

## Course module summary

Semester/Term	>>to be added later<<			
Course Unit/Module Code:	Module 10			
Course Unit/Module Name:	<b>WP 10 Oral health, Swallowing disorders and speech, Sleep</b>			
Credit Value:	01			
Core/Optional	Core			
Pre-requisites	None			
Hourly Breakdown	Theory	Practical	Other	Independent learning
	<b>15</b>	<b>6</b>		<b>29</b>

### **Intended Learning Outcomes:**

#### Oral health:

- To name and identify the main anatomical structures in the mouth
- To understand the importance of oral health
- To know and find suitable tools and methods to prevent mouth diseases
- To perform daily routine oral care procedures
- To instruct family members to carry out oral hygiene procedures for disabled person (including neurodegenerative diseases)
- To notice and recognize the common pathological conditions in the oral cavity
- To know the causes, alleviating methods and treatment principles of these pathologies
- To conduct the examination of oral cavity
- To assess and record an oral health condition

#### Assessment and therapy of swallowing, communication and voice disorders in neurodegenerative diseases:

- To understand the mechanism of speech and voice production
- To be able to recognize the most common speech and voice problems of NDD and handle the patient appropriately

- To understand the physiology of swallowing
- To be able to recognize to symptoms of dysphagia
- To know what unnoticed dysphagia can cause in NGD patients and be able to manage the patients' condition

**Sleep:**

- To understand basic concept of healthy sleep
- To know sleep regulative structures in the body and the effect of surrounding environment on sleep
- To be able to conduct sleep hygiene education based on sleep diary for disabled patient's family
- To be able to recognize dietary factors and daytime routines harmful to sleep
- To know frequent sleep disorders
- To be able to assist filling in sleep disorders questionnaires
- To know and explain main treatment and management options of frequent sleep disorders

**Course Content:**

**Oral health:**

1. Oral health (introduction to oral hygiene assisted procedures and different products for oral hygiene)
2. Common mouth diseases and conditions (anatomy of the oral cavity with main structures and landmarks; an age and/or disease-related changes in the oral cavity; the common diseases and pathological conditions in the oral cavity (aetiology, clinical symptoms, relief, treatment)
3. Oral health assessment (oral health decreasing risk factors; oral cavity examination; oral cavity assessment; mouth care recording)

**Speech, voice, and swallowing disorders:**

4. Speech and voice disorders in NGD patients: introducing normal voice and speech physiology, as well as the pathophysiology of the most common speech and voice disorders and their impact on quality of daily life
5. Speech and voice therapy (overview of the most common voice and speech therapy methods)
6. Dysphagia (normal swallowing physiology; effects of neurodegenerative diseases on the physiology of swallowing; dysphagia assessment methods; dysphagia therapy)

**Sleep:**

7. Sleep physiology. Changes in sleep through life span in different genders. Circadian rhythm. Genetics of sleep.
8. Sleep function concepts to maintain good mental and physical health. Sleep diary
9. Dietary and daily routine changes to improve sleep

10. Sleep disorders: (sleep apnea, periodic limb movement disorder, - PLMD; restless legs syndrome - RLS, narcolepsy, rem behaviour disorder - RBD, hypersomnia, insomnia); a paradigm of mouth breathing and nasal patency.
11. Questionnaires, examinations and sleep studies.

**Teaching /Learning Methods:**

- Lectures (e-learning) 30 %
- Practical work 12 %
- Independent learning 58 %

**Assessment Strategy:**

Theory:

- X Group discussions
- X Self-control / self-check
- X Quizzes
- X Case studies
- X Simulations
- X Test
- 

Practical:

- X Hands-on exercises and practical tasks

Formative Assessment	Summative Assessment	
	Continuous assessments	End course assessment
	40	60

## Recommended Reading

(Books, E Books, Journals, Magazines, Web Based teaching material and sites)

### **Mandatory:**

Oral health:

- *Mouth Care Matters. A guide for hospital healthcare professionals, Second Edition* (2016) (<https://mouthcarematters.hee.nhs.uk/wp-content/uploads/sites/6/2020/01/MCM-GUIDE-2019-Final.pdf>)
- Ekanayake L, Perera I. The association between clinical oral health status and oral impacts experienced by older individuals in Sri Lanka. *Journal of Oral Rehabilitation* 2004 31; 831–836

Swallowing disorders and speech:

- Boschi V, Catricalà E, Consonni M, Chesi C, Moro A and Cappa SF .Connected Speech in Neurodegenerative Language Disorders: A Review (2017). *Front. Psychol.* 8:269. doi: 10.3389 [Frontiers | Connected Speech in Neurodegenerative Language Disorders: A Review \(frontiersin.org\)](https://doi.org/10.3389/fpsyg.2017.00269)
- Wang, T,V; Song, P; C. Neurological Voice Disorders: A Review (2022) *International Journal of Head and Neck Surgery*, Volume 13 [Neurological Voice Disorders: A Review \(ijhns.com\)](https://www.ijhns.com)
- Walshe , M. Oropharyngeal Dysphagia in Neurodegenerative Disease (2014) *Journal of GHR* 1265-1271 [993](https://doi.org/10.1007/s12672-014-0293-2)
- <http://96.126.98.199/index.php/joghr/article/view/883>
- [PDF\] Oropharyngeal dysphagia: An overview](#)

Sleep:

- How sleep works. <https://www.sleepfoundation.org/how-sleep-works>
- Mechanisms linking circadian clocks, sleep, and neurodegeneration. <https://pubmed.ncbi.nlm.nih.gov/27885006/>
- Sleep hygien <https://www.sleepfoundation.org/sleep-hygiene>
- How to Design the Ideal Bedroom for Sleep. <https://www.sleepfoundation.org/bedroom-environment/how-to-design-the-ideal-bedroom-for-sleep>

- Diet, Sleep, and Mental Health: Insights from the UK Biobank Study.  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8398967/>
- Sleep duration and eating behaviours among adolescents.  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9559193/>
- Disorders of sleep: an overview.  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4368182/>
- Obstructive Sleep Apnea and Its Treatment in Aging: Effects on Alzheimer's disease Biomarkers, Cognition, Brain Structure and Neurophysiology.  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7572873/>
- Sleep studies. <https://www.sleepfoundation.org/sleep-studies/at-home-sleep-study>

*Optional:*

Oral health articles:

- Lee H, Chalmers NI, Brown A, Boynes S, Monopoli M, Doherty M, Croom O, Engineer L. Person-centered care model in dentistry. BCM Oral Health. 2018.  
<https://pubmed.ncbi.nlm.nih.gov/30497465/#:~:text=Background%3A%20To%20achieve%20optimal%20health,individual%20behavior%2C%20context%20and%20lifestyle.>

Sleep articles:

- Snoring and Sleep. <https://www.sleepfoundation.org/snoring>
- Sleep deprivation. <https://www.sleepfoundation.org/sleep-deprivation>
- Aging and sleep. <https://www.sleepfoundation.org/aging-and-sleep>
- REM sleep behavior disorder. <https://www.sleepfoundation.org/parasomnias/rem-sleep-behavior-disorder>
- Clinical Practice Guideline for Diagnostic Testing for Adult Obstructive Sleep Apnea: An American Academy of Sleep Medicine Clinical Practice Guideline.  
<https://pubmed.ncbi.nlm.nih.gov/28162150/>

Swallowing, speech, voice articles:

- [\[HTML\] An overview of the molecular mechanisms and novel roles of Nrf2 in](#)

neurodegenerative disorders

- The management of dysphagia in neurodegenerative disorders: Hospice caregivers' perceptions and practices
- [HTML] Dysphagia in Parkinson's disease

Course module code and name – Oral Health

Credits – 01

Total time allocation – 50 hours: 15 hours lectures; 29 hours independent learning; 6 hours practical work

Unit no and name	Unit objectives	Lesson plan in brief (lesson content)	Allocated time (hrs) (for each lesson)	Teaching learning methods	Method of assessment
<p>I Oral health  (Riina Runnel)</p>	<p>Lecture 1 Student performs oral hygiene procedures for disabled patients; can find suitable methods, products, and tools to prevent teeth and mouth diseases.</p> <p>Lecture 2 Student understands the normal anatomy of the mouth; is able to notice and recognize the common pathological</p>	<p>Lecture 1 Oral hygiene (Introduction to oral hygiene assisted procedures and different products for oral hygiene)</p> <p>Practical work 1 An assisted oral hygiene routine</p> <p>Lecture 2 Common mouth diseases and conditions (Anatomy of the oral cavity with main structures and landmarks; an age and/or disease related changes in the oral cavity; the common diseases and pathological conditions in the oral cavity (aethiology, clinical</p>	<p>Lecture 1 1 h lecture 1 h practical work</p> <p>Lecture 2 2 h lectures</p>	<p>Lecture materials</p> <p>Practical works (hands-on exercises)</p> <p>Independent work: Reading Watching videos Group discussions Self-control / self-check</p>	<p>Positively assessed practical works (including an assisted oral hygiene routine, oral cavity examination and assessment) (40%)</p> <p>Independent works, active participation and discussions, posted into forum (40%)</p> <p>Electronical final test (in web) - over 70% positive answers (20%)</p>

	<p>conditions of the oral cavity; knows how to relieve complains related to common problems in the mouth and the treatment principles of these pathological conditions or diseases.</p> <p>Lecture 3 Student knows main oral health decreasing risk factors; is able to assess and to record the condition of an oral cavity (mouth examination); is able to give instructions for the prevention of dental and mouth diseases for caregivers or other persons who are taking care of people with neurodegenerative disabilities.</p>	<p>symptoms, relief, treatment)</p> <p>Lecture 3 Oral health assessment (Oral health decreasing risk factors; oral cavity examination; oral cavity assessment; mouth care recording and planning a mouth care routine)</p> <p>Practical work 2 Oral cavity examination and assessment</p>	<p>Lecture 3 2 h lecture 1 h practical work</p>		
--	---	---	---	--	--



<p>II Assessment and therapy of swallowing, communication and voice disorders in neurodegenerative diseases  (Andres Köster)</p>	<p>1. Student can describe frequently occurring speech, communication, voice and swallowing disorders in patients with NGD. 2. Student knows and recognizes swallowing and speech pathological changes and is able to give instructions to the caregivers or other people taking care of NGD patients.</p>	<p>1. Normal swallowing physiology. The etiology of swallowing disorders in NDD patients  2. The symptoms and assessment methods of dysphagia. Therapy of swallowing disorders 3. Mechanism of speech, influence of the central and peripheral nervous system on speech production; pathophysiology of speech disorders caused by NDD 4. Assessment of speech and speech-related facial and oral muscle function with various speech pathology examples, speech motor function is supported or preserved by therapy methods 5. Normal physiology of voice, mechanism of organic voice disorders, dysphonia assessment</p>	<p>Lecture1: 1 h lecture+ 1 h independent work  Lecture2: 1 h lecture+2 h independent work  Lecture3: 1 h lecture+1 h independent work  Lecture3: 1 h lecture+1 h independent work  Lecture3: 1 h lecture+1 h independent work</p>	<p>Lecture materials.  Independent work: -reading mandatory articles;  -taking the Gugging Swallowing Screen test (GUSS test ) oneself or a close relative  -performing Dysphagia, motor speech-, and organic voice disorders treatment exercises and/or maneuvers on oneself or close relative.</p>	<p>Active participation at lectures/seminars 20%  Independent work 20%  Practical task: PP presentation case report/ intervention and counseling for nurses/caregivers for NDD patients from a nursing/elderly home 60% .</p>

		methods, dysphonia therapy			
III Basic knowledge of sleep. Changes in sleep in NGD (Heisl Vaher)	<p>1.Student can understand and explain basic functions of sleep. Knows how to estimate sleep needs. Is familiar with sleep questionnaires and diary methods. Student is familiar with sleep studies (pulse oximetry, polygraphy, polysomnography)</p> <p>2.Student is familiar with the basic concept of frequent sleep disorders and sleep time breathing disorders. Student gives necessary guidance to improve and stabilize sleep function and routines of NGD patient and related family; student is able to provide patient/caregiver</p>	<p>1. Sleep physiology. Changes in sleep through life span in different genders. Circadian rhythm. Genetics of sleep. 28 slides</p> <p>A. Introduction to sleep: anatomy of structures responsible for sleep (pictures). Neurohormonal signaling for sleep and awakening (5 slides)</p> <p>B. External (environmental) and internal (body and brain) pacemakers that influence sleep (4 slides)</p> <p>C. Brief introduction to the human sleep clock</p>	<p>Lectures : 5h</p> <p>Practical work: 1 h</p> <p>Independent work 12 h</p>	<p>Lecture material. Videos of sleep apnea, RLS, PLMD, narcolepsy, RBD. Independent work (filling in personal sleep diary and basic sleep questionnaires for oneself and close relatives).</p>	<p>Web-based evaluation of will consist of the following:</p> <p>Positively assessed practical works (personal sleep diary fulfillment; assisted sleep diary fulfillment of family member) (15%)</p> <p>Independent works and discussions, posted into forum (5%)</p> <p>Electronical final test (in web) - over 70% positive answers (80%)</p>

	<p>with sleep disorder questionnaires, knows how to assess questionnaires. Student is able to guide patient/caregiver for further sleep medical examination based on questionnaire and diary results.</p>	<p>system - genetics (4 slides)</p> <p>D. How circadian rhythm orchestrates the immune system to keep us healthy (3 slides)</p> <p>E. Individual sleep needs in teenagers, adults, elderly (3 slides)</p> <p>In lecture group discussion: What is each student's sleep need?</p> <p>In lecture group discussion - case study: Shift work effect on sleep based on medical nurse case (the case has to be studied through before the lecture; material will be provided)</p> <p>F. The role of melatonin in sleep; external</p>			
--	---	--	--	--	--

		<p>consumption (3 slides)</p> <p>G. Glymphatic system of the brain (3 slides)</p> <p>H. Effects of hypnotics and other pharmacological sleep aids on sleep and on daily functioning (3 slides)</p> <p>In lecture group discussion:</p> <p>Topics:</p> <ul style="list-style-type: none"><li>● Rate your own sleep in 10 point scale (0-10: 0 - sleep is very good, 10 - I have big problems with my sleep, there is a need to seek help);</li></ul>			
--	--	---	--	--	--

		<ul style="list-style-type: none"><li>● Think about your own sleep in childhood and now - express verbally</li><li>● Think about your family members' sleep - do you think someone has a sleep problem, explain shortly what you have noticed.</li></ul> <p>2. Sleep function concepts to maintain good mental and physical health. Sleep diary. 31 slides</p> <ul style="list-style-type: none"><li>A. Introduction to healthy sleep (4 slides)</li><li>B. How does sleep affect different organ systems (3 slides)</li></ul>			
--	--	--	--	--	--

		<p>C. Bidirectional effect of sleep and learning/ studying/ mental effort; role of sleep in developing resilient, easily retrieved, integrated, lasting long-term memory (7 slides)</p> <p>D. Basic rules of physical activity to gain and remain normal sleep (5 slides)</p> <p>In a lecture group discussion: What is each student's sleep need in hours and sleep quality?</p> <ul style="list-style-type: none"><li>- up to 5 h; 6-8 h; 9 and more h</li><li>- sleep is very good, 10 - I have big problems with</li></ul>			
--	--	--	--	--	--

		<p>my sleep, there is a need to seek help;</p> <p>Think about your own sleep changes from childhood till now - express verbally</p> <p>E. Following sleep. How to know if there is a sleep disorder? Excessive daytime sleepiness. Sleep diary (6 slides)</p> <p>F. Estimating bedroom environment at hospital ward and at home (resp what is applicable). Simple techniques to apply for sleep improvement based on light, noise, air quality and temperature, bedding (5 slides)</p>			
--	--	--	--	--	--

		<p>G. Application of mindfulness (religion, music, art) in approaching sleep (3 slides)</p> <p>In lecture group discussion of the sleep diary</p> <p>In lecture group discussion of bedroom environment at home, bedroom/hospital - four wards</p> <p>3. Dietary and daily routine changes to improve sleep. 37 slides.</p> <p>A. Consistency in daily routines and sleep hygiene management (5 slides)</p> <p>B. Obesity has effects on sleep (5 slides)</p>			
--	--	---	--	--	--



		<p>C. Cardiovascular and metabolic disorders affecting sleep (6 slides)</p> <p>In lecture group discussion: what measures (food-drinks) are students using at the moment to sleep better</p> <p>D. Approaching dietary concerns (5 slides)</p> <p>E. Food selection, amounts, timing favoring sleep and mental health (10 slides)</p> <p>F. Sleep restriction, stimulus control, mindful activities to target anxiety and thought rumination for sleep (6 slides)</p>			
--	--	---	--	--	--

		<p>In lecture group discussion: sleep routine, hygiene analyses</p> <p>4. Sleep disorders: (sleep apnea, periodic limb movement disorder, - PLMD; restless legs syndrome - RLS, narcolepsy, rem behavior disorder - RBD, hypersomnia, insomnia); paradigm of mouth breathing and nasal patency. 32 slides.</p> <ul style="list-style-type: none"><li>A. Definition of sleep disorders (2 slides)</li><li>B. Brief overview of sleep disorders (10 slides)</li><li>C. Prevalence of sleep disorders (2 slides)</li></ul> <p>In lecture group discussion - case studies</p>			
--	--	---	--	--	--

		<p>1. Insomnia case study</p> <p>2. Sleep apnea case study</p> <p>D. Early changes in sleep to detect ND risk and predicting decline (6 slides)</p> <p>E. ND and sleep disorders - overlapping, comorbidities, consequences (6 slides)</p> <p>F. Management of sleep disorders (6 slides)</p> <p>5. Questionnaires, examinations and sleep studies. 25 slides.</p> <p>A. Sleep on the screen - simplistic approach to sleep phases, bodily functions to be</p>			
--	--	--	--	--	--

		<p>measured during different sleep studies (6 slides)</p> <p>B. Studying sleep objectively (sleep studies - oximetry, polygraphy, polysomnography ) (6 slides)</p> <p>In lecture group discussion: what kind of electrophysical clinical methods are used in Sri Lanka?</p> <p>C. Normative sleep values in healthy aging (5 slides)</p> <p>D. Examining sleep in ND patient (using sleep diary, following patients reactions in the morning; explaining sleep study results to the family</p>			
--	--	--	--	--	--

		<p>members) (4 slides)</p> <p>E. Questionnaires to estimate daytime excessive tiredness (4 slides)</p> <p>Practical and independent work related to lecture nr 1:</p> <p>Independent work: prelecture reading 1 h:</p> <p>How sleep works. <a href="https://www.sleepfoundation.org/how-sleep-works">https://www.sleepfoundation.org/how-sleep-works</a></p> <p>Mechanisms Linking Circadian Clocks, Sleep, and Neurodegeneration: <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5219881/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5219881/</a></p>			
--	--	--	--	--	--

		<p>Independent work: post lecture self assessment test (10 questions) 10 min</p> <p>Practical and independent work related to lecture nr 2:</p> <p>Independent work: prelecture reading 2 h:</p> <p>Sleep hygiene <a href="https://www.sleepfoundation.org/sleep-hygiene">https://www.sleepfoundation.org/sleep-hygiene</a></p> <p>How to Design the Ideal Bedroom for Sleep <a href="https://www.sleepfoundation.org/bedroom-environment/how-to-design-the-ideal-bedroom-for-sleep">https://www.sleepfoundation.org/bedroom-environment/how-to-design-the-ideal-bedroom-for-sleep</a></p>			
--	--	--	--	--	--

		<p>Independent work: post lecture self assessment test (10 questions) 10 min</p> <p>Practical work (1 h): filling in sleep diary (paper diary will be provided) during 2 week period + filling in the protocol of sleep diary)</p> <p>After finishing filling oneself sleep diary student will instruct one family member to fill in the sleep diary for 2 weeks - (gives the instructions; fills in the protocol of sleep diary)</p> <p>Independent work (1 hour): Estimating bedroom/ward environment for good sleep at home and at the hospital ward/ nursing home. Protocol provided</p>			
--	--	--	--	--	--

		<p>Practical work related to lecture nr 3:</p> <p>Independent work: prelecture reading 2 h:</p> <p>Diet, sleep and mental health <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8398967/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8398967/</a></p> <p>Sleep duration and eating behaviors among adolescents <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9559193/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9559193/</a></p> <p>Post lecture self assessment test (10 questions) 10 min</p> <p>Independent work 1h:</p>			
--	--	--	--	--	--



		<p>List up (write down) sleep routine activities for wind down for one hour period prior to sleep based on suggestions give in the lecture nr 3 and adding your own practices you have found working; (recommended but not obligatory: practice sleep routine activities for 2 weeks)</p> <p>Practical work related to lecture nr 4:</p> <p>Independent work: prelecture reading 2 h:</p> <p>Disorders of sleep: an overview <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4368182/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4368182/</a></p> <p>Obstructive Sleep Apnea and Its Treatment in Aging: Effects on Alzheimer's disease</p>			
--	--	--	--	--	--

		<p>Biomarkers, Cognition, Brain Structure and Neurophysiology <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7572873/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7572873/</a></p> <p>Post lecture self assessment test (10 questions) 10 min</p> <p>Practical and independent work related to lecture nr 5:</p> <p>Independent work: prelecture reading 1 h:</p> <p>Sleep studies <a href="https://www.sleepfoundation.org/sleep-studies/at-home-sleep-study">https://www.sleepfoundation.org/sleep-studies/at-home-sleep-study</a></p>			
--	--	---	--	--	--

		Post lecture self assessment test (10 questions) 10 min			
--	--	---	--	--	--