

The Dormant Triad

Citation for published version (APA):

Huppertz, V. A. L. (2022). *The Dormant Triad: Exploring Dysphagia, Oral health, and Malnutrition in stroke and nursing home patients*. [Doctoral Thesis, Maastricht University]. Maastricht University. <https://doi.org/10.26481/dis.20221013vh>

Document status and date:

Published: 01/01/2022

DOI:

[10.26481/dis.20221013vh](https://doi.org/10.26481/dis.20221013vh)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

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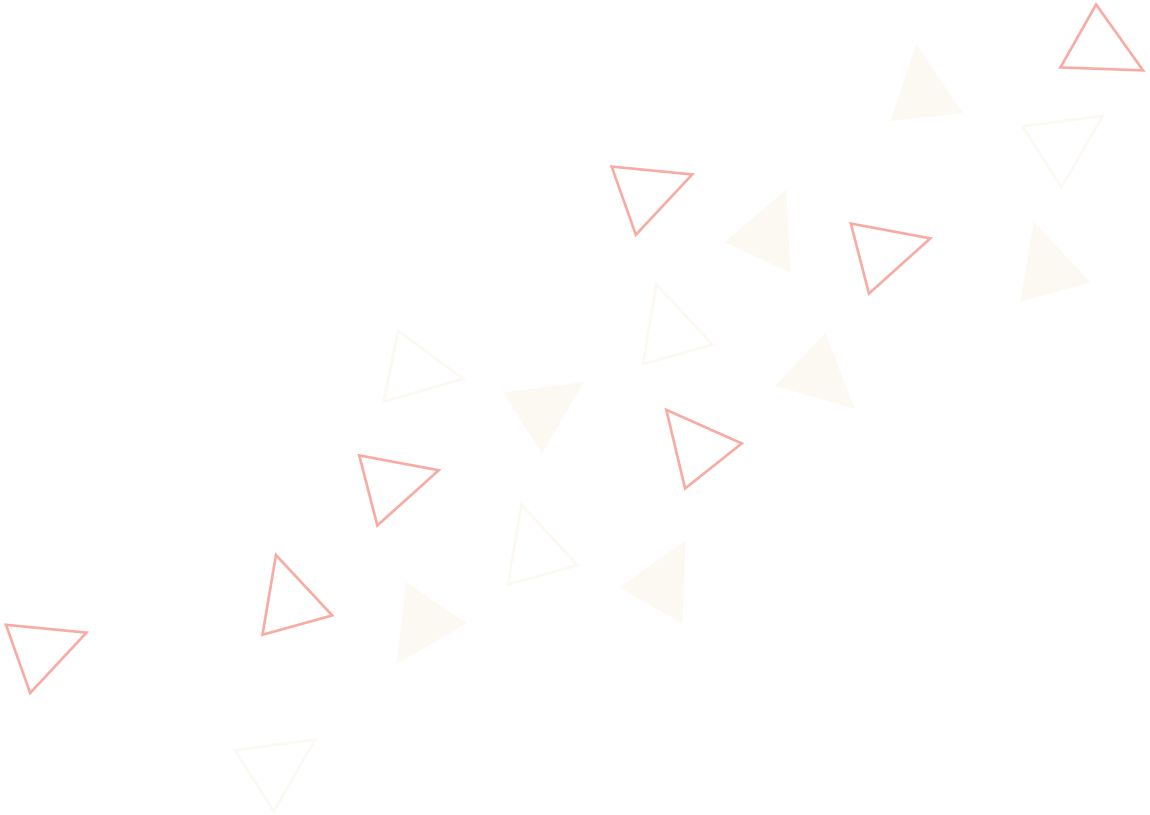
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IMPACT



The percentage of diseased and older people around the globe is rising and the age of the oldest is increasing. Simultaneously, the medical field is developing rapidly, enhancing treatment efficacy, and increasing the chance of survival from severe illness [1]. Surviving severe illness such as stroke does not necessarily result in complete recovery as patients are at risk of poor clinical outcomes including chronic disability and impairments. These patients with poor clinical outcomes are often partially or completely care dependent. These developments are challenging factors for healthcare. Our study findings contribute to the fundamentals of these developments in the medical field and improvements in care for adult hospitalized patients, stroke patients, and nursing home residents with malnutrition, oropharyngeal dysphagia, and poor oral health.

In this paragraph we discuss the knowledge utilization of our research on quality of nutritional care in the hospital, and for stroke patients and nursing home residents. We address the scientific relevance of this dissertation, and the impact of our findings for patients and healthcare professionals, educators, management of healthcare institutions, and policy makers in healthcare. Finally, we delineate how we shared our findings to raise awareness on the quality of nutritional care and on the negative consequences of the pathophysiological triad of malnutrition, oropharyngeal dysphagia, and poor oral health in stroke patients and nursing home residents.

Aim, most relevant findings, and conclusions of this dissertation

Our overall aim was to gain knowledge and reflect on the quality of nutritional care in hospitals and on malnutrition, oropharyngeal dysphagia, and poor oral health in stroke patients and nursing home residents, respectively.

We showed that, despite international and national standards, the degree to which standard nutritional screening was performed in the hospitals was low. Nutritional screening is an essential starting point of nutritional care of adult hospitalized patients, as it represents the basis for further comprehensive diagnostic measurements and treatment. Therefore, we encourage standard nutritional screening of all adult hospitalized patients.

Additionally, the insights we gained on the components and associations of the pathophysiological triad of malnutrition, oropharyngeal dysphagia, and poor oral health in stroke patients and nursing home residents really urge for more awareness among patients, relatives or informal caregivers, healthcare professionals, educators, and policy makers to improve the care for these patients. An increase in the body of evidence on malnutrition, oropharyngeal dysphagia, and poor oral health and the associations between these conditions may contribute to the enhancement of clinical practice guidelines towards more integrated, thus multi-, inter-, and transdisciplinary care. After dedicated implementation, these developments may structurally contribute to improved care for stroke patients and nursing home residents across the continuum of care.

Scientific relevance

Our findings regarding the suboptimal performance of nutritional screening in hospitals, the alarming prevalence rates of malnutrition, oropharyngeal dysphagia, and poor oral health and the associations between these health conditions in stroke patients and nursing home residents were in line with earlier findings from various national and international research groups. We have stressed the relevance of more awareness and future research on these health conditions despite the already available evidence and national and international clinical guidelines. On top of this, the confirmed associations between malnutrition, oropharyngeal dysphagia, and poor oral health emphasize the importance of more integrated research in this field in stroke patients and in nursing home residents.

The design of our DYNAMO study may be regarded as a stepping stone for future research in the field of malnutrition and oropharyngeal dysphagia and moreover, the study involves a rather understudied population. The study aims to generate insights on the effect of an innovative nutritional intervention (pre - thickened oral nutritional supplementation). It is strongly recommended to actually perform this study in the near future now the disturbing effects of the Covid crisis gradually disappear.

In our studies, we have exposed a number of methodological issues that complicated our research and which are relevant for future research. The most striking issues concerned the present diversity in nutritional screening and diagnostic measurements and the lack of (longitudinal) data in chronic stroke patients, as well as in nursing home residents. These issues must be dealt with in future research in order to enable the generation of more conclusive evidence to promote integrated care for patients at risk of the pathophysiological triad of malnutrition, oropharyngeal dysphagia, and poor oral health. A very significant aspect in this respect involved the operationalization of malnutrition for the pooling of data retrieved from the literature covering the past 20 years, to investigate the prevalence of malnutrition across the continuum of care in stroke patients. To partially deal with the diverse data from the various nutritional screening and diagnostic measurements that were applied in previous studies, we introduced the term 'impaired nutritional condition'. This term refers to all not well - nourished patients, who were discriminated from the well - nourished patients based upon a self - developed set of criteria for impaired nutritional condition. The utilization of uniform language, criteria, and comprehensive methods is very important to enable the comparison of study findings and benchmark future studies in a more reliable way.

In the meantime, progress has already been made with the global consensus on criteria for the diagnosis of malnutrition [2, 3], though based on our findings we concluded that there is still plenty of room for improvement. Also longitudinal research on the pathophysiological triad of malnutrition, oropharyngeal dysphagia, and poor oral health is indicated as we have shown that the literature on stroke patients in the chronic phase after stroke is still scarce. For nursing home residents it is generally known that this group is complex to study which may in part explain

the fact that this group is understudied.

Therefore we emphasize the necessity to gather relevant and reliable scientific data that covers the total disease trajectory of the patient, including transfers between healthcare settings. This will enable healthcare professionals to tailor treatment and better monitor the course of health conditions, symptoms, and intervention outcomes throughout the entire patients' care trajectory. Given the growing population of chronically ill and ageing patients, including stroke patients and nursing home residents, this is even more important.

Relevance for patients and healthcare professionals

This brings us to the relevance of this dissertation for patients and healthcare professionals. This dissertation has unraveled meaningful insights for better nutritional care for adult hospitalized patients and also for the promotion of integrated care for stroke patients and very frail nursing home residents, as these patients are at high risk of the pathophysiological triad of malnutrition, oropharyngeal dysphagia, and poor oral health.

We strongly encourage standard nutritional screening of all adult hospitalized patients and specifically in stroke patients and nursing home residents. This enables timely identification of patients with risk of malnutrition. Screening may minimize the risk of poor clinical outcomes, provided that the patient with abnormal screening results is subsequently assessed more thoroughly, adequately treated, and monitored.

As shown in this dissertation and confirmed by international literature, oropharyngeal dysphagia and poor oral health may also be the result of malnutrition and vice versa. Considering the still alarmingly high prevalence rates and associations of these health conditions, we urge for more awareness in this respect and recommend the promotion of more integrated care in this context. Awareness may positively affect patients' compliance to treatment and the healthcare professionals' adherence to guidelines. Healthcare professionals, additionally, have an important part to play in creating awareness among patients and the patients' relatives or informal caregivers.

Though not specifically addressed in this dissertation, our findings can also be relevant for other patient groups. For example patients with head and neck cancer [4-7] and patients with other types of neurodegenerative diseases e.g Alzheimer's disease, multiple sclerosis (MS), or amyotrophic lateral sclerosis (ALS) as these patients are also at considerable risk of malnutrition, oropharyngeal dysphagia, and poor oral health [8-15].

Furthermore, more awareness and knowledge on symptoms and negative consequences of these health conditions in society in general may also help community dwelling patients and their informal caregivers to signal symptoms and approach a healthcare professional more timely.

The implementation of standardized screening and an increase of awareness may directly influence patient care, though our findings may also have an indirect impact through actions undertaken by healthcare educators, management of

healthcare institutions, and policymakers who are alerted by our findings.

Relevance for healthcare educators, management, and policy makers

The poor performance of nutritional screening in hospitals and the alarmingly high prevalence rates of malnutrition, oropharyngeal dysphagia, and poor oral health in stroke patients and in nursing home residents may encourage healthcare educators, the management of healthcare institutions, and policy makers to review and monitor the competences of healthcare professionals and the quality of care.

In this regard, an additional revenue of our research was a large scale international collaboration to investigate knowledge and knowledge gaps of healthcare professionals regarding malnutrition in geriatric patients. Findings of this study have not been published yet but may provide valuable insights for educative interventions for healthcare professionals. In addition, the management of healthcare institutions may also be triggered to investigate bottlenecks for care according to guidelines, e.g., standard screening in clinical practice. Overall, these actions driven by awareness may lead to a better understanding of our findings in the context of current practices, which is essential for the process towards optimization of care.

Healthcare educators, the management of healthcare institutions, and policymakers partially determine the quality of care as they educate healthcare professionals and decide on the content and structure of care. We therefore aimed to reach a large audience to share our findings.

Knowledge transfer

Results of this dissertation were disseminated through the publication of articles in high impact scientific journals. In addition, findings were communicated through presentations at national and international conferences, webinars, and training programs in the field of malnutrition, poor oral health, and oropharyngeal dysphagia in stroke patients and nursing home residents, e.g., De Geriatriedagen (2020, 's Hertogenbosch, The Netherlands), the congress of the European Society for Swallowing Disorders (ESSD) (2018, Dublin, Ireland), and the International Nursing Home Research Conference (2018, Rome, Italy). These occasions offered the opportunity to easily reach a large and broad target audience and discuss the results and implications of our studies with them. This transparent and continuous transfer of recently gained knowledge and lessons learned may contribute to improvements in the quality of nutritional care and care for stroke patients and nursing home residents with malnutrition, oropharyngeal dysphagia, and poor oral health worldwide.

Findings from this dissertation have also been used in a mini - lecture on the Dutch national television (Slecht gebit, laag gewicht, MAX NPO, 2019) [16] and were communicated via social media channels and websites.

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