used to taking it.

Dentist: ¿Te da algún efecto secundario? 6. _____?

Patient: It makes me quite dizzy and very sleepy. In fact, I used to take it in the morning, and I had to start taking it in the evening instead.

Dentist: ¿Eres alérgico/a a algún medicamento? 7. _____?

Patient: Yes, I am allergic to penicillin.

Dentist: ¿Qué síntomas te da? 8. _____?

Patient: I get a pretty bad skin rash, especially on the face, and a little shortness of breath.

Dentist: ¿Te has sometido a alguna operación? 9. _____?

Patient: Yes, I had appendicitis, so I needed to have my appendix removed.

Dentist: ¿Cuánto tiempo hace que te operaron? 10. _____?

Patient: That must have been when I was 12 or 13 years old, so it was about 10 years ago.

Dentist: ¿Tuviste alguna reacción a la anestesia? 11. _____?

Patient: No, I did not. I woke up very easily.

Exercise 3. Translate into English the questions provided in Spanish about a patient's family history in the following dialogues.

Dentist: ¿Padece alguien de tu familia alguna enfermedad grave? 1. _____?

Patient: Yes, my father has diabetes.

Dentist: ¿Están vivos todos tus parientes cercanos? 2. _____?

Patient: My grandmother, my father's mother, passed away when she was 58. My other grandparents are still alive and well, and my mum and sister are also in good health.

Dentist: ¿Sabes de qué murió tu abuela? 3. _____?

Patient: She died of lung cancer.

Dentist: ¿Alguien de tu familia toma medicación regularmente? 4. _____?

Patient: Yes, my mother is taking medication for her high blood pressure.

Dentist: ¿Tienes hermanos o hermanas? 5. _____?

Patient: Yes, I have an older brother and a younger sister.

Dentist: ¿Tiene alguno de ellos algún problema grave de salud? 6. _____?

Patient: Not really. My brother suffers from hay fever, but the symptoms are mild and he takes medication when he gets them, so it is under control. And my sister is well.

Dentist: ¿Y tu padre? ¿Está vivo y bien de salud? 7. _____?

Patient: Yes. He needed surgery last year because he broke a leg, but he recovered quickly and he is very well.

Exercise 4. Translate into English the questions provided in Spanish about a patient's pain and symptoms in the following dialogue.

Dentist: ¿Dónde te duele? 1. _____?

Patient: It is my back bottom right tooth.

Dentist: ¿Podrías describir el dolor? 2. _____?

Patient: It is a throbbing and very intense pain.

Dentist: ¿Cuándo empezó? 3. _____?

Patient: It must have started two or three days ago.

Dentist: ¿En algún momento se detiene? 4. _____?

Patient: No, it is persistent.

Dentist: ¿Empeora con algo? 5. _____?

Patient: Yes, eating solid and cold foods makes the pain sharper.

Dentist: ¿Y mejora con algo? 6. _____?

Patient: It stops for a few hours if I take a painkiller, but then it comes back with the same intensity.

Dentist: ¿Notas algún otro síntoma relacionado con el dolor? 7. _____?

Patient: I also feel that the gum that surrounds it is swollen, but it does not hurt.

Dentist: ¿Tienes fiebre? 8. _____?

Patient: I did not, until this morning.

Exercise 5. Translate into English the questions provided in Spanish about a patient's health habits in the following dialogues.

Dentist: ¿Fumas? 1. _____?

Patient: Yes, I do.

Dentist: ¿Cuántos al día? 2. _____?

Patient: Usually just one, but on the weekends it can sometimes go up to three or four.

Dentist: ¿Has intentado dejarlo? 3. _____?

Patient: Yes, I have been trying to quit for a couple of months now. I actually used to smoke three cigarettes a day every day.

Dentist: ¿Bebes alcohol? 4. _____?

Patient: Yes, occasionally.

Dentist: ¿Cuánto bebes en una semana? 5. _____?

Patient: Normally just a one or two beers or glasses of wine, whenever I go out with friends.

Dentist: ¿Con qué frecuencia te cepillas los dientes? 6. _____?

Patient: I always try to brush them three times a day, but when I do not have one of my meals at home, I can only brush them twice.

Dentist: ¿Usas siempre hilo dental después del cepillado? 7. _____?

Patient: Yes, but only on the most accessible teeth. I find it very hard to reach my back teeth.

Dentist: ¿Y enjuague bucal? 8. _____?

Patient: No, I do not use a mouthwash. If you could recommend one, I would really appreciate it.

Exercise 6. Imagine that you are working at your dental office. In pairs, improvise a dialogue for the following situations.

1. You are going to perform surgery on a patient, so you need to take their family and drug history.
2. A patient comes into your office claiming to be in excruciating pain. You need them to describe their health habits, pain and any other symptoms they may be experiencing to be able to diagnose their condition and prescribe a treatment.

3. INTERACTING WITH PATIENTS (2): TREATMENTS AND GIVING INSTRUCTIONS

Interacting with dental patients is of the utmost importance to be able to offer the best possible assistance. Once the patient's history has been taken and their symptoms and diagnostic have been elucidated, the dentist must talk to the patient about the solution that they can provide to their oral health problem.

TERMINOLOGY: EXPLAINING TREATMENTS

Vocabulary. Dental treatments.

Preventative treatments	Check-up Brushing Flossing Mouthwash Prophylaxis / Teeth cleaning Sealant Fluoride
Restorative treatments	Filling Crown Bridge Endodontics / Root canal (treatment) (Dental) implant Denture Periodontal treatment Prosthesis Onlay Inlay
Cosmetic procedures	Teeth whitening (Porcelain) veneer

	(Composite) bonding Orthodontics / Braces Invisalign Gingivectomy / Cosmetic gum lifting Enamel shaping Smile makeover
Other treatments	Extraction / Removal Wisdom teeth removal Biopsy Jaw surgery Emergency dental care

Exercise 1. Provide the Spanish equivalent for the following terms.

1. Wisdom teeth removal:
2. Teeth whitening:
3. Braces:
4. Veneer:
5. Filling:
6. Check-up:
7. Flossing:
8. Enamel shaping:
9. Bonding:
10. Jaw surgery:
11. Prophylaxis:
12. Cosmetic gum lifting:
13. Root canal:
14. Sealant:
15. Fluoride:
16. Invisalign:
17. Denture:
18. Crown:
19. Bridge:
20. Inlay:

Exercise 2. Imagine your patients need or enquire about the following treatments. How would you explain to them what they entail?

1. Teeth whitening:
2. Prophylaxis:
3. Root canal:
4. Filling:
5. Crown:
6. Sealant:
7. Invisalign:
8. Bridge:
9. Veneer:
10. Cosmetic gum lifting:

Vocabulary. Collocations with *pain*.

Adjectives with 'pain'	excruciating / extreme / intense / severe / unbearable pain sharp / stabbing / throbbing pain slight / mild pain chewing pain acute / sudden pain intermittent pain constant / nagging / persistent pain
Verbs with 'pain'	be in / experience / feel / have / suffer (from) pain alleviate / control / ease / relieve / stop / kill pain increase / intensify / make pain worse cause / give pain pain begins / comes pain disappears / goes / stops pain comes back
Nouns with 'pain'	pain control / relief

	pain threshold
Prepositions with 'pain'	in pain pain in

Exercise 3. Match the following collocations with their definition.

ease pain	
unbearable pain	
chewing pain	
pain threshold	
sharp pain	

pain relief	
in pain	
acute pain	
throbbing pain	
nagging pain	

- a) Not very severe but unpleasant, persistent, and disruptive pain.
- b) Feeling pain.
- c) Pain that comes suddenly.
- d) Intense, localised, and piercing pain.
- e) To make pain less severe.
- f) Pain that is only felt when biting into something or chewing.
- g) The level at which a stimulus is perceived as painful.
- h) Pain that is characterised by a pulsing sensation, similar to that of a heartbeat.
- i) Reducing or stopping pain.
- j) Pain that is impossible to tolerate due to its extremely high intensity.

Exercise 4. Provide the Spanish equivalent for the following collocations.

- 1. Be in pain:
- 2. Excruciating pain:
- 3. Slight pain:
- 4. Acute pain:
- 5. Persistent pain:
- 6. Cause pain:
- 7. Ease pain:
- 8. Throbbing pain:

9. Increase pain:
10. Pain threshold:

Exercise 5. Complete the following sentences with the collocations from the box. Conjugate the verbs if necessary.

pain threshold	in	stop	feel
intensify	begin	extreme	intermittent
come back	slight	disappear	give

1. The pain _____ about a week ago.
2. This patient has a very low _____.
3. The pain _____ when I eat cold foods.
4. I pain that I _____ in my gums is _____; it comes and goes.
5. Is there anything that can be done to _____ the pain?
6. When I use the mouthwash the pain _____, but it _____ after a few minutes.
7. I am calling because it has been a week since the surgery and I am still _____ pain.
8. The antibiotics that you prescribed are _____ me a _____ pain in the stomach.

Vocabulary. Collocations with *treatment*.

Adjectives with 'treatment'	dental treatment
	emergency/urgent treatment
	immediate/prompt treatment
	follow-up treatment
	short-term/long-term treatment
	appropriate/adequate treatment
	inappropriate/inadequate treatment
	effective/successful treatment
	ineffective/unsuccessful treatment

	initial treatment conventional treatment alternative treatment free/NHS treatment private treatment specialist treatment complex treatment operative/surgical treatment non-operative/non-surgical/drug treatment
Verbs with 'treatment'	get/have/receive/undergo treatment administer/give/provide treatment need/require/seek treatment advise/prescribe/recommend/offer treatment initiate/start treatment follow/adhere to treatment refuse treatment afford treatment complete treatment benefit from/respond to treatment
Nouns with 'treatment'	treatment decision/option treatment room treatment method/procedure/technique treatment course/plan/programme/regime/schedule initiation of treatment completion of treatment
Prepositions with 'treatment'	in treatment treatment of

	treatment for
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Exercise 6. Match the following collocations with their definition.

Treatment plan	
In treatment	
Respond to treatment	
Follow-up treatment	
Short-term treatment	
Initial treatment	
Treatment room	
Completion of treatment	

Conventional treatment	
Prescribe treatment	
Refuse treatment	
Treatment procedure	
Afford treatment	
Seek treatment	
Ineffective treatment	
Specialist treatment	

- a) Monitoring a patient's health after treatment to ensure that no side effects or new health issues arise.
- b) The treatment is improving the patient's condition or reducing their symptoms.
- c) To officially order a patient to follow a specific treatment.
- d) A space within a healthcare centre with the equipment needed to administer medical treatments.
- e) Undergoing treatment for a health issue.
- f) Rejecting a treatment or intervention that has been recommended.
- g) Finishing a prescribed treatment course.
- h) The steps and strategies selected to treat a patient's health issue or condition.
- i) Medical care provided by a person trained in a specific area of Dentistry.
- j) A brief treatment that often focuses on addressing an immediate need or condition.
- k) The first course of action taken to cure a condition, which generally aims to relieve symptoms.

- l) A treatment that is widely accepted and used by the majority of health care professionals.
- m) To ask a health care professional to provide treatment for a health issue or condition.
- n) A treatment that fails to cure a condition or to suppress its symptoms.
- o) To have the necessary means to pay for a treatment.
- p) A treatment designed to alleviate or cure a health condition.

Exercise 7. Complete the following sentences with the most suitable collocation from those in the box.

treatment option	adhere to treatment	urgent treatment
treatments for	surgical treatment	alternative treatments

- It was concluded from the study that a crown was a valid _____.
- Warm baths, heating pads and melatonin supplements are _____ for bruxism.
- In the early stages of caries, _____ is usually not required.
- Evidence suggests that patients who _____ are more likely to improve or even cure their condition.
- Her gums became swollen and her temperature started to rise, so she needed _____.
- The most appropriate _____ a chipped tooth include bonding, crowns, and veneers.

Vocabulary. Collocations with *medication*.

Adjectives with 'medication'	prescribed medication over-the-counter medication regular/daily medication short-term/long-term medication effective medication ineffective medication generic medication
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Verbs with 'medication'	be on/receive/take medication prescribe medication administer/give/dispense medication stop/discontinue medication change medication need/require medication buy/get medication
Nouns with 'medication'	pain medication anti-inflammatory medication prescription medication medication use medication error
Prepositions with 'medication'	medication for on medication

Exercise 8. Match the following English collocations with their Spanish equivalent.

- | | |
|---------------------------------|---------------------------------|
| 1. Prescribe medication: | a) Estar tomando medicación |
| 2. Discontinue medication: | b) Medicación con receta |
| 3. Generic medication: | c) Medicación analgésica |
| 4. Be on medication: | d) Suspender la medicación |
| 5. Over-the-counter medication: | e) Medicación sin receta |
| 6. Prescription medication: | f) Recetar medicación |
| 7. Long-term medication: | g) Medicamento genérico |
| 8. Pain medication: | h) Medicación de larga duración |

Exercise 9. Complete the following sentences with the collocations from the box. Conjugate the verbs if necessary.

require medication	on medication	prescription medication
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over-the-counter medication	dispense medication	pain medication
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1. He is currently _____ for dry mouth.
2. _____ helps to relieve the pain.
3. The pharmacist recommended a very effective _____.
4. The instructions on _____ labels must be followed very carefully.
5. Many dental patients _____ for pain relief.
6. It is vital to _____ accurately.

Vocabulary. Collocations with *surgery*.

Adjectives with 'surgery'	oral surgery major surgery minor surgery extensive surgery further surgery successful surgery unsuccessful surgery emergency surgery ambulatory surgery
Verbs with 'surgery'	have/undergo surgery perform surgery need/require surgery recover from surgery
Nouns with 'surgical'	surgical recovery surgical complications surgical risk surgical error surgical procedure/operation/technique

	surgical team surgical instruments
Prepositions with 'surgery'	after/before/during surgery in surgery surgery for

Exercise 10. Match the following collocations in English with their Spanish equivalent.

- | | |
|-------------------------|---|
| 1. Undergo surgery: | a) Recuperación quirúrgica |
| 2. Perform surgery: | b) Intervención quirúrgica |
| 3. Oral surgery: | c) Intervención ambulatoria |
| 4. Minor surgery: | d) Operación de urgencia |
| 5. Emergency surgery: | e) Equipo quirúrgico |
| 6. Ambulatory surgery: | f) Realizar una intervención quirúrgica |
| 7. Surgical recovery: | g) Cirugía menor |
| 8. Surgical risk: | h) Cirugía oral |
| 9. Surgical team: | i) Riesgo quirúrgico |
| 10. Surgical operation: | j) Ser operado/a |

Exercise 11. Complete the following sentences with the collocations from the box. Conjugate the verbs if necessary.

ambulatory	undergo	successful
surgical risk	extensive	in surgery

1. He is _____ at the moment, but he should be out in about 20 minutes.
2. The surgery was _____, and the patient is recovering well.
3. She _____ surgery last year.
4. A patient's medical history has an impact on their _____.
5. _____ surgery is not very common in Dentistry, but it may be necessary in some cases.

Vocabulary. Set phrases regarding treatment.

Informing the patient of the treatment required:

You need orthodontic treatment / a root canal / bone surgery / a prophylaxis / a filling.

This filling needs to be replaced.

We have to do scaling and root planning.

The procedure will take (about) 5 minutes / hours.

Referring the patient to another professional:

I need to refer you to the orthodontist / the hygienist / a specialist.

Informing the patient of your next movement during the treatment:

I am going to recline the chair / numb the area / give you an injection / take this tooth out.

We are going to clean your teeth / do an oral exam.

We need to take X-rays / some pictures using a special camera.

We are going to put fluoride / sealants on your teeth.

Informing the patient of their potential feelings during the treatment:

There is going to be slight pressure.

The needle will cause a slight sting. / You will feel a little sting. / It is going to sting a little.

You will be a little / very sore.

Signal me if you have pain. / Let me know if you feel any pain.

Talking about medicines:

I am going to prescribe / We are going to give you some antibiotics / painkillers / pain relievers.

I am going to fill in a prescription for some antibiotics / painkillers / pain relievers.

This medicine will help with healing / reduce the swelling / ease the pain.

Treatment will take (approximately) 2 days / weeks / months / years.

After giving or prescribing the treatment:

We will need to schedule your next check-up in 3 days / weeks / months.

Call me if it doesn't get better.

Call me if you experience any secondary effects.

Vocabulary. Questions that patients may ask regarding treatment.

Before the treatment:

Noemí Barrera Rioja
Enrique Cerezo Herrero
María López Rubio

Could you tell me what a root canal / regular check-up / the treatment for a cavity involves?

Could you explain the treatment plan to me?

What do you take the tooth out with? / What do you use to take the tooth out?

What do you do if the tooth breaks during the extraction?

Will the pain I'm having now be gone? How long will it take?

Is it in the upper or lower jaw?

Let me see the syringe.

After the treatment:

Will it hurt afterwards?

What should I do if I feel pain after the appointment / surgery?

What should I do after getting a tooth extracted?

Is it normal to bleed after extractions?

What can I eat after my dental surgery?

Does this toothpaste help with sensitive teeth?

How can I improve my dental hygiene at home?

Exercise 12. Choose the most appropriate answer to the following patients' questions.

1. How can I improve my dental hygiene at home?
2. What should I do after getting a tooth extracted?
3. What does the treatment for a cavity entail?
4. What do you use to take the tooth out?

- a) I will remove the decayed portion of the tooth and then fill it with composite resin or amalgam.
 - b) I would recommend brushing twice a day, flossing daily, and maybe also using a mouthwash to reduce bacteria.
 - c) I use elevators to loosen the tooth and forceps to grasp and remove it. But please do not worry, I will give you local anesthesia, so you won't feel anything.
 - d) It's important to keep the area clean and not eat solid foods for the next 24 hours.

Exercise 13. Translate into English the extracts in Spanish in the following conversations.

Dentist: You need a root canal.

Patient: What does that entail?

Dentist: El tejido blando dañado que se encuentra en el interior del diente se extirpa y el diente se limpia y luego se empasta. 1. _____.

Patient: Will it hurt afterwards?

Dentist: Te molestará un poco, pero te voy a recetar unos analgésicos. 2. _____. Si el dolor se intensifica o no se va en unos días, por favor, llámame. 3. _____.

Dentist: I am going to have to take this tooth out.

Patient: How long will it take?

Dentist: El procedimiento debería durar entre 20 y 60 minutos. 4. _____.

Patient: Will it hurt?

Dentist: Voy a dormir la zona, así que no te dolerá, solamente notarás un ligero pinchazo. 5. _____.

Patient: What should I do after getting the tooth removed?

Dentist: Durante al menos las 24 horas siguientes a la extracción, deberías tomar alimentos blandos, limitar las actividades que requieran esfuerzo y evitar enjuagarte la boca y fumar. 6. _____.

Patient: Is it normal to bleed after extractions?

Dentist: Sí, un poco de sangrado es normal, pero si es abundante o sigues sangrando pasadas 24 horas, por favor, llámame. 7. _____.

Dentist: You have a cavity.

Patient: What does the treatment for that involve?

Dentist: En tu caso, el diente no está muy dañado, así que tan solo necesitas un empaste. 8. _____.

Patient: That's great to hear. What can I eat after the procedure?

Dentist: Es importante que evites tomar alimentos duros durante un par de semanas. 9.
_____.

Patient. Okay, thanks. When do I need to come back for a check-up?

Dentist: Tendremos que programar la revisión para dentro de seis meses. 10.
_____.

Exercise 14. Imagine that you are working at your dental office. In pairs, improvise a dialogue for the following situations.

1. Your patient requires an orthodontic treatment. Tell them and refer them to a specialist.
2. Your patient presents a very serious case of caries. Tell them and explain to them what the treatment will involve (surgery, medication, healing time, etc.), and respond to any questions or concerns they may have.
3. You are about to extract a patient's tooth. Inform them of the steps that you are going to take, tell them what to do and what not to do after the procedure (medication, eating, hygiene, etc.), and address any questions or concerns they may have.

Exercise 15. Here is an example of how to explain a treatment to a patient. Read the text and answer the questions below.

Headgear

The Face Changer

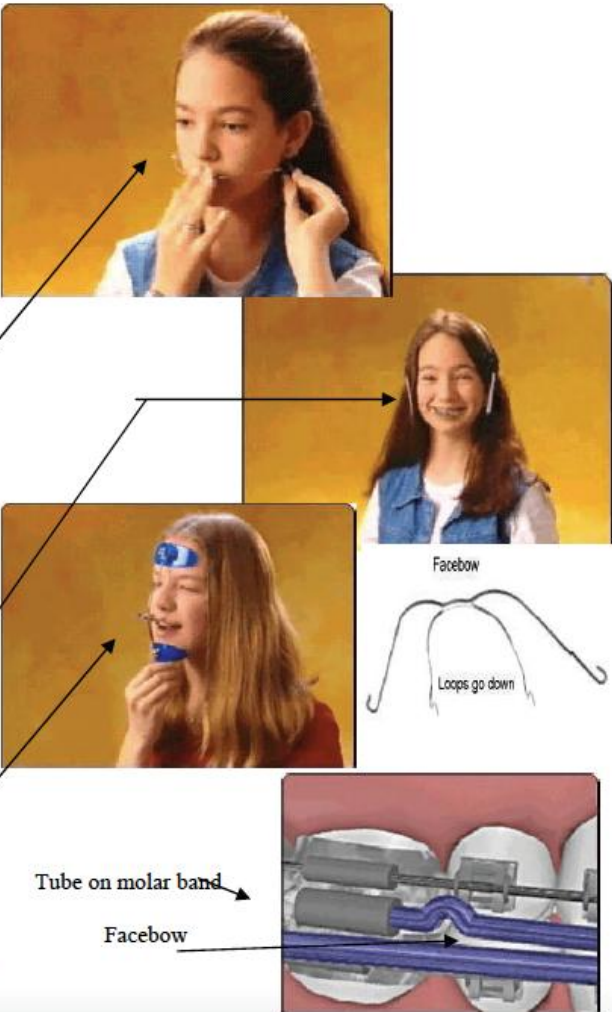
What's this thing in my face all about?
Headgear is an orthodontic appliance that helps straighten your teeth and jaws. When your top and bottom jaw bones don't fit together as they should, the headgear works while you are still growing to help make them fit better. It also acts as the anchor guy in the tug of war game we play with your teeth. You see, as we move your front teeth back we need to hold your back teeth in place. That's a job for the headgear.

SOME COMMON STYLES:

Neckgear – the front metal wire or facebow that fits into tubes on your molar bands and connects with a strap which fits around your neck. This strap is tightened over time to put pressure on the jaws.

Hi-Pull – same as a neckgear but instead of the strap around your neck it goes on top of your head. This type can also be connected to Twin Blocks and Bite blocks instead of to teeth.

Reverse Pull – as the name implies this style of headgear pulls the top jaw in an opposite direction from the other types. Top and bottom pads hold a bar in front of your face while elastic bands connect to your back braces to pull the top jaw forward.



Tube on molar band

Facebow

Loops go down

DR. STEPHEN C. GURZA
ORTHODONTIST

1. What problem do patients that need a headgear have?
 - a. Their teeth are not aligned and their jawbones do not fit together properly.
 - b. Their jawbones are broken.
 - c. Some of their teeth cannot come out due to lack of space.
 - d. They grind their teeth at night.
2. Which of the three headgear styles uses a strap that goes over the top of the head?
 - a. Neckgear
 - b. Hi-Pull
 - c. Reverse Pull
 - d. None of these

3. Which of the three headgear styles pulls the upper jaw forward?
 - a. Neckgear
 - b. Hi-Pull
 - c. Reverse Pull
 - d. None, all of these pull the upper jaw backwards.

4. How would you explain the purpose of a headgear and how it works to a patient that needs it?

4. DISCUSSING CURRENT RESEARCH IN THE FIELD OF DENTISTRY

A career in Dentistry entails staying up to date with the latest developments in the field, primarily by reading academic papers and participating in scientific exchanges such as conferences. For this reason, it is vital that future dentists acquire the necessary linguistic knowledge and skills to perform well not only at the dental office, but also in academia.

BECOMING FAMILIAR WITH ACADEMIC PAPERS

The aim of the following materials and exercises is for the student to become familiar with the structure of an academic paper and the contents of each of its sections.

Source: Lee, S. J., Chung, D., Asano, A., Sasaki, D., Maeno, M., Ishida, Y., Kobayashi, T., Kuwajima, Y., Da Silva, J. D. & Nagai, S. (2022). Diagnosis of Tooth Prognosis Using Artificial Intelligence. *Diagnostics*, 12, 1422.

Theory. The structure of an academic paper.

1. **Abstract:** This is the first part of a paper. It is found immediately below the title of the paper and the name(s) and affiliation(s) of the author(s), and it is generally 200 words. An abstract is a summary of the contents of the entire paper. Thus, it briefly puts forward the motivation behind the study conducted (that is, why it is necessary and relevant to the field), its objective or research question (in other words, what it aims to find out), the methodology adopted to collect and examine the data, and the key results obtained as well as the main conclusion drawn from the analysis of said data.
2. **Keywords:** Found immediately after the Abstract, this section provides a list of the (generally) 5 or 6 terms that best describe the research conducted.
3. **Introduction:** This is the first section of the body of the paper. In this section, the author(s) must provide background information on their research topic, which includes stating the research problem, justifying the relevance of the issue explored, presenting any previous research conducted on the topic and pointing out any gaps in this research, and establishing the objective, research question or hypothesis that guides the study.
4. **Materials and Methods:** This is the section that follows the Introduction. This section offers a description of the data that the author(s) of the study have collected and the procedures or techniques followed to analyse it in order to attain their objective or respond to their question. Figures (such as tables and images) may be used here.
5. **Results:** Following the Materials and Methods section, the author(s) present the results obtained from the analysis of the data. This section simply reports the findings, often using tables and graphs.

6. **Discussion:** Once the results have been reported, in this section, the author(s) interpret them, relate them to the existing literature, and discuss their implications.
7. **Conclusion:** This final section of the body of the paper provides a summary of the main findings and their importance to the field of Dentistry. It may also include an overview of any limitations that the study may present and future lines of research to continue expanding the information available on the issue explored; however, these may be present in the Discussion instead.
8. Some journals may require author(s) to add, after the Conclusion, certain information about the study. This includes adding sections such as **Acknowledgements** (in which they thank individuals or institutions that may have assisted them during the research), **Data Availability Statement** (in which they explain where or how the complete data set of the study can be accessed), **Informed Consent Statement** (when the study has relied on participants), or **Funding** (when the research has received external funding).
9. **References:** All papers offer a list of all the sources cited in the paper at the end. These lists are formatted according to each journal's guidelines.

Exercise 1. Match the following extracts from a scientific paper with the section to which they belong.

Abstract	
Keywords	
Introduction	
Materials and Methods	
Results	
Discussion	
Conclusion	
References	

- a) Tooth prognosis
- b) The mean prognosis rank among 32 tooth types was 4.19 ± 0.93 , max: 4.68, min: 3.43 (Figure 3).

- c) Studies [26–29] also utilized machine-learning methods to find the most significant factors predicting implant systems and prognosis. It is also reported that dentists have become dependent on computer applications to gain insights for clinical decision making [30–32]. Machine-learning algorithms were utilized to identify predictors for tooth loss from the National Health and Nutrition Examination survey and assisted clinicians in prioritizing interventions to prevent tooth loss [33]. However, to date, little is known about AI implemented in comprehensive dental treatment planning.
- d) Through multiple discussions among the faculty members, 17 key parameters including medical and dental conditions, hard tissue, and periodontal, endodontic, prosthodontic, and orthodontic conditions were determined for a training dataset for machine learning (Figure 1). These parameters were selected based on the weight on tooth prognosis for an ideal treatment plan to be considered. Then, data on each parameter were entered into an Excel sheet (Microsoft 365, Washington, DC, USA) using electronic records in axiUm and case presentation documents.
- e) This study utilized data from a multidisciplinary study team comprised of leading specialists from prosthodontics, periodontics, endodontics, and long-term experienced clinician educators at HSDM. Since various factors can impact tooth prognosis, this integration of different disciplines is critical and meaningful to achieve better predictions. Model-A showed a higher accuracy than Model-B in all three machine-learning methods. As Model-A includes the datasets trained by a group including experienced prosthodontists, the accuracy turned out to be higher and more predictable in consensus with the gold standard. This result is comparable to the findings that the accuracy of machine learning-generated analytics and predictive modeling is highly dependent on the type and quality of the data from which the machine learning system is learning [36].
- f) The accurate diagnosis of individual tooth prognosis has to be determined comprehensively in consideration of the broader treatment plan. The objective of this study was to establish an effective artificial intelligence (AI)-based module for an accurate tooth prognosis decision based on the Harvard School of Dental Medicine (HSDM) comprehensive treatment planning curriculum (CTPC). The tooth prognosis of 2359 teeth from 94 cases was evaluated with 1 to 5 levels (1—Hopeless, 5—Good condition for long term) by two groups (Model-A with 16, and Model-B with 13 examiners) based on 17 clinical determining factors selected from the HSDM-CTPC.
- g) Prosthodontics

- h) Pethani, F. Promises and perils of artificial intelligence in dentistry. *Aust. Dent. J.* 2021, 66, 124–135.
- i) Within the limitations of the study, it was concluded that an AI-based machine learning algorithm will be a helpful tool to determine tooth prognosis in consideration of the treatment plan. The comprehensive treatment plan needs to be well considered to diagnose tooth prognosis for long-term oral health and function.
- j) The ultimate goal of this project is to develop an integrated and comprehensive system to create a treatment plan by AI-based machine-learning algorithms. The specific aim of this study was to create an effective AI-based module that allows for accurate clinical decisions on tooth prognosis, taking the ideal treatment plan into account.
- k) The developed models will continuously synthesize their predictive outcome measures and improve their accuracy, allowing clinicians to decide their treatment prognosis in various and complex cases. In the future, real-time online clinical decision support tools can be created by incorporating the machine-learning algorithms developed from this study to facilitate precision medicine in oral care. According to Hung et al., these algorithms can be used as a screening tool in general medical practices, dental clinics, and social service centers or placed online, providing recommendations for dental examinations for those identified as high risk [38].
- l) The decision tree classifier indicated the highest accuracy at 0.8413 (Model-A) and 0.7523 (Model-B). Accuracy with the gradient boosting classifier and the random forest classifier was 0.6896, 0.6687, and 0.8413, 0.7523, respectively. Overall, the decision tree classifier had the best accuracy among the three methods. The study contributes to the implementation of AI in the decision-making process of tooth prognosis in consideration of the treatment plan.
- m) Prognosis is determined by comprehensive clinical knowledge, experience, and patient-specific factors. Moreover, in complex cases, treatment planning is predicated on multidisciplinary analysis and requires the evaluation of not only the individual tooth, but also the entire oral structure, which involves the plane of occlusion, the vertical dimension of occlusion, and the arch form. Thus, treatment planning remains one of the most challenging aspects of clinical practice and dental education.
- n) Sixteen examiners (Table 2, Model-A) individually graded the tooth prognosis of 2359 teeth by ranking from 1 to 5, with 1: hopeless tooth (signifying severe problems requiring tooth extraction) and 5: healthy tooth (signifying good conditions for long-

term). The examiners graded the tooth prognosis in consideration of future comprehensive treatment plans.

- o) The mean value of the gold standard of the prognosis rank of all 2359 teeth was lower than the rank of learning data ($p < 0.001$, Figure 4). The percentage of the prognosis rank of the learning data matched with GS rank indicated a particular trend among the tooth types (Figure 5). Among 2359 teeth ranked by 17 examiners, 69.24% of teeth matched with the GS rank. The matching percentage was significantly different among the type of tooth (<0.01 , one-way ANOVA).
- p) Using the gradient boosting classifier, Model-A achieved an accuracy of 0.6896, while Model-B achieved an accuracy of 0.6687. With the decision tree classifier, Model-A achieved an accuracy of 0.8413, while Model-B achieved an accuracy of 0.7523. Using the random forest classifier, Model-A achieved an accuracy of 0.8312 and Model-B achieved an accuracy of 0.7421. Overall, the decision tree classifier method had the best accuracy among the three methods. Model-A indicated a higher accuracy than Model-B for all three machine-learning methods.
- q) Ha, S.R.; Park, H.S.; Kim, E.H.; Kim, H.K.; Yang, J.Y.; Heo, J.; Yeo, I.L. A pilot study using machine learning methods about factors influencing prognosis of dental implants. *J. Adv. Prosthodont.* 2018, *10*, 395–400.
- r) The three machine-learning algorithm methods used in this study come with their individual set of advantages. A random forest classifier was used because, according to Uddin et al., it demonstrated superior accuracy among other supervised machine-learning algorithms including artificial neural networks, k-nearest neighbor, logistic regression, decision tree, naïve Bayes, and support vector machine.

Source: Könönen, E., Gursoy, M., & Gursoy, U. K. (2019). Periodontitis: A Multifaceted Disease of Tooth-Supporting Tissues. *Journal of Clinical Medicine*, 8(8), 1135. <https://doi.org/10.3390/jcm8081135>

Exercise 2. Analyse the structure of the following Abstract.

Periodontitis is an infection-driven inflammatory disease in which the composition of biofilms plays a significant role. Dental plaque accumulation at the gingival margin initiates an inflammatory response that, in turn, causes microbial alterations and may lead to drastic consequences in the periodontium of susceptible individuals. Chronic inflammation affects the gingiva and can proceed to periodontitis, which characteristically results in irreversible loss of attachment and alveolar bone. Periodontitis appears typically in adult-aged

populations, but young individuals can also experience it and its harmful outcome. Advanced disease is the major cause of tooth loss in adults. In addition, periodontitis is associated with many chronic diseases and conditions affecting general health.

Exercise 3. Provide the Spanish equivalent for the following terms from the text in Exercise 2.

1. Periodontitis:
2. Infection-driven inflammatory disease:
3. Biofilms:
4. Dental plaque accumulation:
5. Gingival margin:
6. Inflammatory response:
7. Microbial alterations:
8. Periodontium:
9. Chronic inflammation:
10. Gingiva:
11. Loss of attachment:
12. Alveolar bone:
13. Tooth loss:

Exercise 4. Translate the text in Exercise 2.

READING ACADEMIC PAPERS

The aim of the following materials and exercises is for students to enhance their reading comprehension skills by being exposed to academic texts in their field of study.

Source: Zhang, J. S., Chu, C. H. & Yu, O. Y. (2022). Oral Microbiome and Dental Caries Development. *Dentistry Journal*, 10, 184.

Exercise 1. Read the following Abstract and choose the most appropriate answer.

Dental caries remains the most prevalent oral disease worldwide. The development of dental caries is highly associated with the microbiota in the oral cavity. Microbiological research of dental caries has been conducted for over a century, with conventional culture-based methods and targeted molecular methods being used in order to identify the

microorganisms related to dental caries. These methods' major limitation is that they can identify only part of the culturable microorganisms in the oral cavity. Introducing sequencing-based technology and bioinformatics analysis has boosted oral microbiome research and greatly expanded the understanding of complex oral microbiology. With the continuing revolution of molecular technologies and the accumulated sequence data of the oral microbiome, researchers have realized that microbial composition alone may be insufficient to uncover the relationship between caries and the microbiome. Most updated evidence has coupled metagenomics with transcriptomics and metabolomics techniques in order to comprehensively understand the microbial contribution to dental caries. Therefore, the objective of this article is to give an overview of the research of the oral microbiome and the development of dental caries. This article reviews the classical concepts of the microbiological aspect of dental caries and updates the knowledge of caries microbiology with the results of current studies on the oral microbiome. This paper also provides an update on the caries etiological theory, the microorganisms related to caries development, and the shifts in the microbiome in dental caries development.

1. Which oral health condition is described as the most common in the world?
 - a) Gingivitis.
 - b) Dental caries.
 - c) Oral cancer.
 - d) Periodontitis.

2. What is the main limitation of using traditional culture-based techniques in studying dental caries?
 - a) They cannot detect all the microorganisms that can be grown in a lab.
 - b) They are too expensive to perform.
 - c) They cannot detect microbial DNA.
 - d) The focus only on viral infections.

3. What effect has sequencing technology had on research into the oral microbiome?
 - a) It has made dental treatment easier.
 - b) It has made any laboratory testing unnecessary.
 - c) It has reduced interest in studying the microbiome.
 - d) It has improved our knowledge of the complex microbiology present in the mouth.

4. Why is focusing only on the types of microbes in the mouth not sufficient to explain dental caries?
 - a) Because bacteria have nothing to do with dental caries.
 - b) Because knowing which microbes are present does not show how they contribute to the disease.
 - c) Because the data obtained from studying microbes is not reliable.
 - d) Because microbes cannot survive in the oral cavity.
5. Which techniques are combined nowadays to better understand how microbes influence dental caries?
 - a) Only genetic testing.
 - b) X-rays and physical exams.
 - c) Metagenomics, transcriptomics, and metabolomics.
 - d) Antibiotic resistance tests.
6. What is the main aim of the article?
 - a) To recommend a new dental treatment for dental caries.
 - b) To criticise older methods of research applied to dental caries.
 - c) To review and update research on how oral microbes contribute to dental caries.
 - d) To prove that all bacteria are harmful and lead to dental caries.

Exercise 2. Provide the Spanish equivalent for the following terms from the text in Exercise 1.

1. Oral cavity:
2. Microbiological research:
3. Culturable microorganisms:
4. Microbiome:

Source: Endres, M. G., Hillen, F., Salloumis, M., Sedaghat, A. R., Niehues, S. M., Quatela, O. Hanken, H., Smeets, R., Beck-Broichsitter, B., Rendenbach, C., Lakhani, K., Heiland, M. & Gaudin, R. A. (2020). Development of a Deep Learning Algorithm for Periapical Disease Detection in Dental Radiographs. *Diagnostics*, 10, 430.

Exercise 3. Read the following Abstract and choose the most appropriate answer.

Periapical radiolucencies, which can be detected on panoramic radiographs, are one of the most common radiographic findings in dentistry and have a differential diagnosis including infections, granuloma, cysts and tumors. In this study, we seek to investigate the ability with which 24 oral and maxillofacial (OMF) surgeons assess the presence of periapical lucencies

on panoramic radiographs, and we compare these findings to the performance of a predictive deep learning algorithm that we have developed using a curated data set of 2902 de-identified panoramic radiographs. The mean diagnostic positive predictive value (PPV) of OMF surgeons based on their assessment of panoramic radiographic images was 0.69 (± 0.13), indicating that dentists on average falsely diagnose 31% of cases as radiolucencies. However, the mean diagnostic true positive rate (TPR) was 0.51 (± 0.14), indicating that on average 49% of all radiolucencies were missed. We demonstrate that the deep learning algorithm achieves a better performance than 14 of 24 OMF surgeons within the cohort, exhibiting an average precision of 0.60 (± 0.04), and an F1 score of 0.58 (± 0.04) corresponding to a PPV of 0.67 (± 0.05) and TPR of 0.51 (± 0.05). The algorithm, trained on limited data and evaluated on clinically validated ground truth, has potential to assist OMF surgeons in detecting periapical lucencies on panoramic radiographs.

1. According to the text, why is it relevant to study periapical radiolucencies?
2. What is the objective of the paper?
3. On panoramic radiographs, how often did surgeons diagnose periapical radiolucencies that were really not there?
 - a) 14 out of 24 times
 - b) On 31% of the cases
 - c) On 49% of the cases
 - d) Never
4. The deep learning algorithm trained to identify periapical radiolucencies on panoramic radiographs performed worse than OMF surgeons.
 - a) True
 - b) False
5. The paper posits that OMF surgeons could use the deep learning algorithm as a tool to help them detect periapical radiolucencies on panoramic radiographs.
 - a) True
 - b) False

Exercise 4. Provide the Spanish equivalent for the following terms from the text in Exercise 3.

1. Periapical radiolucency:
2. Differential diagnosis:
3. Cysts:
4. Falsely diagnose:

Source: Xu, M., Shao, Q., Zhou, Y., Yu, Y., Wang, S., Wang, A., & Cai, Y. (2024). Potential effects of specific gut microbiota on periodontal disease: A two-sample bidirectional Mendelian randomization study. *Frontiers in Microbiology*, 15, Article 1322947. <https://doi.org/10.3389/fmicb.2024.1322947>

Exercise 5. Read the following excerpt from a scientific article on periodontal disease and answer the following questions.

Introduction: Periodontal disease (PD) presents a substantial global health challenge, encompassing conditions from reversible gingivitis to irreversible periodontitis, often culminating in tooth loss. The gut-oral axis has recently emerged as a focal point, with potential gut microbiota dysbiosis exacerbating PD.

Methods: In this study, we employed a double-sample bidirectional Mendelian randomized (MR) approach to investigate the causal relationship between specific gut microbiota and periodontal disease (PD) and bleeding gum (BG) development, while exploring the interplay between periodontal health and the gut microenvironment. We performed genome-wide association studies (GWAS) with two cohorts, totalling 346,731 (PD and control) and 461,113 (BG and control) participants, along with data from 14,306 participants' intestinal flora GWAS, encompassing 148 traits (31 families and 117 genera). Three MR methods were used to assess causality, with the in-verse-variance-weighted (IVW) measure as the primary outcome. Cochran's Q test, MR-Egger, and MR-PRESSO global tests were used to detect heterogeneity and pleiotropy. The leave-one-out method was used to test the stability of the MR results. An F-statistic greater than 10 was accepted for instrument exposure association.

Results and conclusion: Specifically, *Eubacterium xylanophilum* and *Lachnoclostridium* were associated with reduced gum bleeding risk, whereas *Anaerotruncus*, *Eisenbergiella*, and *Phascolarctobacterium* were linked to reduced PD risk. Conversely, *Fusicatenibacter* was associated with an elevated risk of PD. No significant heterogeneity or pleiotropy was detected. In conclusion, our MR analysis pinpointed specific gut flora with causal connections to PD, offering potential avenues for oral health interventions.

1. What was the aim of the study conducted by Xu et al. (2024)?
2. What method did they use to investigate the relationship between gut microbiota and periodontitis?
3. What is meant by 'Mandelian randomization' and why is it relevant in this study?
4. What type of relationship (directionality) between gut microbiota and periodontitis does the study explore?
5. What are the main results of the study?

Exercise 6. Translate the text in Exercise 5.

Source: Pimkhaokham, A., Jiaranuchart, S., Kaboosaya, B., Arunjaroensuk, S., Subbalekha, K. & Mattheos, N. (2022). Can computer-assisted implant surgery improve clinical outcomes and reduce the frequency and intensity of complications in implant dentistry? A critical review. *Periodontology 2000*, 90, 197-223.

Exercise 7. Read the following Introduction section of an academic article and answer the following questions.

Computer-assisted implant surgery (CAIS) includes two major technological pathways, typically distinguished as static and dynamic Computer-assisted implant surgery (d-CAIS) or real-time navigation. Static Computer-assisted implant surgery (S-CAIS) technology utilizes a surgical guide for guiding the osteotomy and implant installation, while the d-CAIS system guides the surgeon during osteotomy and implant placement through real-time imaging by means of optical tracking devices. Both systems are currently widely used and have been well documented to help surgeons achieve significantly higher accuracy of implant placement than conventional freehand surgery. Several recent systematic reviews and meta-analyses have shown superior outcomes in terms of accuracy for both static as well as d-CAIS.

Accuracy of implant placement, however, is not the end purpose in itself. Instead, by offering superior accuracy, the endpoint of CAIS is to facilitate superior clinical outcomes, by reducing

failures, complications, and adverse effects. There are many ways that increased accuracy is expected to influence clinical outcomes. Some authors have suggested that CAIS could reduce intraoperative complications by helping the surgeon avoid damaging sensitive anatomic structures such as the mandibular nerve and the sinus, as well as avoid proximity to roots of neighboring teeth. Some have suggested CAIS could reduce the invasiveness, complexity, and duration of surgical interventions, while others have reported increasing patients' satisfaction and acceptance. Finally, as this technology aims to empower the proper prosthetic-driven implant placement, it could potentially impact the long-term outcomes of implant therapy by allowing implant placement in the optimal position and angulation for prosthetic designs that could promote sustainable esthetic outcomes and health of the peri-implant tissue. Optimal positioning of the implants may also reduce the cost of reconstruction, by allowing the use of stock abutments and minimizing the need for expensive customized solutions. Initial research on CAIS and consequent systematic reviews have primarily focused on reporting accuracy, although some authors acknowledge that survival rates, complications, patient-centered outcomes, and socioeconomic benefits are essential variables that cannot be ignored. As these technologies are increasingly applied, assessing overall effectiveness and efficiency is critical to identify the potential and limitations of such systems, as well as help clinicians to make evidence-based decisions.

The primary aims of this critical review were to investigate whether the use of CAIS can lead to:

1. Reduction of the frequency and extent of complications (intraoperative, postoperative, and medium/long term).
2. Improvement of patient-reported outcomes (PRO) and/or patient-reported experience (PRE).

The secondary aims were to report the influence of CAIS on:

1. Clinical outcomes related to complications (plaque index, bleeding on probing (BOP), probing depth, keratinized mucosa, marginal bone loss (MBL), esthetic outcomes, duration of surgery).
2. Clinical outcomes related to the overall efficiency of CAIS (duration of the surgery, experience, and training of the operator).

1. What has been the primary focus of most of the initial research conducted on CAIS?
 - a) Accuracy of implant placement
 - b) Cost effectiveness
 - c) Increasing the lifespan of implants

- d) Patient satisfaction
- 2. What does the text mention as the fundamental goal of using CAIS in implant surgery?
 - a) To make surgery completely automatic.
 - b) To reduce the costs of implant surgery.
 - c) To improve long-term clinical outcomes and reduce complications derived from surgery.
 - d) To improve the accuracy of implant placement.
- 3. Name two potential clinical benefits of CAIS, as mentioned in the text.
- 4. According to the text, what should be taken into consideration, apart from accuracy, when assessing the effectiveness of CAIS systems?
- 5. What are the main objectives of the paper?

Exercise 8. Provide the Spanish equivalent for the following terms from the text in Exercise 7.

- 1. Imaging:
- 2. Freehand surgery:
- 3. Neighboring teeth:
- 4. Peri-implant tissue:
- 5. Abutment:
- 6. Probing:
- 7. Marginal bone loss:

Source: Zhang, J. S., Chu, C. H. & Yu, O. Y. (2022). Oral Microbiome and Dental Caries Development. *Dentistry Journal*, 10, 184.

Exercise 9. Read the following Introduction section of an academic article and answer the following questions.

Dental caries is the most common oral disease worldwide. Untreated caries affects 2.5 billion adults and 573 million children all over the world [1], placing a heavy health burden on health care systems and society. Over the past 25 years, the prevalence of dental caries has remained at a similarly high level despite oral health care providers' efforts [2]. The high

prevalence of dental caries indicates the effect of the research on dental caries. Dental caries is a multifactorial disease that involves microbial, behavioral, genetic, and environmental factors [3]. Although these factors are important in caries development, the role of microbial factors cannot be ignored. Because the development of dental caries is closely correlated to oral microorganisms, a comprehensive understanding of caries microbiology is essential.

The microbiology of dental caries has been investigated for over a century, with a revolutionized advance in study approaches. Previous studies have used traditional culture-based methods in order to identify the bacteria related to dental caries [4]. The culture-based method has allowed for a basic understanding of the dental plaque microbiota composition in dental caries to be established. Microorganisms have been isolated from carious lesions or dental plaque samples collected from a cross-sectional or longitudinal study using culture-based techniques [5,6]. However, bacteria can only be successfully cultured when provided with their own special growth requirements. At present, because artificial media cannot exactly mimic the natural environment within which oral bacteria reside, most fastidious bacteria remain uncultivable in vitro [7].

Targeted molecular methods for identifying and quantifying caries-associated bacteria were introduced in the early 1990s [8,9]. Targeted molecular methods use DNA probes obtained from cultured bacterial species to enumerate the bacteria [10]. This allows for identifying and quantifying multiple species in dental plaque samples from more individuals compared to culture-based methods. This also facilitates the analysis of species that are difficult to culture [4]. However, targeted molecular methods can only detect the preselected bacteria that culture-based methods have already confirmed. Unknown bacteria sets in the dental plaque cannot be detected.

The introduction of sequencing-based technology and bioinformatics analysis has greatly expanded the understanding of complex oral microbiology. Unlike the targeted molecular methods, next-generation sequencing (NGS) techniques identify sequences by comparing them to the curated microbiome database, enabling the detection of novel species that have historically been uncultivable [11]. Since the development of the Sanger sequencing technique in 1977, great efforts have been made to conquer the high cost and low efficiency of “reading” genes. NGS, also known as massively parallel sequencing technology, stands out for allowing ultra-high throughput with a deeper coverage of the microbial community at a lower cost. During the last decade, targeted 16S rRNA amplicon sequencing, which relies on the amplification of one to three selected hypervariable regions of 16S rDNA, has been widely adopted to study the oral microbiome’s compositional changes in dental caries. However, sequencing fragments of the 16S rRNA gene can miss variants that discriminate different species or strains, which compromises this technique’s taxonomic resolution [12].

The improvement in sequence length in metagenomics overcomes the limitation of 16S rRNA gene sequencing. It is promising in identifying more members of the microbial community [13]. Studies that are more recent coupled metagenomics with transcriptomics and metabolomics to investigate how the active microbial community collaborates in the initiation and progression of dental caries [14–16]. They investigated what the microorganisms in the studied niches were, as well as how the microorganisms actively worked together to cause disease. The understanding of caries microbiology has been greatly enriched with the advancement of sequencing-based technology and bioinformatics analysis in recent years. Therefore, this article aims to review the classical concepts on the microbiological aspect of dental caries and to update the knowledge of caries microbiology with the results of studies on the oral microbiome conducted over the past few years.

1. Which paragraphs explain...
 - a) ...the reason why it is important to study oral microbes to better understand the development of dental caries?
 - b) ...previous research conducted on the research topic and its limitations?
 - c) ...the objective of the paper?
2. According to the text, why is it important to understand the microbiology of dental caries?
3. According to the text, which of the following methods is the most effective for studying the connection between oral microbes and dental caries?
 - a) Culture-based methods
 - b) Targeted molecular methods
 - c) Next-generation sequencing (NGS)
 - d) Sequencing-based methods combined with bioinformatics, metagenomics, transcriptomics, and metabolomics
4. Match the following methods mentioned in the text with their most prominent advantage and limitation:

	Advantage	Limitation
Culture-based methods		

Targeted molecular methods		
Next-generation sequencing		

- a) They make it possible to identify and measure several types of bacteria, even those that may not grow under lab conditions.
- b) They enable a quick, cheaper and more detailed analysis of large amounts of microbial data.
- c) They only allow the study of bacteria that can grow under lab conditions.
- d) They allowed to isolate microorganisms from carious lesions or dental plaque, thus providing an understanding of the connection between microbes in dental plaque and dental caries.
- e) They can only detect bacteria that have already been identified by culture-based methods.
- f) They may not be able to identify genetic differences that are necessary to distinguish between similar species or strains of microbes.

Source: Lee, S. J., Chung, D., Asano, A., Sasaki, D., Maeno, M., Ishida, Y., Kobayashi, T., Kuwajima, Y., Da Silva, J. D. & Nagai, S. (2022). Diagnosis of Tooth Prognosis Using Artificial Intelligence. *Diagnostics*, 12, 1422.

Exercise 10. Read the following Results section of an academic article and answer the following questions.

3.1. Statistics of Tooth Prognosis Rank

The mean prognosis rank among 32 tooth types was 4.19 ± 0.93 , max: 4.68, min: 3.43 (Figure 3). The specific patterns of prognosis rank were observed among the tooth types.

One-way analysis of variance (ANOVA) indicated a significant difference in tooth prognosis rank among the tooth types ($p < 0.01$). Tukey's post hoc test showed that the mean values of the prognosis rank of canines, central incisors, and lateral incisors were significantly higher than for premolars and molars ($p < 0.01$, Table 3).

The mean value of the gold standard of the prognosis rank of all 2359 teeth was lower than the rank of learning data ($p < 0.001$, Figure 4). The percentage of the prognosis rank of the learning data matched with GS rank indicated a particular trend among the tooth types (Figure 5). Among 2359 teeth ranked by 17 examiners, 69.24% of teeth matched with the GS rank. The matching percentage was significantly different among the type of tooth (<0.01 ,

one-way ANOVA). The canines indicated a significantly higher matching rate than premolars and molars ($p < 0.01$). There was an association between the prognosis rank and its matching rate with GS. The Pearson's correlation coefficient was $+0.432$ ($p < 0.001$, Figure 6).

3.2. Accuracy of AI Machine Learning Methods

The accuracy of the performance of the three machine learning methods for the two models is shown in Table 4. Using the gradient boosting classifier, Model-A achieved an accuracy of 0.6896, while Model-B achieved an accuracy of 0.6687. With the decision tree classifier, Model-A achieved an accuracy of 0.8413, while Model-B achieved an accuracy of 0.7523. Using the random forest classifier, Model-A achieved an accuracy of 0.8312 and Model-B achieved an accuracy of 0.7421. Overall, the decision tree classifier method had the best accuracy among the three methods. Model-A indicated a higher accuracy than Model-B for all three machine-learning methods.

1. According to Tukey's post hoc test, which tooth types had by far the highest prognosis ranks?
 - a) Molars and premolars.
 - b) Central and lateral incisors only.
 - c) Canines, central and lateral incisors.
 - d) All tooth types showed very similar values.
2. Which machine learning method had the highest accuracy overall?
 - a) Decision tree classifier.
 - b) Gradient boosting classifier.
 - c) Random forest classifier.
 - d) The three methods reported the same degree of accuracy.

Source: Fukuda, M., Inamoto, K., Shibata, N., Arijji, Y., Yanashita, Y., Kutsuna, S., Nakata, K., Katsumata, A., Fujita, H. & Arijji, E. Evaluation of an artificial intelligence system for detecting vertical root fracture on panoramic radiography. *Oral Radiology*, 36, 337-343.

Exercise 11. Read the following Results section of an academic article and answer the following questions.

The testing results are summarized in Table 1. Of the 267 boxes detected on the 300 images, 247 boxes correctly identified teeth having a VRF [(vertical root fracture)], but 20 boxes

incorrectly marked teeth without a VRF. Among the incorrectly detected 15 mandibular molars, 2 received root separation surgery. Out of the 330 teeth with true VRFs, 83 teeth were not detected, with no relevant box being shown on the images. Seven (58.3%) of 12 teeth without endodontic treatment were not detected. The recall rates were low for the maxillary incisors but high for the mandibular premolars and molars, while the precision rates were high regardless of tooth type (Table 2). Consequently, the estimated recall, precision, and F measure were 0.75, 0.93, and 0.83, respectively.

A typical correctly detected box is shown in Fig. 3, with a VRF being detected in the right mandibular first molar. Figure 4 shows a maxillary second molar without endodontic treatment that was not detected in the image. In Fig. 5, although a VRF is correctly detected in the mandibular left premolar, the first molar after root separation is incorrectly detected as a tooth with a VRF. Figure 6 shows a right first molar showing periapical and bifurcation radiolucency that was misdiagnosed as having a VRF.

1. 20 of the 267 boxes identified teeth that were actually healthy as teeth with VRF.
 - a) True
 - b) False

2. Teeth without endodontic treatment were more likely to not be detected.
 - a) True
 - b) False

3. The precision rates were low for all tooth types.
 - a) True
 - b) False

Exercise 12. Provide the Spanish equivalent for the following terms from the text in Exercise 11.

1. Vertical root fracture:
2. Root separation surgery:
3. Endodontic treatment:
4. Misdiagnosis:

Source: Pimkhaotham, A., Jiaranuchart, S., Kaboosaya, B., Arunjarosuk, S., Subbalekha, K. & Mattheos, N. (2022). Can computer-assisted implant surgery improve clinical outcomes and

reduce the frequency and intensity of complications in implant dentistry? A critical review. *Periodontology 2000*, 90, 197-223.

Exercise 13. Read the following excerpt from the Discussion section of an academic article and answer the following questions.

Looking at medium-to long-term outcomes, the use of CAIS [(computer-assisted implant surgery)] does not appear to affect the morphology and condition of the peri-implant tissue, as well as tissue inflammatory status. However, none of the comparative studies was longer than a year, a rather short period to assess certain outcomes, such as for example the occurrence of peri-implantitis. Longer noncomparative studies on implants placed with CAIS have reported outcomes within the anticipated range of those with conventionally placed implants and demonstrating similar risk predictors (eg, smoking and years in function for MBL). Longer duration comparative studies utilizing accepted case definitions could clarify whether CAIS can lead to different long-term tissue health outcomes. Assessment of clinical outcomes specific to esthetics has been scarce and not the subject of any comparative studies. Nevertheless, evidence from a retrospective study suggests a direct relationship between implant placement accuracy and esthetics measured by means of PES in the esthetic zone, while other smaller case series suggest PES/WES outcomes were above the acceptable threshold when CAIS was utilized.

The study of PROs and PRE has steadily increased in the last 10 years. Although patients appear to favor CAIS when asked prior to surgery, their actual expectations when it comes to specific aspects of the surgery, as well as presurgical stress levels, do not appear to differ statistically significantly. This might well be attributed to the well known “novelty effect”, which typically occurs with technologies the patients perceive as being innovative. Such a novelty effect might have a stronger influence when patients are asked to recollect experiences retrospectively at time points after treatment completion by means of treatment satisfaction questionnaires, as in Youk et al. At the same time, when more detailed outcomes measures were collected systematically during the respective phases of treatment, healing events, as well as postsurgery functional disturbances reported by patients, did not differ statistically significantly between CAIS used with flap elevation and conventional implant placement. Evidence points to the use of a flapless technique being a more potent determinant of postsurgical healing events. CAIS combined with flapless technique reduced the postsurgical pain statistically significantly and improved reported healing outcomes when compared with a similar CAIS protocol under flap. It is therefore reasonable to assume that the use of CAIS could indirectly contribute towards improving

patient-reported healing outcomes, to the extent that it can facilitate and empower wider use of flapless surgery (Figure 6).

1. Why is our understanding of CAIS's long-term impact on peri-implant tissue health still limited nowadays?
2. Although there is not much research on how implants affect physical appearance, it seems that using CAIS usually has a positive impact on it.
 - a) True
 - b) False
3. Choosing CAIS over more traditional methods significantly reduces the stress that patients experience before surgery.
 - a) True
 - b) False
4. How does CAIS impact healing after surgery?
 - a) It does not affect post-surgery in any way.
 - b) It significantly reduces pain after surgery, but it does not improve healing compared with more traditional methods.
 - c) It does not make a significant difference when the surgery is performed with flap elevation, but patients do report less pain and better healing when using a flapless technique.
 - d) When the surgery is performed following a flapless technique, patients say that they experience more pain but also better healing.

Source: Thoma, D. S., Gil, A., Hämmerle, C. H. & Jung, R. E. (2022). Management and prevention of soft tissue complications in implant dentistry. *Periodontology 2000*, 88, 116-129.

Exercise 14. Read the following excerpt from the Discussion section of an academic article and answer the following questions.

Recent evidence has shown the importance of a healthy peri-implant mucosa, both from a biologic and an esthetic perspective. According to a current systematic review, soft tissue grafting procedures can be recommended for gain of attached tissue and increase of mucosal

thickness. For the former, the use of an apically positioned flap in conjunction with autogenous grafts results in greater improvement compared with sites without a surgical intervention. For the latter, the use of autogenous grafts is generally recommended and results in more stable marginal bone levels.

Apart from the importance of the different grafting techniques, the timing of these particular interventions is important and has an impact on the overall risk of the therapy. Consideration should be given to the quantity and quality of both the attached mucosa and the mucosal thickness present. It is generally understood in cases of a lack of attached tissue or mucosal volume that an earlier surgical intervention results in greater predictability.

Concept-wise, the ideal time point to manage deficient soft tissue defects is considered to be prior to implant placement. Several authors have described techniques to address the soft tissues at the time of tooth extraction and various techniques have been described; among these are the use of a free gingival graft or a connective tissue graft harvested from the palate to optimize the soft tissues in the short term. This time point of management allows for an improvement in soft tissue condition (the presence of a wide band of attached tissue and a thick mucosa horizontally and vertically) before any surgery is performed at the level of the bone. High predictability and reliability for a pleasing esthetic result can be expected for future type 2 or type 3 implant placement.

1. In what way does an apically positioned flap benefit peri-implant mucosa?
 - a) It improves the appearance of the implant.
 - b) It eliminates the need for bone grafting around implants.
 - c) It attaches gum tissue more firmly to the implant.
 - d) It reduces the need for regular oral hygiene around the implant.

2. In what way do autogenous grafts benefit peri-implant mucosa?
 - a) They make the gums thicker, thus helping to keep the bone around the implant more stable.
 - b) They make the gums thicker, thus accelerating the integration of the implant.
 - c) They significantly reduce the risk of infection around the implant.
 - d) They reduce the need for regular oral hygiene around the implant.

3. When there is not enough gum tissue or it is not firm enough, it is advisable to not delay the surgery.
 - a) True

b) False

4. Ideally, soft tissue problems should be addressed after placing the implant.

a) True

b) False

Exercise 15. Provide the Spanish equivalent for the following terms from the text in Exercise 14.

1. Apically positioned flap:
2. Autogenous grafts:
3. Marginal bone level:
4. Grafting techniques:
5. Mucosal thickness:
6. Free gingival graft:
7. Connective tissue graft:

Exercise 16. Read the following text on soft tissue complications around implants and answer the following questions.

Three types of soft tissue complications may develop around dental implants and represent an everyday clinical challenge, namely, a lack of attached mucosa, volume deficiency, and peri-implant mucosal recession.

After tooth extraction, a significant reduction in the ridge dimensions occurs. This shrinkage of the alveolar ridge is not limited to the bone but may also be accompanied by a loss of attached tissue and/or a soft tissue volume deficiency.

The incidence of a complete absence of an adequate band of attached and keratinized tissue has been reported to range from 46% to 74% of all inserted implants. By contrast, incidence data for the lack of mucosal volume around implants has not been reported in the literature because of the difficulties in assessing it in a noninvasive manner. Data, however, suggests that it is a common finding among implants placed in the esthetic zone and its occurrence plays a role in the mucosal color match of implants compared with their adjacent dentition. The color of the peri-implant tissues matches those of the neighboring teeth in only 33% of cases. This mismatch is more obvious in thinner biotypes, where a discoloration may still be clinically noticeable. This, to some extent, underlines the necessity to perform soft tissue grafting procedures, predominantly in the esthetic zone.

The occurrence of recession defects on the buccal side of dental implants is influenced by various factors, such as tissue phenotype, facial bone level, implant angulation and axis, interproximal marginal bone level, implant design, and the level of first bone to implant contact. The incidence of such recession defects varies, depending on the time point when dental implants were placed. For immediate implants, an advanced recession at 10% of implants has been reported, whereas for delayed implants, > 1 mm of midfacial soft tissue recession can be expected in 60% of implants.

All three types of soft tissue complication are, therefore, a common clinical finding and may hamper peri-implant health and the esthetic outcome of implant-borne reconstructions.

1. Pulling a tooth makes the gums around the area thinner or less attached.
 - a) True
 - b) False

2. What is the percentage of implants that are placed in areas with insufficient gum tissue?
 - a) 33%
 - b) 10%
 - c) 46% to 74%
 - d) 60%

3. Which of the three types of soft tissue addressed in the text is most likely to cause the colour of the gum around an implant and the natural teeth nearby to not match?

4. Implants that are not placed immediately after tooth extraction are more likely to result in gum recession.
 - a) True
 - b) False

5. The three types of soft tissue complications mentioned in the text can have a negative impact on the health of dental implants, but do not usually affect their appearance.
 - a) True
 - b) False

6. INTERCULTURAL MEDIATION

SPOKEN MEDIATION

Exercise 1. Read the following dialogue between a patient who only speaks Spanish and a dentist who only speaks English. As a mediation professional, your task is to facilitate communication between the two.

You must prepare the interventions that the intercultural mediator would make, translating accurately, clearly, and appropriately each time you address one of the two parties. Also, take into account the possible differences in the sociocultural context of each of the participants in the communicative act and those aspects that go beyond purely linguistic communication and correspond to patterns of communicative interaction (Raga Gimeno, 2022).

Dentist: Good morning. How are you feeling today?

Patient: Un poco nervioso.

Dentist: That's understandable. We'll take a quick look.

(After the dentist's examination)

Dentist: I see a cavity in your upper left molar. We need to do a filling.

Patient: ¿Qué es un empaste?

Dentist: A filling is when we clean out the decay and fill the space with a special material to prevent further damage.

Patient: ¿Me va a doler?

Dentist: No, don't worry. We use local anesthesia so you won't feel any pain during the procedure.

Patient: Vale... ¿Es seguro?

Dentist: Yes, it's a common and safe procedure. Do you have any other questions?

Patient: ¿Cuándo podemos hacerlo?

Dentist: We can Schedule it for next week, if that works for you.

Patient: De acuerdo. La semana que viene me va bien.

Exercise 2. You are presented with a clinical case in which a patient who only speaks English has had a tooth extracted at a clinic where all professionals speak Spanish. You are given a set of post-operative instructions written in Spanish. Your role as an expert in intercultural mediation is to translate them and convey them orally to the patient in English, using simple, clear language that is suitable for people who are not experts in the subject matter.

- Remember to adapt the medical register to the patient so that the information is understandable, while maintaining the accuracy of the clinical instructions.
- Ensure that the patient fully understands the instructions, repeat or clarify any doubts the patient may have, and make sure that they have everything they need to follow the professional's instructions.

Instrucciones para una buena recuperación tras una extracción dental

1. No tome alimentos ni bebidas calientes durante las próximas 24 horas.
2. No enjuague la boca con fuerza.
3. Tome los analgésicos según lo recetado.
4. Aplique hielo para reducir la inflamación.
5. Si sangra, apriete una gasa limpia durante 30 minutos.
6. En caso de duda, contacte con nosotros en horario de atención al público.
7. Si tiene alguna emergencia, llame al teléfono de urgencias de la clínica.

SPOKEN AND WRITTEN MEDIATION

Exercise 3. Listening and mediating information

Watch the video below about what causes cavities and how they can be prevented. Before watching, work in small groups to discuss the following questions. Then, share your ideas with the rest of the class. You may use online dictionaries to help you understand any unfamiliar words.

Discussion questions:

- What are cavities? Why do people have them? How can they be prevented?
- What causes cavities to appear?
- Why did our ancestors have cavities in their teeth if they ate less sugar compared to us?
- Are some people more prone to cavities than others? Why or why not?
- How can we reduce the risk of developing cavities?
- What steps can we take to manage cavities, besides visiting the dentist?

You are going to watch the video in sections. To help you better understand the content, you should first get familiar with the meaning of some key words/concepts. After that, watch each segment of the video and answer the corresponding comprehension questions. Listen to each segment twice.

Link: https://www.ted.com/talks/mel_rosenberg_what_causes_cavities/transcript?subtitle=es

[Segment 1: 00:00-1:09]

Explain the meaning of the following words in context. Where possible, provide a synonym as well.

1. Archaeologists recently **came across** some 15,000 year-old human remains.
2. The teeth of those ancient humans were **riddled with** holes.
3. Diets high in sugary foods cause an explosion of bacteria called **mutans streptococci**.
4. The bacteria generate **byproducts** in the form of acids, such as **lactic acid**.

Answer the following questions:

1. What did archeologists find in 15,000 year-old human remains?
2. How and when do microbes first appear in our mouths?
3. Why is sugar harmful to our teeth?

[Segment 2: 1:09-2:47]

Match the following words with their corresponding meaning.

1. coated	• To gradually damage or erode something through use or friction.
2. enamel	• Extremely hungry.
3. armor	• Covered with a thin layer of something.
4. leach away (to)	• The hard, outer surface layer of the teeth that protects them from decay.
5. wear down (to)	• The layer of the tooth located beneath the enamel. Softer and more vulnerable to decay.
6. dentin	• Tubes (like veins and arteries) that carry blood throughout the body.
7. blood vessels	• Extremely painful.
8. excruciating	

9. indulge (to)	• To gradually remove or wash away a substance by percolating liquid.
10. lean meat	• To allow oneself to enjoy something, often something considered unhealthy or excessive.
11. enzymes	• Protective covering used for defense.
12. ravenous	• Proteins that speed up chemical reactions, such as digestion.
	• Meat that has very little fat.

Answer the following questions:

1. Why is acid harmful to our teeth?
2. Why does it become painful when bacteria reach beyond the dentin?
3. Did ancient humans have healthier teeth when we do today? Why or why not?

[Segment 3: 2:47-4:45]

Classify the words in the table according to whether they refer to:

- Tools/actions performed when using a tool
- Changes
- Food/substances
- Dental terms
- Prevention/elimination
- Bacteria/interaction

flint	smooth out	beeswax	plug (to)
surge (to)	starch	fluoride	enamel crystals
tooth fillings	close off (to)	cutting down on (to)	get rid of (to)
floss (to)	sticky	cling (to)	avert (to)

Answer the following questions:

1. How did ancient humans care for their teeth and treat cavities?

2. What tools and techniques do we use today to protect our teeth from sugar-related damage?
3. How are cavities treated in modern dentistry?

Now read the transcript below. Look up any unfamiliar words using a dictionary and create a personal glossary. For each word you include, make sure to provide:

- A clear definition.
- At least one synonym.
- A translation into your native language.

The words in bold are the ones you have already studied above. Ignore the underlined sentences for now.

Transcript

[Segment 1: 00:00-1:09]

When a team of archaeologists recently **came across** some 15,000 year-old human remains, they made an interesting discovery. The teeth of those ancient humans were **riddled with** holes.

Their cavities were caused by the same thing that still plagues us today, specific tiny microbes that live in our mouths. These microbes are with us soon after birth. We typically pick them up as babies from our mothers' mouths. And as our teeth erupt, they naturally begin to accumulate communities of bacteria.

Depending on what we eat, and specifically how much sugar we consume, certain microbes can overpopulate and cause cavities. Diets high in sugary foods cause an explosion of bacteria called **mutans streptococci** in our mouths. Like humans, these microorganisms love sugar, using it as a molecular building block and energy source. As they consume it, the bacteria generate **byproducts** in the form of acids, such as **lactic acid**.

[Segment 2: 1:09-2:47]

Mutans streptococci are resistant to this acid, but unfortunately, our teeth aren't. While each human tooth is **coated** in a hardy, protective layer of **enamel**, it's no match for acid. That degrades the **armor** over time, **leaching away** its calcium minerals. Gradually, acid **wears down** a pathway for bacteria into the tooth's secondary layer called the **dentin**. Since **blood vessels** and nerves in our teeth are enclosed deep within, at this stage, the expanding cavity doesn't hurt. But if the damage extends beyond the dentin, the bacterial invasion progresses causing **excruciating** pain as the nerves become exposed. Without treatment, the whole tooth may become infected and require removal all due to those sugar-loving bacteria. The more sugar our food contains, the more our teeth are put at risk.

Those cavemen would hardly have **indulged** in sugary treats, however, so what caused their cavities? In meat-heavy diets, there would have been a low-risk of cavities developing because **lean meat** contains very little sugar, but that's not all our early human ancestors ate. Cavemen would also have consumed root vegetables, nuts, and grains, all of which contain carbohydrates. When exposed to **enzymes** in the saliva, carbohydrates get broken down into simpler sugars, which can become the fodder for those **ravenous** mouth bacteria. So while ancient humans did eat less sugar compared to us, their teeth were still exposed to sugars.

[Segment 3: 2:47-4:45]

That doesn't mean they were unable to treat their cavities, though. Archaeological remains show that about 14,000 years ago, humans were already using sharpened **flint** to remove bits of rotten teeth. Ancient humans even made rudimentary drills to **smooth out** the rough holes left behind and **beeswax** to **plug** cavities, like modern-day fillings. Today, we have much more sophisticated techniques and tools, which is fortunate because we also need to contend with our more damaging, sugar-guzzling ways. After the Industrial Revolution, the human incidence of cavities **surged** because suddenly we had technological advances that made refined sugar cheaper and accessible.

Today, an incredible 92% of American adults have had cavities in their teeth. Some people are more susceptible to cavities due to genes that may cause certain weaknesses, like softer enamel, but for most, high sugar consumption is to blame. However, we have developed other ways of minimizing cavities besides reducing our intake of sugar and **starch**. In most toothpastes and many water supplies, we use tiny amounts of **fluoride**. That strengthens teeth and encourages the growth of **enamel crystals** that build up a tooth's defenses against acid.

When cavities do develop, we use **tooth fillings** to fill and **close off** the infected area, preventing them from getting worse. The best way to avoid a cavity is still **cutting down on** sugar intake and practicing good oral hygiene to **get rid of** the bacteria and their food sources. That includes regular tooth brushing, **flossing**, and avoiding sugary, **starchy, and sticky foods** that **cling** to your teeth between meals. Gradually, the population of sugar-loving microbes in your mouth will decline. Unlike the cavemen of yesteryear, today we have the knowledge required to **avert** a cavity calamity. We just need to use it.

Reread the underlined sentences in context and try to guess what the speaker is saying. Afterwards, provide a translation into your language.

1. ..., it's no match for acid.
2. ..., carbohydrates get broken down into simpler sugars, which can become the fodder for those **ravenous** mouth bacteria

3. ..., which is fortunate because we also need to contend with our more damaging, sugar-guzzling ways.

Mediation task: Oral hygiene presentation for school-aged children

Imagine that, as future professionals, you've been invited to give a talk at a bilingual school to explain the problem of cavities and the importance of good oral hygiene to a group of 10–12-year-old students.

Instructions:

1. Work in pairs to prepare a short, age-appropriate presentation based on the information from the listening activity and the vocabulary you've learned.
2. Design a PowerPoint (or similar visual aid) to help reinforce your message and make the presentation more engaging and dynamic for young learners.
3. Record your presentation on video once it's ready, and share it with another pair of classmates. Watch each other's presentations carefully.
4. Provide feedback to each other, highlighting both strengths and areas for improvement (content, clarity, language use, visual aids, etc.).
5. Use the feedback you received to revise and improve your presentation.
6. Be ready to deliver the final version of your presentation in class. Pay special attention to:
 - Pronunciation of technical vocabulary.
 - Grammar and sentence structure.
 - Clarity and simplicity of your message for a young audience.
7. Peer evaluation:

The rest of the class will evaluate your final presentation using the rubric provided below.

Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Needs improvement (1)
Content and relevance	Covers the topic fully with accurate, relevant dental content; clearly adapted to the school children.	Mostly accurate and relevant; minor omissions or limited adaptation to school children.	Basic information is included, though with some gaps or less relevance; adaptation to	Content is unclear, off-topic, or not appropriate for school children.

			school children is weak.	
Organization and structure	Well-structured: clear introduction, logical progression, smooth transitions, and strong conclusion.	Mostly well-organized with clear sections; transitions may be slightly unclear.	Organization is present but uneven or confusing in parts.	Poor structure; difficult to follow or missing sections.
Grammar	Accurate use of grammar; errors are rare and do not impede understanding.	Mostly accurate grammar; errors don't affect comprehension.	Frequent grammar errors, though message is generally understandable.	Numerous errors that interfere with meaning and clarity.
General vocabulary	Rich, appropriate vocabulary; errors are rare and do not impede understanding.	Appropriate vocabulary; errors that don't affect comprehension.	Frequent vocabulary errors, though message is generally understandable.	Numerous errors that interfere with meaning and clarity.
Technical vocabulary	Excellent and accurate use of relevant dental terminology.	Good use of dental terms, with occasional lack of clarity.	Limited use of relevant terminology; some misuses or unclear explanations.	Rare or incorrect use of technical vocabulary.
Pronunciation	Clear pronunciation, correct stress and intonation.	Generally clear pronunciation with minor issues.	Pronunciation or fluency issues sometimes hinder understanding.	Poor pronunciation; difficult to understand.
Fluency	Fluent and confident speaking.	Mostly fluent with occasional pauses.	Frequent pauses or hesitations.	Frequent breakdowns.
Explanation	Concepts are explained	Most concepts are explained	Some explanations are	Explanations are inaccurate,

	accurately, clearly, and at a level appropriate for school children.	accurately and clearly;	unclear or overly technical.	confusing, or inappropriate for school children.
Visual support	Visuals are clear, well-designed, and enhance the message.	Visuals are helpful and mostly well-designed,	Basic visuals.	Poorly designed or missing visuals.
Engagement and communication skills	Highly engaging; maintains audience interest through tone, eye contact, gestures, and enthusiasm.	Communicates clearly and keeps attention most of the time.	Some effort to engage the audience; inconsistent delivery.	Monotone or disengaged delivery; little to no audience interaction.
TOTAL:		/ 5	=	

Writing a decalogue

Following your oral presentation, the school has expressed interest in having you create a catalogue of best practices for cavity prevention. Since this material is intended for school-aged students, the information should be simple, clear, and accessible.

During a previous research phase, you found several general-interest magazines in Spanish that offered a variety of tips for maintaining good oral health. Based on those suggestions, your task is to create a Decalogue of Good Oral Hygiene Practices to raise awareness among students about the importance of dental care and controlling sugar intake.

As the school is bilingual, you have been asked to write the Decalogue in English. In the box below, you will find a series of notes taken from the magazines, which you may use as a starting point. you don't need to use them all. You can also include additional items in your catalogue.

Buenas prácticas de higiene bucal

- Cepillarse los dientes al menos dos veces al día, para lo cual es recomendable usar un cepillo de cerdas suaves y pasta dental con flúor.
- Cepillar durante al menos 2 minutos cada vez y usar hilo dental a diario. De esta manera, se consigue eliminar la placa y los restos de comida entre los dientes, donde el cepillo no llega.

- Cepillar la lengua para ayudar a eliminar bacterias y prevenir el mal aliento.
- Enjuagarse con un colutorio (enjuague bucal), preferiblemente con flúor o antiséptico para reducir bacterias y reforzar el esmalte.
- Evitar el consumo excesivo de azúcar, lo cual implica controlar la ingesta de golosinas, refrescos, zumos industriales y alimentos procesados.
- Evitar alimentos pegajosos o ácidos, ya que estos tienden a quedarse en los dientes y pueden dañar el esmalte.
- Beber suficiente agua para ayudar a mantener la boca limpia y estimular la producción de saliva.
- Visitar al dentista al menos una vez cada 6 meses para revisiones y limpiezas profesionales.
- Cambiar el cepillo de dientes cada 3 meses (o antes si las cerdas se desgastan).

WRITTEN MEDIATION

Exercise 4. Gapped translation

In this activity, you will complete a gapped translation into English using the instructions for an electric toothbrush. Please follow the steps below:

1. Search online for two sets of electric toothbrush instructions written in English.
2. Read both texts carefully and identify specific vocabulary related to the use and care of electric toothbrushes.
3. Try to guess the meaning of unfamiliar words from the context. If that's not possible, look them up in a dictionary.
4. Create a short glossary that you can use in the next stage of the activity. Your glossary should include at least:
 - The English term
 - Its definition in English
 - A possible translation into your own language

Example		
Term	Definition	Translation (Spanish)
Bristles	The small hairs or filaments on the brush head used for cleaning teeth,	Cerdas

5. Complete the following gapped translation into English using the Spanish version as a reference. Use a dictionary if needed to help you find the terms not included in your glossary. The words in bold are those that you need to translate in the gapped translation.

Instrucciones de uso – Cepillo de dientes eléctrico

1. Cargue el cepillo

Antes del primer uso, conecte el cepillo a su **base de carga** o al cable USB (según el modelo) y cárguelo durante al menos 12 horas o hasta que el indicador muestre **carga completa**.

2. Coloque el **cabezal**

Ajuste el cabezal del cepillo en el cuerpo del **mango** hasta que **encaje firmemente**.

3. Aplique pasta dental

Ponga una pequeña cantidad de **pasta dental con flúor** sobre el **cabezal**.

4. Encienda el cepillo

Coloque el cepillo en su boca antes de encenderlo para evitar **salpicaduras**. Pulse el **botón de encendido**.

5. Cepille **por zonas**

Divide tu boca en cuatro zonas (**arriba-derecha, arriba-izquierda, abajo-derecha, abajo-izquierda**). Cepille cada zona durante 30 segundos para completar 2 minutos en total.

No **frote** como con un cepillo manual. Solo **guíe** el cepillo lentamente de diente en diente.

Pase el cabezal suavemente por la **parte frontal, trasera** y la **superficie de masticación** de cada diente.

6. Cepille la lengua (opcional)

Apague el cepillo y use el cabezal para cepillar suavemente la lengua y así ayudar a **eliminar bacterias**.

7. **Limpie** el cabezal

Después de cepillarse, **enjuague** bien el cabezal con agua y déjelo **secar al aire**.

8. Cargue el cepillo regularmente

Recargue el cepillo cuando el indicador lo señale o al menos una vez a la semana, **según** el uso.

9. Cambie el cabezal cada 3 meses

Reemplace el cabezal si las **cerdas** están **desgastadas** o cada 3 meses para mantener una limpieza efectiva.

User Instructions – Electric Toothbrush

1. Charge the toothbrush

Before first use, connect the toothbrush to its _____ or USB cable (depending on the model) and charge it for at least 12 hours, or until the indicator shows a _____

2. Attach the _____

Place the brush head onto the _____ until it fits securely.

3. Apply toothpaste

Put a small amount of _____ on the _____

4. Turn on the toothbrush

Place the brush in your mouth before turning it on to avoid _____ Press the _____

5. Brush _____

Divide your mouth into four sections (_____, _____, _____, _____) Brush each section for 30 seconds, for a total of 2 minutes.

Don't _____ as you would with a manual brush. Simply _____ the brush slowly from tooth to tooth.

Move the head gently over the _____, _____, and _____ of each tooth.

6. Brush your tongue (optional)

Turn off the brush and gently use the head to clean your tongue and help _____

7. _____ the _____

After brushing, _____ the brush head thoroughly with water and let it _____.

8. Recharge regularly

Recharge the toothbrush when the indicator shows a low battery or at least once a week, _____ usage.

9. Replace the brush head every 3 months

Replace the head if the _____ are _____ or at least every 3 months to maintain effective cleaning.

SPOKEN MEDIATION IN AN ACADEMIC SETTING

Exercise 5. Designing an academic poster.

In collaborative groups, you are going to try to propose a cast design to address a specific scientific requirement. This activity will be conducted in the computer room to ensure that you can access a comprehensive array of resources that you may need for the task.

The following steps must be followed:

1. Come up with a name for the group.
2. Identify a need or issue necessitating your team's intervention.
3. In pairs, undertake extensive research into the identified problem. It is of paramount importance to substantiate your proposal with reputable scientific sources.
4. Brainstorming. Put all the ideas gathered in common and collectively determine a strategic approach to address the need or the issue detected.
5. Following a consensus on a course of action, complete the following worksheet with the information required.

Cast design

Group:

Date:

- What is the problem you are trying to solve?
- What resources or materials do you need?
- What was decided during the brainstorming activity? How can the need detected be dealt with? What are the possible solutions to the problem?
- What is the best solution to the need or problem spotted?

6. Share your ideas via an academic poster. Design an academic poster to explain your cast design to other professionals. Include the following points:
 - The design processes.
 - The need or issue your research team is trying to address.
 - Any preliminary sketches you have made as well as your final design.
 - A description of the solution proposed.
 - A list of resources and/or materials used.
 - A description of the materials used (e.g. weight, flexibility, or strength).
 - Examples of how you evaluated your design.
 - An analysis of how the new design solves the original problem.
 - A description of how you would improve your proposal if given time for a redesign.
7. In a further session, all the groups will have to present their poster before their classmates. Be prepared to respond to potential enquires that may arise.

You are now preparing to present your design at a dental conference. Follow the following steps:

1. Write a 200-word abstract for your proposal to be accepted. Be sure to follow the abstract structure you have learned previously, i.e., introduction, objectives, methodology, results, conclusion.
2. Use ChatGPT to refine your language. Copy and paste your abstract into ChatGPT and use one of the following prompts: “Improve language” or “Make writing more academic.”
3. Carefully review the version provided and make any changes you consider necessary.
4. Complete a table summarizing the changes you made (e.g., wording, grammar, tone, structure).
5. Use the template below to complete the activity.

Your abstract:

ChatGPT version:

--

Original	Changes

Final version:

ANSWER KEY

2. INTERACTING WITH PATIENTS (1): TAKING A HISTORY

Exercise 1.

1. When was your last dental appointment?
2. Does anything make the pain worse?
3. Is there any swelling?
4. Are you taking any medication at the moment?
5. Does anyone in your family have a serious illness?
6. How old is the crown?

Exercise 2.

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María López Rubio

1. Do you take any over-the-counter, herbal or homeopathic medicines?
2. How many ibuprofen tablets do you take?
3. Are you taking any regular medication?
4. How many times a day do you take it?
5. Do you always remember to take it?
6. Do you get any side effects?
7. Are you allergic to any medication?
8. What symptoms do you get?
9. Have you ever undergone surgery?
10. How long ago was that surgery?
11. Did you have any reaction to the anesthesia?

Exercise 3.

1. Does anyone in your family have a serious illness?
2. Are all your close relatives alive?
3. Do you know what your grandmother died of?
4. Is anyone in your family taking regular medication?
5. Do you have any siblings?
6. Does any of them have a serious health problem?
7. What about your father? Is he alive and well?

Exercise 4.

1. Where does it hurt?
2. Could you describe the pain?
3. When did it start?
4. Does it ever stop?
5. Does anything make it worse?
6. And does anything make it better?
7. Do you have any other symptoms related to the pain?
8. Do you have a temperature?

Exercise 5.

1. Do you smoke?
2. How many a day?
3. Have you tried giving up / quitting?
4. Do you drink alcohol?

5. How much do you drink in a week?
6. How often do you brush your teeth?
7. Do you always floss after brushing?
8. What about a mouthwash?

Exercise 6.

Students' own answers.

3. INTERACTING WITH PATIENTS (2): TREATMENTS AND GIVING INSTRUCTIONS

Exercise 1.

1. Extracción de muelas del juicio
2. Blanqueamiento dental
3. Brackets
4. Carilla
5. Empaste
6. Revisión
7. Usar hilo dental
8. Contorneado dental
9. Adhesión dental
10. Cirugía mandibular / Cirugía maxilar
11. Limpieza
12. Lifting de encías
13. Endodoncia
14. Sellador
15. Flúor
16. Ortodoncia invisible
17. Dentadura
18. Corona
19. Puente
20. Incrustación

Exercise 2.

[Possible answers]

1. Teeth whitening makes your teeth look whiter and brighter.

2. Prophylaxis is a routine dental cleaning that removes plaque, tartar, and stains to prevent gum disease and cavities.
3. A root canal treats infections or damage in the pulp, a soft tissue found inside the tooth.
4. A filling consists in filling a cavity with amalgam, composite resine, gold or porcelain to restore the damaged tooth's structure and prevent further decay.
5. A crown is a tooth-shaped cover placed over a decayed tooth.
6. A sealant is a coating that is put on teeth to prevent cavities.
7. Invisalign is a clear, removable tooth-shaped cover that straightens teeth.
8. A bridge is a prosthetic device that replaces missing teeth, that is, a fixed partial denture.
9. A veneer is a tooth-coloured covering of the surface of the tooth that restores discoloured or damaged teeth.
10. Cosmetic gum lifting consists in removing excess gum tissue and reshaping the gum line to make teeth look longer and more symmetrical.

Exercise 3.

Ease pain: E

Unbearable pain: J

Chewing pain: F

Pain threshold: G

Sharp pain: D

Pain relief: I

In pain: B

Acute pain: C

Throbbing pain: H

Nagging pain: A

Exercise 4.

1. Tener dolor
2. Dolor atroz / terrible / insoportable
3. Dolor leve
4. Dolor agudo
5. Dolor persistente
6. Causar / Dar dolor
7. Aliviar / Calmar el dolor

8. Dolor punzante
9. Aumentar el dolor
10. Umbral de dolor

Exercise 5.

1. began
2. pain threshold
3. intensifies
4. feel / intermittent
5. stop
6. disappears / comes back
7. in / extreme
8. giving / slight

Exercise 6.

Treatment plan: H

In treatment: E

Respond to treatment: B

Follow-up treatment: A

Short-term treatment: J

Initial treatment: K

Treatment room: D

Completion of treatment: G

Conventional treatment: L

Prescribe treatment: C

Refuse treatment: F

Treatment method: P

Afford treatment: O

Seek treatment: M

Ineffective treatment: N

Specialist treatment: I

Exercise 7.

1. treatment option
2. alternative treatments
3. surgical treatment
4. adhere to treatment
5. urgent treatment

6. treatment for

Exercise 8.

1. F
2. D
3. G
4. A
5. E
6. B
7. H
8. C

Exercise 9.

1. on medication
2. Pain medication
3. over-the-counter medication
4. prescription medication
5. require medication
6. dispense medication

Exercise 10.

1. J
2. F
3. H
4. G
5. D
6. C
7. A
8. I
9. E
10. B

Exercise 11.

1. in surgery
2. successful
3. underwent ambulatory
4. surgical risk
5. Extensive

Exercise 12.

1. B
2. D
3. A
4. C

Exercise 13.

[Possible answers]

1. The damaged soft tissue inside the tooth is removed, and the tooth is cleaned and then filled.
2. You will be a little sore, but I am going to prescribe some painkillers.
3. If the pain intensifies or does not stop after a few days, please call me.
4. The procedure should take between 20 and 60 minutes.
5. I am going to numb the area, so it will not hurt, you will only feel a little sting.
6. For at least 24 hours after the extraction, you should eat soft food, limit activities that require effort, and avoid rinsing your mouth and smoking.
7. Yes, some bleeding is normal, but if it is heavy or continues for more than 24 hours, please call me.
8. In your case the tooth is not severely damaged, so you only need a filling.
9. It is important to avoid eating hard foods for a couple of weeks.
10. We will need to schedule a check-up in six months.

Exercise 14.

Students' own answers.

Exercise 15.

1. A
2. B
3. C
4. [possible answer] A headgear is a tool that helps straighten your teeth and fixes your top and bottom jaws to make them fit together by guiding them into a better position.

4. DISCUSSING CURRENT RESEARCH IN THE FIELD OF DENTISTRY

Exercise 1.

Abstract	F, L
Keywords	A, G
Introduction	C, J, M
Materials and Methods	D, N

Results	B, O, P
Discussion	E, K, R
Conclusion	I
References	H, Q

Exercise 2.

The abstract adheres to the logical, expository structure typically found in scientific texts.

- It defines periodontitis as an inflammatory disease caused by infection.
- It then explains its origin, which involves plaque accumulation leading to inflammation and microbial changes.
- It describes how it progresses, from gingivitis to periodontitis with irreversible tissue loss.
- It indicates who it affects, namely mainly adults but also young people.
- Finally, it highlights the consequences of periodontitis, namely tooth loss, and its relationship to other chronic diseases.

Exercise 3.

1. Periodontitis
2. Enfermedad inflamatoria provocada por una infección
3. Biofilms
4. Acumulación de placa dental
5. Margen gingival
6. Respuesta inflamatoria
7. Alteraciones microbianas
8. Periodonto
9. Inflamación crónica
10. Encía
11. Pérdida de inserción
12. Hueso alveolar
13. Pérdida dental

Exercise 4.

La periodontitis es una enfermedad inflamatoria provocada por una infección, en la que la composición de los biofilms desempeña un papel importante. La acumulación de placa dental en el margen gingival inicia una respuesta inflamatoria que, a su vez, causa alteraciones microbianas y puede conducir a consecuencias graves en el periodonto de individuos susceptibles. La inflamación crónica afecta a la encía y puede evolucionar hacia una periodontitis, que se caracteriza por la pérdida irreversible de inserción y de hueso alveolar. La periodontitis aparece típicamente en la población adulta, aunque también puede afectar a personas jóvenes y producir los mismos efectos perjudiciales. En su forma avanzada, esta enfermedad es la principal causa de pérdida dental en adultos. Además, la periodontitis se asocia con muchas enfermedades crónicas y afecciones que afectan a la salud general.

READING ACADEMIC PAPERS

Exercise 1.

1. B
2. A
3. D
4. B
5. C
6. C

Exercise 2.

1. Cavity oral / buccal
2. Microbiological investigation
3. Cultivable microorganisms
4. Microbiome

Exercise 3.

1. [possible answer] According to the text, it is relevant to study periapical radiolucencies because they are one of the most common findings in dentistry.
2. [possible answer] The objective of the paper is to evaluate how accurately OMF surgeons can detect periapical radiolucencies on panoramic radiographs and to compare their performance with that of a deep learning algorithm.
3. B
4. B
5. A

Exercise 4.

1. Radiolucencia periapical
2. Diagnóstico diferencial
3. Quistes
4. Hacer un diagnóstico falso

Exercise 5.

[Possible answers]

1. The aim of the study was to analyse whether certain types of gut microbiota casually influence periodontitis and whether periodontitis influences microbiota.
2. The method used by the authors was two-sample bidirectional Mendelian randomisation with GWAS data, using SNPs as instruments to assess causality in both directions.
3. 'Mandelian randomization' means using randomly inherited genetic variants to infer causal relationships between exposure and outcome, reducing bias and reverse causality issues.
4. The type of relationship explored in the study is bidirectional, analysing both gut microbiota to periodontitis and periodontitis to gut microbiota.
5. According to the study results, the gut microbiota influences periodontitis, with no evidence found that periodontitis affects the microbiota.

Exercise 6.

[Possible translation]

Introducción:

La enfermedad periodontal (EP) representa un importante desafío para la salud global, abarcando condiciones que van desde la gingivitis reversible hasta la periodontitis irreversible, a menudo culminando en la pérdida dental. Recientemente, el eje intestino-oral ha emergido como un punto de atención, ya que una posible disbiosis de la microbiota intestinal podría agravar la EP.

Métodos:

En este estudio, utilizamos un enfoque de aleatorización mendeliana (AM) bidireccional con doble muestra para investigar la relación causal entre microbiotas intestinales específicas y el desarrollo de enfermedad periodontal (EP) y sangrado de encías (SE), explorando también la interacción entre la salud periodontal y el microambiente intestinal. Se realizaron estudios de

asociación del genoma completo (GWAS) con dos cohortes que incluyeron un total de 346,731 participantes (EP y controles) y 461,113 participantes (SE y controles), junto con datos del GWAS de la flora intestinal de 14,306 personas, que abarcaban 148 rasgos (31 familias y 117 géneros).

Se emplearon tres métodos de AM para evaluar la causalidad, utilizando la medida ponderada por varianza inversa (IVW) como resultado principal. Se aplicaron la prueba Q de Cochrane, MR-Egger y MR-PRESSO para detectar heterogeneidad y pleiotropía. La técnica leave-one-out se utilizó para comprobar la estabilidad de los resultados de la AM. Se aceptaron asociaciones con un estadístico F mayor a 10 para los instrumentos de exposición.

Resultados y conclusión:

En concreto, *Eubacterium xylanophilum* y *Lachnoclostridium* se asociaron con un menor riesgo de sangrado de encías, mientras que *Anaerotruncus*, *Eisenbergiella* y *Phascolarctobacterium* se vincularon a un menor riesgo de EP. Por el contrario, *Fusicatenibacter* se asoció con un mayor riesgo de EP. No se detectó heterogeneidad ni pleiotropía significativas. En conclusión, nuestro análisis de AM identificó flora intestinal específica con conexiones causales con la EP, lo que ofrece posibles vías para intervenciones en salud bucal.

Exercise 7.

1. A
2. C
3. [possible answer] Two potential benefits of CAIS are that it could reduce intraoperative complications and that it could increase patient satisfaction.
4. [possible answer] When assessing the effectiveness of CAIS systems, survival rates, complications, patient-centred outcomes and socioeconomic benefits should be considered apart from accuracy.
5. [possible answer] The main objectives of the paper are to investigate whether the use of CAIS can reduce the frequency and extent of surgical complications and improve patients' outcomes and experience in relation to surgery.

Exercise 8.

1. Escaneo
2. Cirugía manos libres
3. Dientes adyacentes
4. Tejido periimplantar
5. Pilar (protésico)
6. Sondaje

7. Periimplantitis

Exercise 9.

1. a) Paragraph 1 b) Paragraphs 2-5 c) Paragraph 5
2. [possible answer] Understanding the microbiology of dental caries is important because the disease is strongly linked to oral microorganisms.
3. D
4. Advantage of culture-based methods: D
Limitation of culture-based methods: C
Advantage of targeted molecular methods: A
Limitation of targeted molecular methods: E
Advantage of NGS: B
Limitation of NGS: F

Exercise 10.

1. C
2. A

Exercise 11.

1. A
2. A
3. B

Exercise 12.

1. Fractura vertical radicular
2. Resección radicular
3. Tratamiento endodóntico / de conducto
4. Error en el diagnóstico / Diagnóstico equivocado

Exercise 13.

1. [possible answer] Because comparative studies on the matter have not lasted longer than one year.

2. A
3. B
4. C

Exercise 14.

1. C
2. A
3. A
4. B

Exercise 15.

1. Colgajo de reposición apical
2. Injertos autólogos
3. Nivel óseo periimplantario
4. Técnicas de injerto óseo
5. Espesor de la mucosa
6. Injerto gingival libre
7. Injerto de tejido conectivo (de encía)

Exercise 16.

1. A
2. C
3. [possible answer] Volume deficiency is the soft tissue complication that is most likely to cause colour mismatches between the gum surrounding the implant and the teeth nearby.
4. A
5. B

6. INTERCULTURAL MEDIATION

Exercise 1.

[Possible translation]

Dentist: Buenos días. ¿Cómo se encuentra hoy?

Patient: A little nervous.

Dentist: Es comprensible. Vamos a echar un vistazo.

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(After the dentist's examination)

Dentist: Veo que tiene una caries en el molar superior izquierdo. Tendremos que ponerle un empaste.

Patient: What's a filling?

Dentist: Un empaste es cuando limpiamos la caries y rellenamos el espacio con un material especial para evitar más daño.

Patient: Will it hurt?

Dentist: No, no se preocupe. Usamos anestesia local, así que no sentirá dolor durante el procedimiento.

Patient: Okay... Is it safe?

Dentist: Sí, es un procedimiento común y seguro. ¿Tiene alguna otra pregunta?

Patient: When can we do it?

Dentist: Podemos programarlo para la semana que viene, si le va bien.

Patient: Okay. Next week works for me.

Exercise 2.

[Possible translation]

Instructions for proper recovery after a tooth extraction

1. Do not eat or drink anything hot for the next 24 hours.
2. Do not rinse your mouth vigorously.
3. Take painkillers as prescribed.
4. Apply ice to reduce swelling.
5. If bleeding occurs, apply pressure with a clean gauze pad for 30 minutes.
6. If in doubt, contact us during office hours.
7. If you have an emergency, call the clinic's emergency number.

Exercise 3.

Discussion questions:

- What are cavities? Why do people have them? How can they be prevented?

Cavities are holes in the teeth caused by tooth decay. They happen when bacteria feed on sugars and produce acid that damages the enamel. Brushing, flossing, and reducing sugar help prevent them.

- What causes cavities to appear?
Cavities are caused by acid produced by bacteria that feed on sugars and starches left on teeth.
- Why did our ancestors have cavities in their teeth if they ate less sugar compared to us?
Even though they ate less sugar, they still consumed carbohydrates, which break down into sugars that feed harmful bacteria.
- Are some people more prone to cavities than others? Why or why not?
Yes, genetics can make some people more prone to cavities due to weaker enamel or differences in saliva and bacteria.
- How can we reduce the risk of developing cavities?
Brushing and flossing regularly, using fluoride toothpaste, avoiding sugary and sticky foods, and visiting the dentist for check-ups.
- What steps can we take to manage cavities, besides visiting the dentist?
Maintain good oral hygiene, reduce sugar intake, use fluoride products, and monitor early signs of decay.

[Segment 1: 00:00-1:09]

Vocabulary:

Came across

- Meaning in context: Discovered or found by chance.
- Synonym: Found / discovered / stumbled upon

Riddled with

- Meaning in context: Filled with or full of (usually something negative or damaging).
- Synonym: Full of / covered in

Mutans streptococci

- Meaning in context: A type of bacteria in the mouth that contributes to tooth decay.

Byproducts

- Meaning in context: Secondary substances produced during a chemical or biological process.
- Synonym: Side products / secondary results

Lactic acid

- Meaning in context: A type of acid produced by bacteria as a result of sugar breakdown.

Questions:

1. What did archaeologists find in the 15,000-year-old human remains?
They found that the ancient humans' teeth were riddled with cavities.
2. How and when do microbes first appear in our mouths?
Microbes appear shortly after birth, usually transferred from the mother's mouth, and start accumulating as teeth erupt.
3. Why is sugar harmful to our teeth?
Sugar feeds harmful bacteria like mutans streptococci, which multiply and produce acids (such as lactic acid) that damage the teeth and cause cavities.

[Segment 2: 1:09-2:47]

Vocabulary:

1. **Coated:** Covered with a thin layer of something.
2. **Enamel:** The hard, outer surface layer of the teeth that protects them from decay.
3. **Armor:** Protective covering used for defense.
4. **Leach away (to):** To gradually remove or wash away a substance by percolating liquid.
5. **Wear down (to):** To gradually damage or erode something through use or friction.
6. **Dentin:** The layer of the tooth located beneath the enamel. Softer and more vulnerable to decay.
7. **Blood vessels:** Tubes (like veins and arteries) that carry blood throughout the body.
8. **Excruciating:** Extremely painful.
9. **Indulge (to):** To allow oneself to enjoy something, often something considered unhealthy or excessive.
10. **Lean meat:** Meat that has very little fat.
11. **Enzymes:** Proteins that speed up chemical reactions, such as digestion.
12. **Ravenous:** Extremely hungry.

Questions:

1. Why is acid harmful to our teeth?
Acid weakens tooth enamel by leaching away calcium minerals, eventually allowing bacteria to reach the dentin and cause cavities.

2. Why does it become painful when bacteria reach beyond the dentin?
Because the nerves and blood vessels are located deeper inside the tooth, and when exposed due to bacterial damage, they cause excruciating pain.
3. Did ancient humans have healthier teeth than we do today? Why or why not?
Not necessarily. Although they ate less sugar, their diets still included carbohydrates that turned into sugar, which fed bacteria and caused cavities.

[Segment 3: 2:47-4:45]

Vocabulary:

- Tools/actions performed when using a tool: flint, smooth out (to), plug (to).
- Changes: surge (to)
- Substances/food: beeswax, starch, starchy and sticky foods.
- Dental terms: fluoride, enamel crystals, tooth fillings.
- Prevention/elimination: close off(to), cut down on (to), get rid of (to), floss (to).
- Bacteria/interaction: cling (to), avert (to)

Questions:

1. How did ancient humans care for their teeth and treat cavities?
They used sharpened flint to remove decayed parts of the tooth, rudimentary drills to smooth out holes, and beeswax to plug cavities. It's similar to modern fillings.
2. What tools and techniques do we use today to protect our teeth from sugar-related damage?
We use fluoride in toothpaste and water to strengthen enamel, maintain good oral hygiene (brushing and flossing), and avoid sugary, starchy, and sticky foods that feed harmful bacteria.
3. How are cavities treated in modern dentistry?
Dentists use tooth fillings to seal off the damaged area, preventing further decay and protecting the tooth from infection.

Interpretation of the underlined sentences in context:

1. "...it's no match for acid."
Interpretation: Even though enamel is strong, it can't resist acid, and it gets damaged over time.

Spanish translation: No es resistente al ácido. (Aunque el esmalte dental es resistente, el ácido lo acaba debilitando.)

2. “...carbohydrates get broken down into simpler sugars, which can become the fodder for those ravenous mouth bacteria.”

Interpretation: Carbohydrates are turned into sugars by enzymes, and those sugars feed the bacteria that cause cavities.

Spanish translation: Los carbohidratos se descomponen en azúcares simples, que sirven de alimento para esas bacterias voraces de la boca.

3. “...which is fortunate because we also need to contend with our more damaging, sugar-guzzling ways.”

Interpretation: It's a good thing we have better dental tools today because our high-sugar diets are worse for our teeth than ever.

Spanish translation: Lo cual es una suerte, porque también tenemos que lidiar con nuestros hábitos actuales más dañinos y adictos al azúcar.

Mediation task: Oral hygiene presentation for school-aged children

Students' own answers

Writing a decalogue

A catalogue sample:

10 best practices to prevent cavities

1. Brush your teeth at least twice a day

- Use a soft-bristled toothbrush and fluoride toothpaste to clean your teeth properly.

2. Brush for at least 2 minutes each time

- Take your time! Make sure to clean all your teeth. Don't forget to floss once a day to remove food stuck between your teeth.

3. Brush your tongue too

- It helps remove bacteria and keeps your breath fresh.

4. Use mouthwash (if allowed)

- A fluoride or antibacterial mouthwash helps kill germs and makes your teeth stronger.

5. Eat less sugar

- Try not to eat too many sweets, soft drinks, fruit juices, or processed foods. Sugar feeds the bacteria that cause cavities.
6. Avoid sticky and acidic foods
- Sticky snacks and sour candies can stay on your teeth and harm the enamel (the outer layer of your teeth).
7. Drink plenty of water
- Water helps wash away food and sugar and keeps your mouth healthy.
8. Visit the dentist every 6 months
- Regular check-ups help catch problems early and keep your teeth clean and strong.
9. Change your toothbrush every 3 months
- If the bristles are worn out, the toothbrush won't clean your teeth properly.
10. Take care of your smile every day!
- Good habits today mean a healthy, happy smile for life!

Exercise 4. Gapped translation

User Instructions – Electric Toothbrush

1. Charge the toothbrush

Before first use, connect the toothbrush to its **charging base** or USB cable (depending on the model) and charge it for at least 12 hours, or until the indicator shows a **full charge**.

2. Attach the **brush head**

Place the brush head onto the **handle** until it fits securely.

3. Apply toothpaste

Put a small amount of **fluoride toothpaste** on the **brush head**.

4. Turn on the toothbrush

Place the brush in your mouth before turning it on to avoid **splashing**. Press the **power button**.

5. Brush **in sections**

Divide your mouth into four sections (**upper right, upper left, lower right, lower left**). Brush each section for 30 seconds, for a total of 2 minutes.

Don't **scrub** as you would with a manual brush. Simply **guide** the brush slowly from tooth to tooth.

Move the head gently over the **front, back,** and **chewing surfaces** of each tooth.

6. Brush your tongue (optional)

Turn off the brush and gently use the head to clean your tongue and help **remove bacteria**.

7. **Rinse** the brush head

After brushing, **rinse** the brush head thoroughly with water and let it **air dry**.

8. Recharge regularly

Recharge the toothbrush when the indicator shows a low battery or at least once a week, **depending on** usage.

9. Replace the brush head every 3 months

Replace the head if the **bristles** are **worn** or at least every 3 months to maintain effective cleaning.

Exercise 5. Designing a poster.

Students' own answers

Strategies to manage patients with dental anxiety and dental phobia: literature review

Appukuttan DP. Strategies to manage patients with dental anxiety and dental phobia: literature review. Clin Cosmet Investig Dent. 2016 Mar 10;8:35-50. doi: 10.2147/CCIDE.S63626. PMID: 27022303; PMCID: PMC4790493.

[Deva Priya Appukuttan](#)

Abstract

Dental anxiety and phobia result in avoidance of dental care. It is a frequently encountered problem in dental offices. Formulating acceptable **evidence-based therapies** for such patients is essential, **or else** they can be a considerable source of stress for the dentist. These patients need to be identified at the earliest opportunity and their concerns **addressed**. The initial interaction between the dentist and the patient can reveal the presence of anxiety, fear, and phobia. In such situations, subjective evaluation by interviews and **self-reporting** on fear and anxiety scales and objective assessment of blood pressure, pulse rate, finger temperature, and galvanic skin response can greatly enhance the diagnosis and enable categorization of these individuals as mildly, moderately, or highly anxious or dental phobics. **Broadly**, dental anxiety can be managed by psychotherapeutic interventions, pharmacological interventions, or a combination of both, depending on the level of dental anxiety, patient characteristics, and clinical situations. Psychotherapeutic interventions are either behaviorally or cognitively oriented. Pharmacologically, these patients can be treated using either sedation or general anesthesia. Behavior-modification therapies aim to change unacceptable behaviors through learning, and involve muscle relaxation and relaxation breathing, along with guided imagery and hypnosis, acupuncture, distraction, positive reinforcement, and exposure-based treatments, such as “tell-show-do”, and modeling. Cognitive behavior therapy is a combination of behavior therapy and cognitive therapy, and is currently the most accepted and successful psychological treatment for anxiety and phobia. In certain situations, where the patient is not able to respond to and cooperate well with psychotherapeutic interventions, is not willing to **undergo** these types of treatment, or is considered dental-phobic, pharmacological therapies such as sedation or general anesthesia should be **sought**.

Keywords: behavioral therapy, cognitive therapy, general anesthesia, psychotherapeutic intervention, pharmacological intervention, conscious sedation

Resumen

La ansiedad y la fobia dentales tienen como resultado/ resultan en/ conducen a evitar/ la evasión de la atención odontológica. Se trata de un problema frecuente en las consultas dentales/ Es un problema que se encuentra frecuentemente en las consultas dentales. La formulación de/ Formular terapias aceptables basadas en la evidencia para estos pacientes es esencial, o de lo contrario pueden ser una fuente considerable de estrés para el dentista. Es necesario identificar a estos pacientes lo antes posible y abordar sus preocupaciones. La interacción inicial entre el dentista y el paciente puede revelar la presencia de ansiedad, miedo y fobia. En tales situaciones, la evaluación subjetiva mediante entrevistas y el autoinforme/ autoevaluación en escalas de miedo y ansiedad, así como la evaluación objetiva de la presión arterial, la frecuencia del pulso, la temperatura de los dedos y la respuesta galvánica de la piel, pueden mejorar enormemente el diagnóstico y permitir la clasificación de estos individuos como leve, moderada o altamente ansiosos o fóbicos dentales. En términos generales, la ansiedad dental puede tratarse mediante intervenciones psicoterapéuticas, farmacológicas o una combinación de ambas, dependiendo del nivel de ansiedad dental, las características del paciente y las situaciones clínicas. Las intervenciones psicoterapéuticas tienen una orientación conductual o cognitiva. Desde el punto de vista farmacológico/ Farmacológicamente, estos pacientes pueden tratarse con sedación o anestesia general. Las terapias de modificación de la conducta pretenden cambiar las conductas inaceptables a través del aprendizaje, e implican la relajación muscular y la respiración de relajación, junto con las imágenes guiadas y la hipnosis, acupuntura, distracción, refuerzo positivo y tratamientos basados en la exposición, como el «decir-mostrar-hacer» y el modelado. La terapia cognitivo-conductual es una combinación de terapia conductual y terapia cognitiva, y es actualmente el tratamiento psicológico más aceptado y con más éxito para la ansiedad y la fobia. En determinadas situaciones, cuando el paciente no es capaz de responder y cooperar bien con las intervenciones psicoterapéuticas, no está dispuesto a someterse a este tipo de tratamientos o se le considera odontofóbico, deben buscarse terapias farmacológicas como la sedación o la anestesia general.

Palabras clave: terapia conductual, terapia cognitiva, anestesia general, intervención psicoterapéutica, intervención farmacológica, sedación consciente

Relative clauses

Task 1. Combine a sentence from (A) with a sentence from (B) to make new sentences with ‘that’, ‘who’, ‘which’, or ‘whose’.

A	B
1. Injuries to the soft tissues can cause bleeding.	a. These medications can make you drowsy.
2. Sedation is used to relax a patient or keep them still for a specific procedure.	b. These tissues surround and support the teeth.
3. Before the dental anesthesia, inform your dental team know if you are taking medications like opioids.	c. You can buy these tablets at a drug store.
4. Some patients have consistent oral hygiene routines.	d. The patient may experience anxiety.
5. You can chew disclosing tablets to make dental plaque easier to see.	e. The tea bag contains tannic acid that helps shrink blood vessels and control bleeding.
6. Periodontal disease affects the tissues.	f. The soft tissues include your tongue, cheeks, gums, and lips.
7. You can use a caffeinated tea bag to apply pressure to a soft tissue injury.	g. Those patients may benefit from crowns that last for decades.

Correct answers:

1 + f - Injuries to the soft tissues, **which** include your tongue, cheeks, gums and lips, can cause bleeding.

2 + d - Sedation is used to relax a patient **who** may experience anxiety or keep them still for a specific procedure.

3 + a - Before the dental anesthesia, inform your dental team know if you are taking any medications **that** can make you drowsy, like opioids.

4 + g - Patients **whose** oral hygiene routines are consistent may benefit from crowns that last for decades.

5 + c - You can chew disclosing tablets, **which** you can buy at a drug store, to make dental plaque easier to see.

6 + b - Periodontal disease affects the tissues **that** surround and support the teeth.

7 + e - You can use a caffeinated tea bag, **which** contains tannic acid that helps shrink blood vessels and control bleeding, to apply pressure to a soft tissue injury.

Task 2. Correct the following sentences containing relative clauses. Then, work with a partner to answer the questions related to the sentences.

1. *Silver fillings contain mercury which it can be toxic.*

Why is mercury toxic? Should dentists inform patients about the risks of mercury in amalgam fillings? Are composite (tooth-colored) fillings a better alternative to silver fillings?

2. *Fluoride, who is added to drinking water in the U.S., helps prevent cavities.*

Should people have the right to choose whether or not they consume fluoride? Do the benefits of fluoride outweigh its potential risks to health?

3. *Oxygen-ozone therapy creates an environment when harmful bacteria cannot survive, promoting better oral health.*

Is oxygen-ozone therapy better than regular cleaning to kill bacteria? Is oxygen-ozone therapy safe for everyone?

4. *Babies which use bottles or pacifiers for a long time often develop bad habits that affect their facial growth.*

What are the downsides of sippy cups and pacifiers? Should dentists educate parents more about the risks of prolonged pacifier and bottle use? Can bad oral habits learned from pacifiers and bottles be easily corrected later?

Correct answers:

1. Silver fillings contain mercury, **which** can be toxic.

Mercury is a toxic metal that may harm the nerves, digestive and immune systems, as well as organs such as the lungs or the kidneys. Composite resin is better than silver fillings because it is mercury-free but it is less durable and it can stain over time.

2. Fluoride, **which** is added to drinking water in the U.S., helps prevent cavities.

Research has shown that high doses of fluoride can affect the brain, the endocrine system, the thyroid gland, fertility, and the immune system (link to a Harvard Public Health article discussing the risks of fluoridated drinking water: <https://hsph.harvard.edu/news/fluoridated-drinking-water/>). Robert F Kennedy Jr, the current health secretary of the U.S., plans to remove fluoride from tap water.

3. Oxygen-ozone therapy creates an environment **where** harmful bacteria cannot survive, promoting better oral health.

The relative adverb “when” is incorrectly used to refer to “an environment”, which is a place, not a time. It should be “where”, which refers to a place or condition.

Oxygen-ozone therapy is quite effective at killing bacteria. However, this kind of therapy cannot fully replace regular cleaning as the latter serves to physically remove plaque and debris from teeth, which is also essential. While oxygen-ozone therapy is generally safe, it may not be suitable for patients with certain respiratory conditions or allergies. That is why dentists must carefully evaluate each patient before using this therapy.

4. Babies **who** use bottles or pacifiers for a long time often develop bad habits that affect their facial growth.

The prolonged use of sippy cups and pacifiers (1) encourages bad tongue posture (they train the tongue to stay down on the floor of the mouth instead of on the palate), (2) promotes mouth breathing instead of nasal breathing, (3) causes incorrect swallowing, and (4) leads to dental issues such as open bites, crooked teeth, and improper jaw growth.

Yes, dentists should educate parents about the risks of prolonged pacifier and bottle use. Many bad oral habits can be corrected if addressed early in childhood. If these habits persist until late childhood or adolescence, the patient may require orthodontic treatment or speech therapy.

Comparatives and superlatives

Task 1. In pairs read the sentences below and identify the comparative and superlative forms. Discuss whether you agree or disagree with the statements.

1. A manual toothbrush can be just as effective as an electric toothbrush at removing plaque.

2. The best time for orthodontic treatment is generally during childhood. Age is less important than dental development.

3. Orthodontic treatment is more expensive for adults than for teenagers.

4. Laser therapy offers faster healing than traditional surgical methods in the treatment of gum recession.

5. Clear aligners are an appealing option for many adult patients because they are more comfortable and less noticeable than traditional braces.

Answers

1. This sentence makes use of the **comparative of equality**, which expresses that two entities are equal in some way. This type of comparative uses the structure “as + adjective + as” or “as + adverb + as” (in this case, ‘as+effective [Adjective]+as’). **With proper technique and brushing for two minutes**, a manual toothbrush can be just as effective at removing plaque.
2. Here we have the **superlative** “the best time” and the **comparative of inferiority** “less + adjective + than” (e.g. *less important than*).
3. In this sentence we identify the **comparative of superiority** “more + adjective + than” (e.g. *more expensive*). It is more expensive for adults **because it often takes longer and may involve more complex procedures**.
4. In this sentence we use the **comparative of superiority** “adjective + er” (e.g. *faster*).
5. In this sentence we use a **comparative of superiority** “more + adjective + than” (e.g. *more comfortable than braces*) and a **comparative of inferiority** “less + adjective + than” (e.g. *less noticeable than braces*). Clear aligners are more comfortable than braces as they can be removed for eating and cleaning.

Task 2. Look at the table below and write 3-5 sentences comparing age groups and income levels. Use comparatives and superlatives.

Discuss the following questions:

- 1) Which age group is most affected by untreated cavities?
- 2) How does income influence cavity rates in different age groups?
- 3) Why do you think the rate is highest among certain groups?

	5-19 years	20-44 years	45-64 years	65+
At or below poverty level	22.8	49.5	54.3	43.7
100%-199% > poverty level	20.4	39.4	47.9	36.3
200%-399% > poverty level	14.8	29.2	30.2	20.6
400% or more than poverty level	9.8	15.1	13.1	10.1

Table 1. Percentage of people with untreated cavities (U.S.)¹

¹ This table, which contains data from 2013-2016, was retrieved from <https://fortsondentistry.com/blog/crazy-dental-statistics/> (Last consulted on June 14, 2025).

Answers:

- *People aged 45-64 years at or below the poverty level have a **higher** percentage of untreated cavities (54.3%) **than** any other age group.* [Comparative of superiority]. **Explanation (Answers Q1 and Q3):** People in this age group are the most affected by untreated cavities. They may have less access to affordable dental care and they may also suffer the long-term effects of past dental neglect or poor oral health habits.

- *The **lowest** percentage of untreated cavities is found in the 5-19 years age group with incomes 400% or more above the poverty level (9.8%).* [Superlative] **Explanation:** The percentage is so low among children and teenagers who come from high-income families because they have better access to dental care and healthier diets, which reduces the risk of tooth decay.

- *The percentage of untreated cavities in people 20-44 years old is **more than double** in the lowest income group compared to the highest income group (49.5% vs. 15.1%).* [Comparative of superiority]. **Explanation:** People in this age group may prioritize rent, food, or other basic needs over dental treatment. Adults in this age group may not have jobs with flexible hours, making it harder to visit the dentist.

- *The rate of untreated cavities is **the lowest** among those with incomes 400% or more above the poverty level in every age category.* [Superlative] **Explanation:** People with higher incomes can afford regular dental check-ups, cleanings, and early treatment for cavities. Moreover, these people often have better education and awareness of oral health. Regarding **Q2**, we observe that as income increases, the rate of untreated cavities decreases, in every age group.

Reading Comprehension

Name and Surname:

Read the Introduction of this article and answer the following questions, using your own words:

<https://www.intechopen.com/chapters/18430>

1. Under what circumstances is extraction considered to treat affected teeth?
2. What factors should be taken into account when deciding whether to preserve a compromised tooth or to extract it and place an implant?
3. Define an “end-stage” tooth.
4. What are the risks of extracting a compromised tooth and then replacing it with an implant, rather than preserving and treating it with conservative treatments?
5. In your opinion, which treatment do you think is better: implant or endodontic treatment?

Keys:

1. Under what circumstances is extraction considered to treat affected teeth?

When there are financial considerations and limited restorative options.

If a tooth has “end-stage” failure (it is not simply compromised) and cannot be saved with restorative dentistry.

2. What factors should be taken into account when deciding whether to preserve a compromised tooth or to extract it and place an implant?

Survival rates of endodontic treatment versus implant placement; patient’s expectations, perception of treatment, and health conditions; time; financial status; esthetics; and clinician’s proficiency and clinical background.

3. Define an “end-stage” tooth.

An “end-stage” tooth is a tooth with a pathologic state or structural deficiency that cannot be successfully repaired with reconstructive therapies, including root canal treatment and retreatment, and that continues to exhibit progressive pathologic changes and clinical dysfunction

4. What are the risks of extracting a compromised tooth and then replacing it with an implant, rather than preserving and treating it with conservative treatments?

The sacrifice of many sound salvageable teeth.

5. In your opinion, which treatment do you think is better: implant or endodontic treatment?

Students’ own answers.

3.INTERACTING WITH PATIENTS (2): TREATMENTS AND GIVING INSTRUCTIONS

Unit overview:

In this unit, we will focus on how to explain dental procedures and treatments patients effectively in English. Our purpose is to develop a deeper understanding of how to check patient comprehension, use advanced communication strategies, and clarify potential misunderstandings in a dental setting. These skills are vital for ensuring that patients feel well-informed, reassured, and confident in their treatment plans and in the care that we provide as professionals. Essentially, as future dentists, mastering dentist-patient communication means adhering to the principles below. Read through them carefully and, using your creativity and critical thinking, try to come up with another principle that is also crucial in this context:

1. **Clarity and simplicity:** We should use straightforward, succinct language and avoid excessively complex clinical terms to make sure our patient understands their condition, diagnosis, and treatment plans.
2. **Reassurance and empathy:** It is crucial that our patients feel calm, comfortable and confident before, during, and after any procedure. For this purpose, we need to show empathy and active listening, striving to put ourselves in their place and to imagine how they may feel in such an unfamiliar situation. Mastering this skill is essential for building trust and rapport, which in turn will nurture a positive dentist-patient relationship.
3. **Organized speech:** To ensure effective communication, it is essential that information be presented in a logical, structured, and easy-to-follow manner. This helps patients feel well-informed and more comfortable, reducing anxiety and confusion, while also improving their adherence to treatment plans and encouraging a healthier lifestyle.
4. **Easy-to-understand metaphors:** To enhance patient-dentist communication, professionals can simplify dental terminology through quotidian metaphors, using relatable analogies and alternate word choices

to ensure that patients fully understand the nature of their condition and treatment.

5. _____:

Warm-up: Class discussion

- Have you ever had an experience where the dentist made you feel reassured before a procedure? Can you reflect on the communicative strategies that were used for this purpose?
 - Why do you think going to the dentist may be a bit scary and emotionally overwhelming for some people? Have you ever had, or heard of, a negative experience at a dental setting?
 - Take a moment to consider a complex dental concept, such as periodontal disease, caries or receding gums. Could you find a way to explain it in simpler, everyday language to someone who is not a professional in the field?
 - What are the differences between language for specific purposes, as in English for dentistry, and general language used in everyday contexts? What are some characteristics of scientific communication and medical discourse?
 - Patients may feel anxious and concerned before dental procedures. How can you, as future dentists, ensure that they feel reassured, calm, and confident?
 - In which ways may cultural differences influence the way you communicate with patients? Can you imagine a situation where cultural differences and linguistic barriers may give rise to serious misunderstandings?
-

Lesson 1: Explaining procedures in steps

Learning Objective:

By the end of this lesson, you will be able to explain the main steps of a dental procedure using clear sequence markers and simple language in English in a patient-friendly manner.

Task 1: Sequencing the steps

To explain a dental procedure clearly, it is essential to break it down in manageable steps organized in a logical, easy-to-follow manner, following patient-centered communication strategies. Let's practice with a couple of examples.

Read the following outlined steps of a teeth cleaning and a dental filling procedure. Rearrange them in the correct order using appropriate sequence markers to ensure a logical flow. Then, write comprehensive and clear sentences for each step, explaining it in a patient-friendly manner. Focus on being informative, supportive and well-organized in your explanations.

1) Teeth cleaning:

1. Polishing
2. Applying fluoride treatment
3. Complete physical examination
4. Removing plaque and tartar
5. Flossing

Correctly arranged and detailed, communicative explanation:

- 1.
- 2.
- 3.
- 4.
- 5.

1) Teeth cleaning:

1. Preparing filling material
2. Numbing area
3. Cleaning cavity

4. Placing filling
5. Final check and polishing

Correctly arranged and detailed, communicative explanation:

- 1.
 - 2.
 - 3.
 - 4.
 - 5.
-

Task 2. Grammar focus: effective sequence markers and transitions

When you explain a patient the procedure they are about to undergo, you should use **sequence markers and transitions** to guide them through each of the steps. These words and phrases will allow you to organize the information and help your patient to follow along. While some common markers include: First,... Second, ... Third, ... Next, ... Then, ..., Finally, ..., more advanced and precise transitions in English encompass the following ones:

- | | |
|---------------------------|-----------------------------|
| • Before we begin, ... | • Prior to this, ... |
| • Owing to..., ... | • Consequently, ... |
| • After that, ... | • Due to ..., ... |
| • Once that's done, ... | • Moving on, ... |
| • Following this, ... | • This leads to... |
| • At this point, ... | • Immediately after, ... |
| • In the final phase, ... | • Thus, ... |
| • Hence, ... | • Simultaneously, |
| • To conclude, ... | • From there, ... |
| • Meanwhile, ... | • In the next stage, ... |
| • As a result, ... | • In response to ..., ... |
| • To start with, ... | • When that's finished, ... |
| • The first step is... | • Later on, ... |

- To wrap things up, ...
- The final step is...

Let's work a bit and try to grasp their meaning. Decide which of the above sequence markers are used to:

- Start the procedure:
- Continue the procedure:
- Finish the procedure:
- Show cause:
- Show consequence:

Task 3: Explaining a procedure (Writing and speaking practice)

Work with a partner. Agree on a complex dental procedure (e.g., a root canal treatment, wisdom teeth extraction, maxillofacial surgery, dental implant...) and write a clear, step-by-step explanation of that procedure using a wide variety of sequence markers and transitions. Make sure you include some of the markers from the list above and try to come up with other, new ones. You may look them up online for inspiration. You may also need **additive** and **adversative transitions**: while the former ones are used to add information and reinforce ideas (like '**additionally**,' '**furthermore**,' or '**moreover**'), the latter show conflict or contrast (such as '**however**,' '**whereas**,' '**conversely**,' or '**instead**.') As always, remember to focus on being informative, reassuring, supportive, and patient-friendly.

Patient-focused explanation:

Lesson 2: Providing Reassurance

Learning objective:

Dental procedures can be stressful and unsettling for some people, causing heightened anxiety. As a dentist, it is our responsibility to reassure our patient, not only by providing them with a clear explanation of the procedures, but also by offering comfort and emotional support. By the end of this lesson, you will be equipped to provide reassurance to an anxious patient by mastering calming language in English and effective empathetic communication skills.

Warm-up: Class discussion

- What are some reasons why patients may find dental procedures emotionally overwhelming and stressful?
- Why is providing reassurance and emotional support of paramount importance in dentistry?
- Try to brainstorm some reassuring phrases you could use in a dental setting, such as “I don’t want you to worry, this is a very common procedure,” “if you feel uncomfortable, just let me know and I’ll give you a break,” or “you will feel some pressure, but it shouldn’t hurt.”

- Can you think of non-linguistic strategies to convey reassurance to a nervous patient? Consider key aspects of non-verbal communication, such as eye contact, facial expression, and tone of the voice.
-

Task 1: Identifying reassurance

Read the following exchanges between a concerned patient and an empathetic dentist striving to create a supportive atmosphere. Underline the parts of the professional's responses that provide reassurance and show empathy. Identify the phrases that explain procedures clearly to help the patient follow along. Reflect on the register, tone, and the kind of lexicon used by the professional.

Scenario 1:

- **Patient:** "But my mom told me root canals are super painful. She says she once even passed out because of the pain!"
- **Dentist:** "I hear you. I understand why you might feel a bit anxious: root canals do have a notorious reputation. However, with current techniques and anesthesia, I can assure you that most patients find the procedure just a bit uncomfortable. Plus, I'll make sure you're numb before we get started, so you won't feel any pain during the procedure. Please, feel free to let me know if you experience any distress at any point. Your well-being is my top priority, and my goal is that you have a positive, pain-free experience."

Scenario 2:

- **Patient:** Doc, I'm worried that I won't be able to keep my mouth open for such a long time. This is embarrassing, but, honestly, what if I bite you!?"
- **Dentist:** "Don't worry, I get this a lot. I promise I've got quick reflexes! I'm just joking: I can use a small tool that helps keep your mouth open comfortably, and we can take breaks whenever you need. You're in control during the whole procedure, so, if you feel discomfort, you just have to signal to me, and we'll pause at any time you need."

Scenario 3:

- **Patient:** “I’m actually not sure I can afford the cost of oral surgery right now. How urgent is it?”
 - **Dentist:** “I completely understand your unease. Because many patients share this concern, we have arranged different ways to support you. We can go through the different treatment possibilities together and discuss the payment plans that are available to help make this easier and more manageable for you. Our top priority now is to make sure to get you the care you need as soon as possible.”
-

Task 2: Role-Play: Addressing patient’s concerns (Speaking practice)

In pairs, role-play a scenario where one student plays the patient and the other, the dentist. The patient will express concerns about a dental procedure, and the dentist will address them with a clear, manageable, step-by-step explanation while providing reassurance and emotional support to alleviate the patient’s anxiety. Go beyond linguistic strategies by engaging in supportive, reassuring non-verbal communication as well. Once the conversation is complete, switch roles.

- **Scenario 1:** The patient has had past negative experiences at the dentist and needs to undergo a root canal treatment now. The patient is getting anxious and emotional, and feeling visibly self-conscious. They are worried about pain as well as the potential negative outcomes or side effects.
- **Scenario 2:** The patient has never had a wisdom tooth extraction before, and the X-ray shows that the tooth to be removed is very close to the nerves. They are extremely concerned and anxious about the possibility of nerve damage during the procedure.
- **Scenario 3:** A foreign patient who does not speak much English suffers from a severe oral infection causing swelling and pain that needs urgent treatment. The dentist must explain the diagnosis clearly using simple

language and non-verbal communication cues to ensure the patient understands the urgency without panicking.

- **Scenario 4:** The patient, an elderly man, is extremely anxious about getting anesthesia the minute before the procedure. They are worried that the anesthetic will not take effect and they will feel excruciating pain. They are also concerned about potential side effects of the anesthesia.
-

Lesson 3: Ensuring patient understanding

Learning objective:

By the end of this lesson, you will have developed a diverse set of communicative skills to make sure that your patient has fully grasped the procedure.

As professional dentists, our duty extends beyond providing a mere explanation of the involved procedure: it is our responsibility to make sure that the patient has correctly understood what to expect as well. Furthermore, clear and self-reliant communication is crucial to increase our authority and credibility as a dental professional. Some common strategies to enhance effective communication in health care include the ones listed below. Read through them carefully and, using your creativity and critical thinking, try to come up with another patient-friendly strategy that could be integrated in this list.

1. **Using the teach-back method:** Healthcare professionals tend to ask the patient to repeat the diagnosis, instructions or steps of the procedure in their own words to confirm that the patient has understood the information correctly.
2. **Employing daily metaphors to simplify technical terminology:** Dentists can use original, relatable comparisons that capture technical procedures in everyday language to help patients grasp complex concepts.

3. **Summarizing the key points and recapitulating:** Once the professional has finished providing an explanation, it is recommended to succinctly summarize the principal steps of the procedure for clarity.
 4. _____:
-

Task 1: Checking for understanding

In the following situations, patients are responding emotionally to the dentist's explanation of a procedure. For each conversation, decide whether the patient demonstrates a correct understanding of what is happening or not. In those cases where you deem the patient has not understood, propose some follow-up question or clarification the dentist could use to help the patient grasp the information successfully.

Patient 1: "Hold on, what's amalgam again? Is that what you're using to numb the area?"

Clarification suggestion:

Patient 2: "Wait, now you said I'll need a crown, but I thought you were just going to remove the infection."

Clarification suggestion:

Patient 3: "So I just need to take antibiotics you have prescribed, and my gum infection will heal on its own, right?"

Clarification suggestion:

Patient 4: "So enamel will grow back naturally if I just brush really well everyday with my electric toothbrush, right?"

Answer: _____ (Yes/No)

Clarification Suggestion:

Patient 5: "I really don't get why I need braces; my teeth look okay."

Answer: _____ (Yes/No)

Clarification Suggestion:

Task 2: The teach-back method

In this task, you will practice using open-ended questions and the teach-back method to ensure the patient knows what to expect. **Open-ended questions**, such as those starting with *what*, *how*, *where*, or *why*, allow the patient to elaborate further and share their insights better than simple 'yes or no' questions, which are much more limited in the insight they provide. Below you will find the dentist's explanations of procedures. After each one, come up with some possible questions the dentist could ask to check the patient's understanding.

1. **Dentist Explanation:** "For this procedure, I will begin by anesthetizing the area around your tooth with a local anesthetic. You'll feel a small pinch when I give you the injection, imagine it like the sting of a bee. But after some minutes, the anesthetic will kick in and numb the area, so you won't feel any pain during the

actual extraction. You should also know that, sometimes, the anesthetic may cause your heart to race a little or make you feel a bit jittery. This is also a completely normal response, so I don't want you to worry about it."

Questions:

- 1.
 - 2.
2. **Dentist Explanation:** After the tooth extraction, it is usual to ooze some blood from the socket and, to minimize bleeding, you can bite on gauze for a while. To reduce swelling and discomfort, you can apply an ice pack to your cheek for 20-30 minutes. Please remember to eat soft foods, avoid hot or hard items, and refrain from smoking or drinking alcohol to promote proper healing. If you feel any pain, you can take an over-the-counter painkiller, but if you experience excessive pain, swelling, or signs of infection, don't hesitate to reach out.

Questions:

- 1.
 - 2.
-

Task 3. Alternatives for dental terminology

To explain a complex concept or procedure, the dentist may simplify technical terminology in patient-friendly, simple language. For instance, a professional may decide to describe gingivitis to a patient in terms of 'gum inflammation,' or bruxism as 'teeth grinding.' Find an alternate word or a simplified phrase for each of these frequently used terms:

- sutures:
- composite:
- halitosis:
- sealant:

- caries:
 - diastema:
 - moulage:
 - sialadenitis:
 - prosthetics:
 - overdenture:
 - malocclusion:
 - maxilla:
 - root planning:
 - gauze:
 - incisors:
 - edentulous:
-

Task 4. Using metaphors to simplify dental terminology

- **Reflecting on metaphors:** In pairs, begin by discussing what a metaphor is and the different functions it may fulfill in communication. Think about different contexts in which metaphors and analogies can create relatable comparisons that make it easier to convey and understand complex or abstract information.
- **Brainstorming time:** In your pairs, come up with a list of dental procedures or clinical terms that might be hard for patients to understand, such as root canal treatment, periodontal disease, pulpectomy, crown placement...
- **Creating metaphors:** For each term or procedure that you have chosen, create a metaphor or analogy that could help a patient understand it better. Aim for clear, original, and relatable comparisons, using situations from everyday life.

For instance, some common dental metaphors used by dentists include, among others, explaining a root canal in terms of a 'sick tree,' or describing a filling as if the dentist were to 'patch a tire.'

Metaphor 1:

Metaphor 2:

Metaphor 3:

Metaphor 4:

Wrap-Up Unit Review

Task 1. Role-Play: Interacting with patients (speaking practice)

In groups of 3, imagine a scenario where one student plays the dentist, one plays the patient, and the third one is an observer. The dentist is about to explain a complex dental procedure to a visibly anxious patient. The observer should take notes and, once the interaction has finished, will provide their classmates with constructive feedback on:

- Use of transitions and sequence markers
- Language used (lexicon, structures, register)
- Use of metaphors and simplified terminology
- Empathy and reassurance
- Checking for understanding

Rotate roles until everyone has practiced each part

Task 2. Patient-friendly definitions

Below you will find some technical terms as defined by the American Dental Association in its online *Glossary of Dental Clinical Terms*, a comprehensive resource that is freely available at the Association's website. Try to rephrase the concepts in a patient-friendly version:

1) *acute periradicular* or *acute apical abscess*: An inflammatory reaction to pulpal infection and necrosis characterized by rapid onset, spontaneous pain, tenderness of the tooth to pressure, pus formation and eventual swelling of associated tissues. May also be known as acute periapical abscess, acute

alveolar abscess, dentoalveolar abscess, phoenix abscess, recrudescent abscess, secondary apical abscess.

Patient-friendly version:

2) *bleaching*: Process of lightening of the teeth, usually using a chemical oxidizing agent and sometimes in the presence of heat. Removal of deep seated intrinsic or acquired discolorations from crowns of vital and non-vital teeth through the use of chemicals, sometimes in combination with the application of heat and light. Bleaching has been achieved through short and long term applications of pastes or solutions containing various concentrations of hydrogen peroxide and carbamide peroxide. Normally applied externally to teeth; may be used internally for endodontically treated teeth

Patient-friendly version:

3) *resin infiltration*: Application of a resin material engineered to penetrate and fill the sub-surface pore system of an incipient caries lesion to strengthen, stabilize, and limit the lesion's progression, as well as mask visible white spots

Patient-friendly version:

3) *deep sedation*: a drug-induced depression of consciousness during which patients cannot be easily aroused but respond purposefully following repeated or

painful stimulation. The ability to independently maintain ventilatory function may be impaired. Patients may require assistance in maintaining a patent airway, and spontaneous ventilation may be inadequate. Cardiovascular function is usually maintained.

Patient-friendly version:

5) apexification: The process of induced root development to encourage the formation of a calcified barrier in a tooth with immature root formation or an open apex. May involve the placement of an artificial apical barrier prior to nonsurgical endodontic obturation.

Patient-friendly version:

Task 3. End of unit reflection: Interacting with patients (writing practice)

Write a brief reflection sharing your insights and personal experiences in relation to patient-centered communication in dentistry. Consider addressing the following issues:

1. How can techniques such as the teach-back method or the use of metaphors enhance communication between dentists and patients?
2. In which ways does empathy play a crucial role in dentist-patient interaction?
3. How has this unit challenged your perspectives on communication in healthcare?

References and further reading:

American Dental Association. (2024). *Glossary of Clinical Dental Terms*. Available at: <https://www.ada.org/publications/cdt/glossary-of-dental-clinical-terms>.

Callanan, Deidre. (2021). Tools for success in provider-patient communication. *Registered Dental Hygienist*, 41(7): 44-47.

Hashim, M Jawad. (2017). Patient-centered communication: basic skills. *Am Fam Physician*, 95(1): 29-34.

Ho, Jasmine Cheuk Ying, et al. (2024). Strategies for effective dentist-patient communication: A Literature Review. *Patient Preference and Adherence*, 18: 1385-1394.

Translate the following abstract from an academic article into Spanish:

Bascones-Martínez A, Muñoz-Corcuera M, Bascones-Ilundain J. Diabetes y periodontitis: una relación bidireccional [Diabetes and periodontitis: A bidirectional relationship]. Med Clin (Barc). 2015 Jul 6;145(1):31-5. Spanish. doi: 10.1016/j.medcli.2014.07.019. Epub 2014 Sep 3. PMID: 25192582.

Diabetes and periodontitis: A bidirectional relationship

Abstract

Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia resulting from a defect in insulin secretion, a defect in insulin action or a combination of both. Periodontitis is now considered a chronic infection located in the oral cavity that can trigger the host's inflammatory immune responses at local and systemic levels, and can also be a source of bacteremia. It is now known that periodontitis has an influence on the pathogenesis of certain systemic diseases. The biological relationship between diabetes and periodontal disease is well documented. In the mid-1990s sufficient scientific support for the association between diabetes and periodontitis was found, and periodontitis started to be designated as the sixth complication of diabetes. There have been studies that show an improvement in both clinical and immunological parameters of periodontitis and glycemic control in long-term diabetes after treatment of periodontal disease. In addition, scientific evidence confirms that poorer glycemic control contributes to a worse periodontal condition.

The interplay between the two conditions highlights the importance of the need for a good communication between the GP (general practitioner) and the dentist about diabetic patients, always considering the possibility that the two diseases may be occurring simultaneously in order to ensure an early diagnosis of both.

Resumen

La diabetes mellitus es un grupo de enfermedades metabólicas caracterizadas por una hiperglucemia resultante de un defecto en la secreción de insulina, un defecto en la acción de esta, o bien una combinación de ambos. La periodontitis se considera actualmente una infección crónica localizada en la cavidad oral, que puede activar la respuesta inmunitaria inflamatoria del huésped a nivel local y sistémico, y que además puede ser una fuente de bacteriemia. Hoy en día se sabe que la periodontitis tiene una influencia sobre la patogénesis de ciertas enfermedades sistémicas. La relación biológica entre la diabetes y la enfermedad periodontal está bien documentada. A mediados de la década de 1990 se encontró soporte científico suficiente para la asociación entre la diabetes y la periodontitis, que se comenzó a designar como la sexta complicación de la diabetes. Se han realizado estudios que muestran una mejora tanto en los parámetros clínicos e inmunológicos de la periodontitis como en el control glucémico a largo plazo de la diabetes tras el tratamiento de la enfermedad periodontal. Además, la evidencia científica confirma que un peor control glucémico contribuye a un peor estado periodontal.

La interrelación entre ambas afecciones deja constancia de la importancia de la necesidad de una buena comunicación entre el médico de cabecera y el odontólogo de los pacientes

Leopoldina Pedro Mustieles

diabéticos, teniendo siempre en cuenta la posibilidad de que ambas enfermedades puedan estar ocurriendo simultáneamente, para garantizar el diagnóstico precoz de ambas.

Name and surname:

Listening comprehension I

<https://www.youtube.com/watch?v=zGoBFU1q4g0>

1. The speaker mentions that the cavities found by archaeologists were caused by...

- a. The same microbes than today. X
- b. Microbes that are extinct today.
- c. Unknown microbes.

2. Where do these microbes come from? How do we get them?

They live in our mouths. They are with us soon after our birth. We typically pick them up as babies, from our mothers' mouths.

3. Which of these statements is true?

- a. Mutans streptococci and teeth are both resistant to lactic acid.
- b. Mutans streptococci are resistant to lactic acid, but teeth aren't. X
- c. Mutans streptococci aren't resistant to lactic acid, but teeth are.

4. Fill in the gaps.

While each human tooth is coated in a hardy, protective layer of ___enamel___, it's no much for acid. That ___degrades_ the armor over time, leaching away its _calcium_ minerals. Gradually, acid wears down a pathway for bacteria into the tooth's secondary layer called the _dentin_.

5. Ancient humans had cavities because...

- a. Their food typically contained lots of sugar.
- b. They were exposed to sugar in carbohydrates. X
- c. Their diet consisted mostly of meat.

6. Fill in the gaps.

When exposed to _enzymes_ in the _saliva_, carbohydrates get broken down into ___simpler sugars_, which can become the fodder for those ravenous mouth bacteria.

7. What did ancient humans used to do fillings with?

- a. Beeswax. X
- b. Animal grease.
- c. Medicinal plant.

8. Why did the incidence of cavities surged after the Industrial Revolution?

We had technological advances that made refined sugar cheaper and more accessible.

9. How many adults in America have cavities in their teeth?

- a. 19 %
- b. 29 %
- c. 92% X

10. According to the speaker, what is another possible cause for cavities apart from sugar consumption?

- a. Lack of oral hygiene.
- b. Hard enamel.
- c. Genes. X

11. Apart from toothpaste, where is fluoride also added?

- a. Bottles of water.
- b. Fountains.
- c. Water supplies. X

12. Which of these statements is true?

- a. Our knowledge on tooth care hasn't evolved much, as we suffer from the same problems.
- b. Our knowledge on tooth care has evolved, as we have the means to avoid a cavity calamity. X
- c. We might have some problems in common with ancient humans, but the means to face them are different.

Listening Comprehension II

Watch the following video and answer the questions below:

https://www.youtube.com/watch?v=vVWGR7VAuas&ab_channel=CignaHealthcare

1. Decide whether the following statements are true or false:

- a) If you have a family history of chronic diseases, such as diabetes or heart disease, the risk of developing tooth decay or gum disease increases. True.
- b) Cavities are contagious, so they can be spread to other family members. False. Cavity-causing bacteria can spread through shared utensils, drinks.
- c) Parents should never clean a dropped pacifier by sticking it in their mouth, as they might pass cavity-causing bacteria on to their baby. True.
- d) Parents should allow their children to continue drinking from a bottle, rather than encouraging them to drink from a cup. False.
- e) Parents should take their children to the dentist as soon as they have cavities. False.

2. What can we do to have a good oral health if we have a genetic predisposition to develop dental health conditions?

- Practice good oral health habits.
- Be aware of your family history.
- Talk to your dentist open and honestly about your family history.

3. What does helping children maintain good oral health habits involve?

- Teaching them good healthy oral habits and maintaining your own.

4. When do children start being susceptible to cavities?

- As soon as their teeth break through their gums.

Listening exercise 1: Scaling and Root Planning

1. Fill in the gaps with the words you hear in the YouTube video:

https://www.youtube.com/watch?v=OkZLYwA_qdE&ab_channel=SpearEducation

- a) For many reasons, sometimes people aren't able to maintain their recommended frequency of _____.
- b) Harmful bacteria and hard _____ deposits called _____ build up on your teeth above and below the _____, releasing toxins that cause gum disease, also known as _____.
- c) Unfortunately, this buildup occurs in areas that can't be taken care of by brushing, _____, or even a regular dental cleaning.
- d) Over time, if periodontitis progresses, it can lead to increased _____, _____, receding gums, and ultimately receding bone tissue.
- e) By removing the deposits and _____, this procedure is in many cases able to hold the _____ of periodontitis.
- f) Your doctor will determine the next steps for continued _____ of your _____.

2. State whether these statements are true or false:

- a) Periodontitis is an illness that consists in bone tissue degeneration. T/F
- b) Advanced periodontitis can lead to bleeding and receding bone tissue. T/F
- c) Scaling and root planning can be recommended by your doctor to remove deposits from your teeth. T/F
- d) Scaling and root planning are specialized procedures that fills cavities with amalgam. T/F
- e) Scaling and root planning are usually performed with a hand scaler and an ultrasonic cleaner, which separate the calculus from the tooth. T/F
- f) This procedure never has to be performed on stages. T/F

Listening exercise 2. Answer the following questions by choosing the correct option (a, b or c):

https://www.youtube.com/watch?v=zIJvqkj8c0s&ab_channel=MarkBurhenne%2CDDS

1. What is the correct way to brush your teeth?

- a) “Sawing motion”: sweeping back and forth.
- b) Jiggling between the teeth and staying in between the teeth and the gum.
- c) Both ways would be correct.

2. What are the “embrasures” (troneras)?

- a) The space in between the teeth up against the gums.
- b) The bristles of the toothbrush.
- c) A sharp tool used by dentists to remove tartar.

3. Why is flossing important?

- a) It helps reduce calculus buildup.
- b) Flossing is not recommended by dentists.
- c) It does get in between the teeth.

4. What are the possible outcomes of brushing your teeth in a sweeping motion?

- a) Enamel erosion.
- b) Sensitive teeth.
- c) All of the above.

1. Fill in the gaps with the words you hear in the YouTube video:

https://www.youtube.com/watch?v=OkZLYwA_qdE&ab_channel=SpearEducation

- a) For many reasons, sometimes people aren't able to maintain their recommended frequency of _____ (dental checkups).
- b) Harmful bacteria and hard _____ (tartar) deposits called _____ (calculus) build up on your teeth above and below the _____ (gum line), releasing toxins that cause gum disease, also known as _____ (periodontitis).
- c) Unfortunately, this buildup occurs in areas that can't be taken care of by brushing, _____ (flossing), or even a regular dental cleaning.
- d) Over time, if periodontitis progresses, it can lead to increased _____ (inflammation), _____ (bleeding), receding gums, and ultimately receding bone tissue.
- e) By removing the deposits and _____ (bacteria), this procedure is in many cases able to hold the _____ (spread) of periodontitis.
- f) Your doctor will determine the next steps for continued _____ (rehabilitation) of your _____ (gum tissue).

2. State whether these statements are true or false:

- a) Periodontitis is an illness that consists in bone tissue degeneration. T/F False
- b) Advanced periodontitis can lead to bleeding and receding bone tissue. T/F True
- c) Scaling and root planning can be recommended by your doctor to remove deposits from your teeth. T/F. True
- d) Scaling and root planning are specialized procedures that fills cavities with amalgam. T/F False
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1. What is the correct way to brush your teeth? B

- a) “Sawing motion”: sweeping back and forth.
- b) Jiggling between the teeth and staying in between the teeth and the gum.
- c) Both ways would be correct.

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- a) The space in between the teeth up against the gums.
- b) The bristles of the toothbrush.
- c) A sharp tool used by dentists to remove tartar.

3. Why is flossing important? C

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- b) Flossing is not recommended by dentists.
- c) It does get in between the teeth.

4. What are the possible outcomes of brushing your teeth in a sweeping motion? C

- a) Enamel erosion.
- b) Sensitive teeth.
- c) All of the above.

LISTENING

https://www.youtube.com/watch?v=HG68Ymazo18&ab_channel=Indeed

Expert: Arguably, the most crucial part of the job search. An interview can make or break an opportunity. So to help you really prepare, we're going to dissect and analyze an entire interview from start to finish. I'll be sprinkling in a mix of tips about body language, etiquette, and how to answer common questions, like when exactly does the interview start? How do you deal with nerves? And how soon can you follow up? For years, athletes have used science and data analysis to improve. Now we are doing the same for job seekers everywhere. This is Job Science.

Meet Anya, a recent grad majoring in business administration. She's interviewing for an entry level project management position. Note her posture. Head up, shoulders pulled back, no slouching, and no laid-backness. The interview begins the minute you walk into the building. Anya treats everyone in the office with respect while keeping eye contact. From security personnel to receptionists. Anyone you run into on your way in could be asked to give feedback on you. It's normal to be nervous. When nerves kick in, the natural human response is to take short breaths and breathe faster. Stay calm by taking a deep breath before entering. Hold it. Count to three and then slowly breathe out.

Pause. First, ace those introductions. Greet everyone in a way that is authentic to you, like, "Hey, nice to meet you". And then say their name. That one always works. You know you're more likely to remember their name if you say it out loud when you first meet. A lot of the time, small talk comes up before any questions. It's good to have a few current events or topics in mind. You can't possibly predict what they're going to ask. But you can practice answering the common ones like, "why do you want to work here? What makes you unique?" Let's see what our interviewer asks.

Interviewer: So I want to hear more. Tell me a little about your experience and what you'd bring to this role.

Expert: Pause. When this is asked, they're looking to learn what makes you stand out. Be honest with your answers. If that means having to pause and think for a second, that is alright. Think about your past experiences and how the role lines up with your future goals. It never hurts to be honest.

Interviewed: Great question. Ever since I was young, I've always been the organized one of my family, whether it was helping my parents schedule vacations or color-coordinating my closet. Naturally, that lifestyle got me here, project management. I've been a people-person for as long as I can remember. Plain and simple. I love team-building and making sure everyone has a part. Just the other month...

Expert: Ooh, just really quick. Don't speak negatively about previous places you've worked. Instead, talk about what you've learned.

Interviewed: I helped lead a team of five to deliver a three-week sales project a few days ahead of schedule. I'd love to bring these things here.

Expert: Perfect. A response like this not only answers the question but also shows off her personality. But remember, there's no one right way to interview and answer questions. Be yourself, and let your personality shine. Be aware of your movements. Practice polite, confident body language. Subtly miming your interviewers posture can actually create a sense of connection. Of all places, unnecessary movements are hard to ignore in an interview. Whether it's tapping your fingers or bouncing your leg, be aware and stay present.

Interviewer: Hey, it's been great chatting so far. I guess my last question is, do you have any questions for me?

Expert: Oh, this is a hard one. Make sure to have a short list of questions for your employer in your back pocket. Ask the questions you would if you got the job. If tomorrow was your first day what would you want to know from the manager. Even if you don't have any burning questions, asking a few shows that you did your homework and that you really care. Some include, "what do you like best about working here? What are some mistakes people have made in this position? What is a goal you're currently working toward? How will my performance be evaluated?"

Interviewed: Well, I did read that you're expanding your software team next quarter. I'm curious how you plan to carry that out.

Expert: The interview isn't actually over. Always follow up within 24 hours with the thank you email to the hiring manager. This can be a quick note simply thanking them for their time. Or a longer one that elaborates on some of the things you talked about. It's key to leaving a lasting impression. This was the breakdown of an interview. Till next time.

ACTIVITY 1

Listen carefully and write the missing word.

Arguably, the most crucial part of the job search. An interview can make or break an opportunity. So to help you really prepare, we're going to dissect and analyze an entire interview from start to finish. I'll be sprinkling in a mix of tips about _____, _____, and how to answer common questions, like when exactly does the interview start? How do you _____ nerves? And how soon can you _____? For years, athletes have used science and data analysis to improve. Now we are doing the same for job seekers everywhere. This is Job Science.

Meet Anya, a recent grad majoring in Business Administration. She's interviewing for an entry level project management position. Note her posture. _____, shoulders pulled back, no slouching, and no laid-backness. The interview begins the minute you walk into the building. Anya treats everyone in the office with respect while _____. From security personnel to receptionists. Anyone you run into on your way in could be asked to _____ on you. It's normal to be nervous. When nerves _____, the natural human response is to take short breaths and breathe faster. _____ by taking a deep breath before entering. Hold it. Count to three and then slowly _____.

ACTIVITY 2

Read the sentences and decide if they are true (T) or false (F).

- ☐ A good first impression starts with greeting only the interviewer, as they are the most important person in the room. F
- ☐ Saying the name of the person you just met helps you remember it better. T
- ☐ Small talk usually happens before the official interview questions begin. T
- ☐ Even though you can't predict every interview question, you can prepare for common ones like "Why do you want to work here?" T
- ☐ If you need to pause before answering a question, it may give the impression that you are unprepared. F
- ☐ When discussing previous jobs, it is recommended to focus on the lessons learned rather than speaking negatively about the experience. T
- ☐ Giving real-life examples of past experiences can help demonstrate your skills. T
- ☐ There is no single "correct" way to answer interview questions, but being authentic and confident is important. T
- ☐ Using confident body language and mimicking the interviewer's posture can help build a connection. T

☐ Making movements like tapping your fingers or bouncing your leg is recommended to stay relaxed. F

ACTIVITY 3

Answer the questions.

1. How can you make a strong first impression in an interview?
2. What unnecessary movements should you avoid in an interview?
3. What is an example of a thoughtful question you could ask the employer during an interview?
4. What are two possible approaches to writing a thank-you email after an interview?

VOCABULARY

ACTIVITY 1

Match each word with a definition.

put down (an implant) – give someone treatment - double-jaw surgery - Hippocratic Oath – chart – cavity filling – non-insured materials – prevent damage

- A procedure that moves both the upper and lower jaws to fix alignment problems, improve appearance, and help with issues like biting or breathing
- To place a dental implant into the jawbone as a replacement for a missing tooth
- To take actions or measures to stop harm, injury, or deterioration from occurring to someone
- A drawing that shows information in a simple way
- A dental restoration used to repair and restore teeth damaged by decay (cavities) by filling the affected area with materials such as composite resin, amalgam, or porcelain
- An ethical code that outlines principles of medical ethics, including patient confidentiality, non-maleficence, and professional integrity
- Medical supplies, treatments, or services that are not covered by a patient's health insurance plan, requiring them to pay out-of-pocket costs
- To provide medical care to a patient to help them recover from an illness, injury, or condition

ACTIVITY 2

Fill in the gaps using the words from the list provided. Make sure to use the correct word according to the context.

put down – give someone treatment - double-jaw surgery - Hippocratic Oath – chart – cavity fillings – non-insured materials – prevent damage

This dialogue takes place between a dentist (D) and her boss (B), who have a disagreement on how to proceed with a patient's treatment. While the dentist prioritizes a more patient-centered approach, her boss is focused on the clinic's policies and efficiency. Their differing perspectives lead to an argument about the best course of action.

Dialogue 1)

B – I took a second here just to read your _____.

D – On patient Ms Smith?

B – Yes. You _____ one implant and just three _____.

D – Yeah. I didn't wanna _____ her extra _____ if I could preserve some teeth.

B – Eventually, she'll need implants for the rest of her teeth, so it's better to just remove them now to _____ any more _____. The best defense is a good offense. All right, come up with a new strategy, okay?

D – She's my patient. It's my job to treat her in the way I think is best for her.

Dialogue 2)

B – It seems like you have a lot to say, so go on. Be my guest.

D– You suggested _____ to a patient and used _____ to raise the fee and you do expensive implants for teeth you could save. Ripping off patients is your specialty.

B – What's your point here?

D - It's the _____. Do you even remember it? And you call yourself a doctor.

ACTIVITY 3

Put the dialogue in the correct order.

_____ Judging by the X-ray, you must have been in a lot of pain.

_____ Oh, implants? I heard implants are expensive.

_____ Teeth aren't something you can pull out easily. It could even be dangerous, **life-threatening** for the elderly. You won't **be able to eat well**. You may **suffer from malnutrition**. Your bones will weaken, make it hard to walk. I could get really serious.

_____ There's not much to say. I've been chewing for the past 80 years. It seems only natural that **my teeth have grown weak**.

_____ No, I'm not doing it. **Put them all out**. Yeah, just **pull out all of my weaker teeth**.

_____ But **they're in pretty good condition** for your age. You can still **get implants**.

_____ Uh, listen, I understand your concern. But **your insurance will cover up to two of them**. You're responsible for 30 percent. You just have to pay for one implant.

_____ You can also **get dentures**, if you think implants are too expensive. But implants are much, much stronger. They'd be better, because implants are

María Carbonell Saiz

stronger than dentures. You have pretty strong bones for someone your age. It'd be best...

_____ That's too expensive. Just pull them all out already.

A) Reading comprehension

DeBate RD, Tedesco LA, Kerschbaum WE. Knowledge of oral and physical manifestations of anorexia and bulimia nervosa among dentists and dental hygienists. J Dent Educ. 2005 Mar;69(3):346-54. PMID: 15749945.

Knowledge of Oral and Physical Manifestations of Anorexia and Bulimia Nervosa Among Dentists and Dental Hygienists

Rita D. DeBate Ph.D., Lisa A. Tedesco Ph.D., Wendy E. Kerschbaum R.D.H., M.P.H.

Read the Introduction of this article and answer the following questions:

1. Why does the text say that dental health providers are key in the secondary prevention of eating disorders?

Since dentists and dental hygienists may be the first health care providers to assess the physical and oral effects of anorexia nervosa and bulimia nervosa, they may be the key health care providers in the secondary prevention of eating disorders.

2. What might happen if dental health providers fail to notice the oro-dental effects of eating disorders?

Failure by the dental care provider to identify these oral manifestations may lead to more serious systemic problems and irreversible damage to the oral cavity, in addition to reducing the probability of early treatment.

3. How can a dentist help diagnose an eating disorder?

Examination of the mouth, face, and general appearance of the patient by the dentist and dental hygienist is a crucial first step in the secondary prevention of eating disorders and associated systemic conditions.

4. State whether the following statements are true or false:

a) Intra-oral oro-dental effects of eating disorders include caries, lanugo and dental erosion. False

b) Oro-dental effects have been well documented in the literature for decades. False

c) Extra-oral effects of BN might include erosion of the fingernail, as well as overweight. True

d) Malnutrition might lead to dry mouth, periodontal disease and loss of body fat. True

e) Perimylolysis is an erosion characterized by hardened enamel with rounded margins, an irregular appearance of the incisal surfaces of the anterior teeth, and loss of contours on unrestored teeth. False

Keys:

1. Why does the text say that dental health providers are key in the secondary prevention of eating disorders?

2. What might happen if dental health providers fail to notice the oro-dental effects of eating disorders?

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e) Perimylolysis is an erosion characterized by hardened enamel with rounded margins, an irregular appearance of the incisal surfaces of the anterior teeth, and loss of contours on unrestored teeth.

In pairs or groups of three, please act out the following role plays in order to practice dentist-patient interaction. Each interaction should last, at least, three minutes:

.....
A patient has been having a severe toothache for the last few weeks, especially when he drinks cold beverages or chews on hard food.

.....
A patient has had bleeding gums and bad breath for a few weeks. He has a history of periodontitis and gingivitis in his family.
.....

A child patient has overbite and she's starting to develop tooth decay.

.....
An elderly patient has a severe case of edentulism. She asks the dentist if she needs a denture or if there are other cheaper alternatives.

.....
An adolescent has had a severe pain in his gums for a few weeks. The dentist decides that one of his wisdom tooth is erupting and needs to be extracted.

.....
A young woman has some stained and chipped teeth and is concerned about her appearance.

.....
A young man has had a motorbike accident and he has missed several of his front tooth.

.....
A patient hasn't been to the dentist in a few years and he has accumulated plaque and some loose teeth.

.....
A patient had a root canal treatment a few years ago. She has noted that her crown is fractured and discolored.

.....
A patient who clenches her teeth while she sleeps has noticed some enamel erosion and claims that she has terrible headaches and pain in the jaw when she wakes up in the morning.
.....

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