

## Appendix 1. Summary of concepts about attributes reviewed and associated authors

Category	Subcategory	Contents	Authors associated with concept
Assessment	Feeding-swallowing function	Assess feeding-swallowing function	Shimizu et al. (2017); Hayashi (2021); Shimoda et al. (2013); Kaneko et al. (2012); Sato et al. (2008); Kitagawa et al. (2022); Nin (2022); Tanaka et al. (2019)
		Catch the site and degree of dysphagia	Kuroki et al. (2006)
		Assess using assessment tools	Shimizu et al. (2017)
	General condition	Assess general condition	Kaneko et al. (2012); Fujishima et al. (2022); Nin (2022); Sato et al. (2008); Shimizu et al. (2017); Shimoda et al. (2013)
		Confirm consciousness level and arousal status	Fujishima et al. (2017); Kitagawa et al. (2022)
		Confirm cognitive and attentional functions	Kitagawa et al. (2022); Nakahigashi (2005); Fujishima et al. (2022)
		Assess vital signs	Kaneko et al. (2012)
	Nutritional condition	Assess nutritional status	Nakahigashi (2005); Nin (2022)
	Physical function	Assess physical function	Shimoda et al. (2013); Nin (2022); Shimizu et al. (2017)
		Assess ability of posture retention	Shimoda et al. (2013); Kitagawa et al. (2022)
Confirm residual functionality and possible behavior		Nin (2022)	
Appetite	Assess hunger and appetite	Shimoda et al. (2013); Kitagawa et al. (2022); Nin (2022); Shimizu et al. (2017); Fujishima (2004)	
Comprehensive judgment of meal-related risks	Comprehensive judgment of meal-related risks	Comprehensive judgment of meal-related risks	Kaneko et al. (2012); Sato et al. (2008); Kitagawa et al. (2022)
		Identify factors that inhibit eating behavior	Nin (2022); Kitagawa et al. (2022)
	Withholding oral intake	Withholding oral intake if there is a risk of aspiration or suffocation or a declaration of intention to refuse to accept it	Shimizu et al. (2017); Tanaka et al. (2019)
Consideration of meal assistance method	Consideration of the meal assistance method	Consideration of meal assistance method	Shimizu et al. (2017); Kuroki et al. (2006); Kitagawa et al. (2022)
		Clarification of the scope of assistance	Nin (2022)
	Consideration of food form and intake amount based on the assessment of the feeding-swallowing function	Consideration of food form and intake amount based on assessment of feeding-swallowing function	Hayashi (2021); Sato et al. (2008); Nakahigashi (2005); Kitagawa et al. (2022); Fujishima (1998); Shimoda et al. (2013); Kuroki et al. (2006); Fujishima (2004); Fujishima et al. (2022); Nin (2022); Michi et al. (2008)
		Identify what the patient can eat	Nin (2022); Kitagawa et al. (2022)
Adjustment of the meal environment	Maintenance of an environment suitable for meals	Selection and adjustment of swallowing control diet	Nakahigashi (2005); Fujishima et al. (2022); Kitagawa et al. (2022)
		Maintenance of an environment suitable for meals	Shimizu et al. (2017); Shimoda et al. (2013); Kuroki et al. (2006); Nin (2022); Fujishima (2004); Kitagawa et al. (2022); Michi et al. (2008)
		Relaxing environment	Fujishima et al. (2022); Nin (2022)
	Maintenance of an environment where patients can concentrate on eating meals	Create an environment where patients can concentrate on eating meals	Nakahigashi (2005); Michi et al. (2008); Fujishima (2004); Kitagawa et al. (2022)
		Arrange a quiet environment by limiting the amount of information that comes from the	Nin (2022); Fujishima (1998) Fujishima (2004); Kitagawa et al. (2022)

		<u>surroundings</u>		
		Finish excretion before meals	Michi et al. (2008); Kitagawa et al. (2022)	
Support for preparation of patients' mind and bodies for eating meals	Arrangement of the dining table in a way that is easy for patients to eat	Adjust the table shape and height Appropriately	Kitagawa et al. (2022); Michi et al. (2008); Nin (2022)	
		Place meals where the patient can see them	Yamamoto et al. (2015); Nin (2022); Michi et al. (2008); Kitagawa et al. (2022)	
		Adjust tableware and eating utensils to a position that makes eating easier for patients	Shimoda et al. (2013); Michi et al. (2008); Nin (2022);	
	Preparation of self-help equipment	Preparation of self-help equipment	Sato et al. (2008) Kitagawa et al. (2022); Nin (2022)	
	Awakening	Promote to be awake	Shimizu et al. (2017); Michi et al. (2008); Fujishima (2004); Shimoda et al. (2013); Nin (2022); Kitagawa et al. (2022)	
	Preparation of a mind and body for eating meals	Preparation of mind and body for eating meals	Preparation of mind and body for eating meals	Shimoda et al. (2013); Fujishima et al. (2022); Michi et al. (2008); Nin (2022)
			Talk to patients to enhance motivation and spontaneity	Sato et al. (2008)
			Ingenuity of meal content according to patients' preference	Kuroki et al. (2006); Fujishima et al. (2022); Michi et al. (2008); Nin (2022)
			Promote expectoration of sputum	Nin (2022)
			Breathing exercises	Sato et al. (2008); Fujishima (2004)
			Stretch and massage lips, cheeks, and tongue	Sato et al. (2008); Kuroki et al. (2006); Nin (2022)
			Swallowing exercises	Kitagawa et al. (2022); Sato et al. (2008); Fujishima (2004); Fujishima et al. (2022); Nin (2022)
			Ice massage	Kitagawa et al. (2022); Sato et al. (2008); Kuroki et al. (2006); Fujishima (2004); Fujishima et al. (2022)
			Vocal practice, articulation training	Sato et al. (2008); Kuroki et al. (2006); Nin (2022)
			Massage the shoulders and neck to relieve tension in the cheeks and neck	Michi et al. (2008); Kuroki et al. (2006); Kitagawa et al. (2022)
	Oral care	Observe oral conditions	Nin (2022)	
		Oral care before meals	Michi et al. (2008); Fujishima (2004); Fujishima et al. (2022); Kitagawa et al. (2022); Nin (2022); Kuroki et al. (2006)	
		Keep oral cavity clean	Hayashi (2021); Kuroki et al. (2006); Michi et al. (2008); Fujishima (2004); Fujishima et al. (2022); Kitagawa et al. (2022); Nin (2022)	
		Moisturize the oral cavity and promote secretion of saliva	Fujishima (1998); Fujishima et al. (2022); Kitagawa et al. (2022); Nin (2022); Kuroki et al. (2006)	
Wear dentures properly		Michi et al. (2008)		
Remove food residue in patients' oral cavity after meals		Michi et al. (2008); Fujishima (1998); Nin (2022)		
Pharyngeal care	Pharyngeal care	Fujishima (2004); Fujishima et al. (2022)		
	Clear the pharynx by clearing the throat or yelling	Nin (2022)		
Stimulating the five senses and enhancing cognition toward food	Have the patient look at the meals	Nakahigashi (2005); Nin (2022)		
	Have the patient smell the meals	Nin (2022)		
Support for patients while	Adjustment of posture fit to the	Adjust neck to flex forward	Hayashi (2021); Yamamoto et al. (2015); Fujishima (2004); Fujishima et al. (2022);	

avoiding the risk of aspiration and choking	feeding-swallowing function		Kitagawa et al. (2022); Nin (2022)
		Stabilize the head and neck and adjust to proper position	Shimoda et al. (2013); Sato et al. (2008); Fujishima et al. (2022); Nin (2022)
		Ingenuity and examination of eating posture and body position according to feeding-swallowing function	Kuroki et al. (2006); Sato et al. (2008); Yamamoto et al. (2015); Kitagawa et al. (2022); Shimizu et al. (2017); Shimoda et al. (2013); Michi et al. (2008); Nin (2022); Fujishima (1998)
		Adjust to a posture that reduces the burden of eating movements for patients	Michi et al. (2008); Kitagawa et al. (2022)
		Maintain posture to stabilize the pelvis	Yamamoto et al. (2015); Kitagawa et al. (2022)
		Adjust trunk angle	Fujishima (2004); Fujishima et al. (2022)
		Keep the soles of patients' feet firmly contact on the floor	Yamamoto et al. (2015); Nin (2022); Kitagawa et al. (2022)
		Assist from a position that is at same eye level with the patient	Yamamoto et al. (2015); Nin (2022);
Providing assistance according to patients' self-care level		Explain the meal contents	Hayashi (2021); Nakahigashi (2005); Michi et al. (2008); Nin (2022)
		Tell what nurses assist and what patients can do on their own	Fujishima (1998); Nin (2022)
		Assist and monitoring according to patients' self-care level	Shimoda et al. (2013); Nin (2022); Kaneko et al. (2012)
		Support for patients to be able to ingest by themselves	Nin (2022); Kitagawa et al. (2022); Shimoda et al. (2013); Michi et al. (2008)
Ingenuity for easy swallowing		Check food temperature	Yamamoto et al. (2015); Fujishima (2004); Fujishima et al. (2022)
		Adjust sip size	Shimoda et al. (2013); Nakahigashi (2005); Yamamoto et al. (2015); Fujishima et al. (2022); Michi et al. (2008); Nin (2022); Fujishima (2004)
		Adjust the place to put food in the oral cavity	Michi et al. (2008); Oguchi (2019); Nin (2022)
		Ingenuity of self-help tools that help patients eat food easily	Yamamoto et al. (2015); Terami (2012)
		Match the patients' eating pace	Yamamoto et al. (2015); Fujishima (1998); Fujishima (2004); Nakahigashi (2005)
Matching patients' eating pace		Encourage patients to chew well and eat slowly	Fujishima (2004); Sato et al. (2008)
		Encourage patients according to the patients' eating behavior	Yamamoto et al. (2015); Hayashi (2021)
		Predict and monitor the risk of aspiration and suffocation	Tanaka et al. (2019); Kitagawa (2022); Nin (2022); Shimizu et al. (2017); Sato et al. (2008); Fujishima (1998)
Predicting and monitoring the risk of aspiration and suffocation		Prevalence of choking	Shimoda et al. (2013); Kaneko et al. (2012); Kuroki et al. (2006); Fujishima (2004); Nin (2022); Kitagawa et al. (2022)
		Status of food residue in patients' oral cavity	Shimoda et al. (2013); Nakahigashi (2005); Yamamoto et al. (2015); Hayashi (2021); Fujishima (2004)
		Prevalence of fatigue	Shimoda et al. (2013); Fujishima (2004); Nin(2022); Kaneko et al. (2012)
		Change in respiratory status	Kaneko et al. (2012); Fujishima (2004); Kitagawa et al. (2022); Nin (2022)
		Appearance of wet hoarseness	Kitagawa et al. (2022); Nin (2022) ; Terami (2012); Fujishima (2004)

	Existence of pharynx discomfort	Fujishima (2004); Nin (2022)
	Assess ingestion status (intake amount, required time, mastication status)	Nakahigashi (2005); Kuroki et al. (2006); Nin (2022); Shimoda et al. (2013); Fujishima et al. (2022)
	Prevalence of laryngeal elevation	Shimoda et al. (2013); Nakahigashi (2005); Nin (2022)
	Encourage alternating swallows	Kuroki et al. (2006); Nakahigashi (2005); Kitagawa et al. (2022); Fujishima (2004)
Reducing pharyngeal residue	Encourage nodding swallowing or sideways swallowing	Kitagawa et al. (2022); Fujishima et al. (2022)
	Proceed to the next intake after confirming swallowing	Nin (2022)
	Have patients ingest water after meals	Fujishima et al. (2022)
	Encourage patients to avoid lying down for 30 minutes to 1 hour after eating	Michi et al. (2008); Fujishima (2004); Nin (2022)
Preventing aspiration due to gastroesophageal reflux	Be prepared to respond promptly in the event of aspiration or suffocation	Michi et al. (2008); Fujishima (2004); Kitagawa et al. (2022); Shimoda et al. (2013); Nin (2022); Fujishima (1998)
Preparedness to respond promptly in the event of aspiration or suffocation	Keep suction equipment ready for immediate use	Michi et al. (2008); Fujishima et al. (2022); Fujishima (1998)

## Appendix 2. Summary of concepts about antecedents reviewed and associated authors

Category	Subcategory	Contents	Authors associated with concept
Nurses' status	Nurses' perception	Understanding of the meaning of providing support for patients with dysphagia	Fujishima et al. (2022)
		Perception toward safe meal assistance	Tanaka et al. (2019); Michi et al. (2008)
		Anxiety and burden associated with meal assistance	Shimizu et al. (2017); Michi et al. (2008) Tanaka et al. (2019);
	Nurses' knowledge	Knowledge regarding appropriate meal assistance methods	Shimizu et al. (2017); Kaneko et al. (2012); Michi et al. (2008); Nin (2022)
		Knowledge regarding feeding-swallowing function	Shimoda et al. (2013); Kaneko et al. (2012); Kitagawa et al. (2022); Nin (2022); Michi et al. (2008)
	Nurses' skills	Skills for appropriate meal assistance methods	Shimizu et al. (2017); Nin (2022); Kaneko et al. (2012); Michi et al. (2008); Sato et al. (2008);
		Assessment of nutritional status and feeding-swallowing function	Sato et al. (2008); Shimoda et al. (2013); Kitagawa et al. (2022); Nin (2022); Michi et al. (2008); Tanaka et al. (2019); Shimizu et al. (2017); Yamamoto et al. (2015)
		Skills related to oral care	Kitagawa et al. (2022) Michi et al. (2008)
		Set up an education and training systems for nurses regarding safe meal assistance	Kaneko et al. (2012);
Organizational environment	Education and training systems for nurses regarding meal assistance	Set up an education and training systems for nurses regarding safe meal assistance	Kaneko et al. (2012);
		Available tools for meal assistance	Tools necessary for oral care
	Staffing levels	Self-help tools suitable for autogenous intake	Kitagawa et al. (2022); Nin (2022); Michi et al. (2008)
		Lack of staff to perform meal assistance	Kaneko et al. (2012); Michi et al. (2008)
		Staff are busy with many different tasks	Kaneko et al. (2012)
Patient status	Patients' perception of eating, such as will and desire to eat	Perception of eating, such as will and desire to eat	Sato et al. (2008); Fujishima et al. (2004); Fujishima et al. (2022); Nakahigashi (2005); Nin (2022); Kitagawa et al. (2022); Shimizu et al. (2017)
		Food habits and values about eating	Kitagawa et al. (2022); Nin (2022)
	Perception of receiving meal assistance	Perception and shame toward receiving meal assistance	Nakahigashi (2005); Nin (2022); Yamamoto et al. (2015)
Multi-professional collaboration	Sharing information regarding patients' conditions and planning for meal assistance among medical staff	Collaborate in a multidisciplinary team to support patients' food intake	Shimizu et al. (2017); Nin (2022) Fujishima et al. (2022); Sato et al. (2008); Kitagawa et al. (2022); Tanaka et al. (2019)
		Sharing information regarding patients' conditions and planning for meal assistance among the medical staff	Nin (2022); Tanaka et al. (2019); Fujishima et al. (2022) Sato et al. (2008); Kitagawa et al. (2022)

### Appendix 3. Summary of consequences about the concepts reviewed and associated authors

Category	Subcategory	Contents	Authors associated with concept
Prevention of aspiration pneumonia	Prevention of aspiration pneumonia	Prevent aspiration pneumonia	Hayashi (2021); Shimizu et al. (2017); Shimoda et al. (2013); Kaneko et al. (2012); Sato et al. (2008); Michi et al. (2008); Kitagawa et al. (2022); Fujishima (2004); Fujishima et al. (2022)
	Increased food intake	Increased food intake	Nakahigashi (2005)
Maintenance and improvement of nutritional status to sustain life	Intake of nutrients and water necessary for sustaining life	Intake of nutrients and water necessary for sustaining life	Hayashi (2021); Kaneko et al. (2012); Nin (2022); Shimizu et al. (2017); Kitagawa et al. (2022); Tanaka et al. (2019); Michi et al. (2008)
	Improvement of nutritional status	Improvement of nutritional status	Nakahigashi (2005)
Maintenance of mind and body function	Energy gains for performing various activities	Energy gains for performing various activities	Tanaka et al. (2019); Kitagawa et al. (2022)
	Maintenance of function of the mind and body	Activation and Maintenance of function of mind and body	Shimizu et al. (2017) Nin (2022)
		Impact on cognitive function	Shimizu et al. (2017)
		Positive impact on activities of daily living and prognosis	Nakahigashi (2005); Shimizu et al. (2017)
Improvement of lifestyle	Improvement in life behaviors, life rhythms	Improvement in life behavior, life rhythm	Sato et al. (2008); Nin (2022)
	Maintenance of health status	Maintenance of health status	Kitagawa et al. (2022)
Pleasure in daily life	Pleasure from eating food	Pleasure from eating food	Hayashi (2021); Kaneko et al. (2012); Michi et al. (2008); Tanaka et al. (2019); Nin (2022); Shimizu et al. (2017)
	Feeling a sense of satisfaction	Feeling a sense of satisfaction	Shimizu et al. (2017); Tanaka et al. (2019); Kitagawa et al. (2022); Kaneko et al. (2012)
		Encouragement to live	Kuroki et al. (2006)
Enhanced quality of life	Satisfying the needs necessary to live and being themselves	Satisfying the needs necessary to live and be themselves	Hayashi (2021); Kitagawa et al. (2022); Michi et al. (2008); Shimizu et al. (2017)
		Enhancement of quality of life	Sato et al. (2008); Michi et al. (2008); Tanaka et al. (2019)
	Enriching daily life	Enriching daily life	Nin (2022); Kitagawa et al. (2022)
		Lead to a better life	Nin (2022); Kitagawa et al. (2022); Michi et al. (2008)
	Building relationships	Nin (2022); Kitagawa et al. (2022)	