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Anorexia of aging: An international assessment of healthcare providers' knowledge and practice gaps

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Abstract

Background Anorexia of aging is a common geriatric syndrome that includes loss of appetite and/or reduced food intake, with associated undernutrition, unintended weight loss, sarcopenia, functional decline, loss of independence and other adverse health outcomes. Anorexia of aging can have multiple and severe consequences and is often overlooked by healthcare professionals (HCPs). Even more concerningly, clinicians commonly accept anorexia of aging as an inevitable part of 'normal' aging. The aim of this assessment was to identify current gaps in professional knowledge and practice in identifying and managing older persons with anorexia. Results may guide educational programmes to fill the gaps identified and therefore improve patient outcomes.

Methods This international assessment was conducted using a mixed-methods approach, including focus group interviews with subject matter experts and an electronic survey of practicing HCPs. The assessment was led by the Society on Sarcopenia, Cachexia and Wasting Disorders (SCWD) and was supported by in-country collaborating organizations.

Results A quantitative survey of 26 multiple-choice questions was completed by physicians, dietitians and other HCPs ($n = 1545$). Most HCPs (56.8%) recognize a consistent definition of anorexia of aging as a loss of appetite and/or low food intake. Cognitive changes/dementia (91%) and dysphagia (87%) are seen as the biggest risk factors. Most respondents were confident to give nutritional (62%) and physical activity (59.4%) recommendations and engaged caregivers such as family members in supporting older adults with anorexia (80.6%). Most clinicians assessed appetite at each visit (66.7%), although weight is not measured at every visit (41.5%). Apart from the Mini-Nutritional Assessment Short Form (39%), other tools to screen for appetite loss are not frequently used or no tools are used at all (29.4%). A high number of respondents (38.7%) believe that anorexia is a normal part of aging. Results show that treatment is focused on swallowing disorders (78%), dentition issues (76%) and increasing oral intake (fortified foods [75%] and oral nutritional supplements [74%]). Nevertheless, the lack of high-quality evidence is perceived as a barrier to optimal treatment (49.2%).

Conclusions Findings from this international assessment highlight the challenges in the care of older adults with or at risk for anorexia of aging. Identifying professional practice gaps between individual HCPs and team-based gaps can provide a basis for healthcare education that is addressed at root causes, targeted to specific audiences and developed to improve individual and team practices that contribute to improving patient outcomes.

Keywords anorexia of aging; geriatric anorexia; global assessment; professional practice gaps

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Introduction

Anorexia of aging is a common geriatric syndrome that includes loss of appetite and/or reduced food intake, with associated undernutrition, unintended weight loss, reduced immune status, frailty, sarcopenia, functional decline, loss of independence, poor quality of life and other adverse health outcomes.[1,2,3,4,5] In older populations, the incidence of anorexia of aging ranges from 25% (community dwellers) to 85% (nursing homes) depending on individual circumstances, and given the advancing age of the world population, it is likely that the incidence of anorexia of aging will increase significantly over the next several decades.[5,6] There are several factors that may negatively affect appetite in older adults. Irrespective of primary or secondary anorexia, both central and peripheral signalling are observed, reflecting an exacerbation of physiological aging alterations related to appetite regulation control involving cholecystokinin, ghrelin, insulin, peptide YY, β-endorphin and glucagon-like peptide-1, among others.[7] There are also chemosensory changes, gastrointestinal dysmotility and digestive dysfunction often implicated in some degree. For example, side effects of medications may alter the sense of taste or smell or induce oral dryness and constipation, all of which have been associated with appetite reduction.[8] A review by Maki et al.[9] cited causes of anorexia of aging in 81% of older adults such as infection (22%), benign gastrointestinal diseases (16%) and cardiovascular disease (8%). Prevention and recognition of anorexia of aging, therefore, are essential to reducing associated morbidity and mortality.[5]

Despite the high prevalence of anorexia of aging, it is often overlooked by healthcare professionals (HCPs).[10] Assessment of anorexia of aging is rarely performed in clinical practice, and screening tools are inconsistently used in practice.[11] Even more concerningly, clinicians commonly accept anorexia of aging as an inevitable part of 'normal' aging. Early detection of anorexia of aging and swift implementation of management strategies may prevent its consequences on nutritional status, health, frailty and quality of life.[12] Clinicians must recognize that anorexia of aging assessment cannot be performed through body mass index (BMI) analysis but must specifically address appetite.[13]

Different assessments have been used to evaluate appetite: Visual Analogue Scale (VAS),[2,5] the Appetite, Hunger and Sensory Perception Questionnaire (AHSPQ),[14] the Council on Nutrition Appetite Questionnaire (CNAQ) and its short derivative, the Simplified Nutritional Appetite Questionnaire (SNAQ),[15] the Functional Assessment of Anorexia and Cachexia Therapy (FAACT)[5,6] and the Rapid Geriatric Assessment (RGA)[16]; however, it is not clear which method is optimal. Additionally, it is important that clinicians differentiate between anorexia of aging and similar diagnoses, such as frailty, which often 'overlap in constructs, diagnosis, and treatment'.[17]

Exercise can have a positive impact on appetite. Exercises that include resistance, balance and flexibility training can increase muscle mass, strength, physical function and mobility, helping to maintain independence and improve quality of life.[18,19,20] Resistance training can increase muscle strength and mass.[21,22,23] However, the application of generalized exercise benefits to older adults with anorexia of aging is less clear due to a lack of sufficient evidence.[6,24] Although commonly recommended to older adults with anorexia, the practice of physical exercises did not result in any benefit according to a systematic review.[24] Nutritional intervention has been evaluated in older adults. Diet supplementation with protein, leucine and creatine, and omega-3 fatty acids has been found to improve malnutrition, although they have no specific effect on appetite.[6,25,26]

Several pharmacotherapies are available for appetite stimulation in anorexia of aging, although side effects have limited their utility. The two commonly utilized appetite stimulants are megestrol acetate and dronabinol. In an early analysis of megestrol acetate in geriatric patients, patients reported greater improvements in appetite, enjoyment of life and well-being.[27] However, appetite-stimulating pharmacotherapies rarely have an impact on weight and other measures of nutritional status in older persons, and the risks of these agents in older adults can outweigh the benefits and therefore are not recommended for anorexia of aging.[28] New drugs may improve clinicians' ability to treat anorexia of aging while limiting side effects and adverse events. Many of these agents are being evaluated in cancer patients and include atypical antipsychotics (AAPs),[29] mirtazapine (antidepressant),[30,31] anamorelin hydrochloride (active ghrelin receptor agonist)[32,33,34] and PF-06946860 (selective humanized monoclonal antibody).[35] Given the limitations of current pharmacotherapy for anorexia of aging, it is essential that healthcare providers are aware of and prepared to utilize novel agents when they become available.

The aim of this international assessment, which involved several regional societies and individuals from various countries, was to identify professional practice gaps regarding the knowledge and management of anorexia of aging. The results of this survey could add to the development of educational initiatives to healthcare providers across professions involved in recognizing, diagnosing and managing older adults with or at risk for anorexia of aging. This project was led by the Society on Sarcopenia, Cachexia and Wasting Disorder (SCWD) in collaboration with the American Society of Parenteral and Enteral Nutrition (ASPEN), the European Society for Clinical Nutrition and Metabolism (ESPEN), the European Geriatric Medicine Society (EuGMS), the Geriatrics and Gerontology Society of Chile, the St. Louis Geriatrics Work Force Enhancement Program (GWEP), the International Conference on Frailty and Sarcopenia Research (ICFSR), the Japanese Association on Sarcopenia and Frailty (JASF) and the Japanese Geriatric Society (JGS).

Methods

This international assessment was conducted using a mixed-methods approach that included (1) a literature review of classic and recent articles on the definition, causes and management of anorexia of aging and (2) focus group interviews of clinical experts leading to the development of (3) a survey of practicing HCPs, who are members of the collaborating societies, to collect quantitative data. An International Advisory Board (IAB) was recruited to analyse the current status of care for older adults with anorexia and to identify professional practice gaps among HCPs in their respective countries. This information formed the basis of the development of the survey. To ensure in-country relevance, the survey was reviewed, refined and validated by the IAB and the Regional Advisory Board (RAB) representing Europe, Japan, Latin America and the United States. In this paper, we report the quantitative findings of this international assessment.

Survey

The quantitative survey consisted of 26 multiple-choice, Likert scale or free response items. The estimated online completion time was 20 min. The survey was organized into respondent demographics (four items), screening (five items), defining/diagnosing (five items), treating (four items) and referral (two items). The survey was available in English, Japanese, Italian, Spanish and Portuguese to increase in-country clinician response rates. The survey was disseminated electronically using QuestionPro© from 25 May 2022 to 30 November 2022 for the English version and from 16 June 2022 to 5 October 2022 for the translated versions. Dissemination was supported by the collaborating organizations, IAB and the RAB members.

Following the close of the survey, data were downloaded from QuestionPro© and analysed. All data were collected confidentially and rendered anonymously with the removal of all IP addresses.

Respondents who did not pursue the survey (n = 866) after Item 10, 'In the absence of an explicit cause such as acute illness, anorexia in older adults is most accurately defined as:', were removed from the original file and not included in the analysis. Therefore, the aggregate analysis was conducted on the remaining 1545 respondents.

Data analysis

Analyses included descriptive statistics (mean, standard deviation, %) and summarizing free text responses. For the purposes of evaluating the percentage response, single response items were divided by the total number of respondents per item. For multiple response items (select all that apply), the percentage response was calculated by the number of respondents who proceeded after the definition item (N = 1545) regardless of the respondent drop-off over time.

Results

Survey participation and respondent characteristics

Data were collected from 2416 survey responders. Of these, 871 were excluded from analysis as they did not pursue the survey following the item on definition, leaving a total of 1545 for analysis. Most respondents completed the survey in Japanese (61.4%) followed by English (14%). By country, most respondents were from Japan (60.9%), followed by Brazil (9.6%), the United States (8.9%) and Italy (6.7%). By profession, specialist physicians/medical doctors was the group with the highest response (32.1%), followed by primary care or general practice physicians (18.6%), dietitians/registered dietitians/nutritionists (15.6%), pharmacists (15.6%), 'other' (7.1%) and physical therapists (7%). Most respondents provided patient care in a private hospital (21.7%), public hospital (17.2%) or academic medical centre (14.9%). For those who listed specialty practice, geriatrics was reported most often (28.3%) across the professions (*Table 1*).

Screening for anorexia of aging

Most respondents reported assessing appetite at each visit (66.7%), and more than half of the respondents reported that older adults should be screened for appetite loss at each appointment (54%) and when the older adult has lost a determined percentage of body weight (52%) (*Table 2*). One third (31%) reported a need to screen for appetite loss when the older adult or family member expresses concern. Less than a quarter of respondents (24%) reported a need to screen for appetite loss at least annually. Responses were not mutually exclusive.

When asked if older adults are weighed at each visit using a weighing scale, slightly more reported no (47.3%) than yes (41.5%). Often the primary treating physician is reported having the responsibility for screening older adults for appetite loss (66%), followed by the nurse or advanced practice nurse (59%) and dietitian/registered dietitian/nutritionist (50%). Responses were also not mutually exclusive.

The tool used most often to screen older adults for appetite loss was the Mini-Nutritional Assessment Short Form (MNA-SF) (39%), followed by an informal clinical interview (21%). Almost 30% (29.4%) did not use any tool to screen older adults for appetite loss. Responses were again not mutually exclusive.

Table 1 Respondent demographics (N = 1545)

	N	Statistic
Health profession		
Primary care or general practice physician/medical doctor	288	18.6%
Specialist physician/medical doctor	496	32.1%
Physician assistant	9	0.6%
Advanced practice nurse (e.g., nurse practitioner)	28	1.8%
Registered nurse/nurse	54	3.5%
Pharmacist	115	7.4%
Occupational therapist	23	1.5%
Physical therapist	108	7.0%
Dietitian/registered dietitian/nutritionist	241	15.6%
Social worker	9	0.6%
Psychologist	10	0.6%
Speech/language pathologist	37	2.4%
Other mental health provider/counsellor	7	0.5%
Education specialist	10	0.6%
Other (free text)	109	7.1%
Missing system	1	0.1%
Specialty (if applicable)		
Allergy and immunology	3	0.2%
Cardiology	59	3.8%
Endocrinology	46	3.0%
Geriatrics	438	28.3%
Gastroenterology	19	1.2%
Internal medicine	114	7.4%
Neurology	64	4.1%
Oncology	11	0.7%
Otorhinolaryngology	4	0.3%
Physical medicine/rehabilitation	168	10.9%
Psychiatry	29	1.9%
Pulmonology	18	1.2%
Rheumatology	6	0.4%
General surgery	22	1.4%
Surgical specialty	19	1.2%
Other	364	23.6%
Missing system	161	10.4%
Primary practice location		
Academic medical centre	230	14.9%
Private hospital	335	21.7%
Public hospital	266	17.2%
Multispecialty group practice	28	1.8%
Long-term care/nursing home	154	10.0%
Solo practice	125	10.0%
Specialty group practice	13	0.8%
Community-based health centre/clinic	92	6.0%
Home health centre	106	6.9%
Veterans administration medical centre/military facility	7	0.5%
National health service/government	38	2.5%
Other	116	7.5%
Missing system	35	2.3%

Defining and diagnosing older adults with anorexia

In the absence of an explicit cause, most respondents selected 'loss of appetite and/or low food intake in older adults' as the most accurate definition of anorexia in older adults (56.8%) (*Table 3*). Approximately equal numbers of respondents reported 'nutrition risk, malnutrition or undernutrition in older adults' (14.7%) and 'unintended weight loss in older adults' (14.5%) as an accurate definition. The causes of anorexia mostly seen are poor dentition (84%), loss of motor skills/independence of activities of daily living (ADLs) (81%) and diminished smell and taste (78%). However, in terms of the risk factors for anorexia of aging, respondents selected cognitive changes/dementia as the biggest risk factor (91%), followed by dysphagia (87%) and social isolation (86%). When asked for the results of anorexia of aging, most identified malnutrition (93%), frailty (90%) and impaired muscle function/sarcopenia (89%).

Respondents reported mostly using their own clinical judgement (34%) and/or frailty scores (25%) to identify/diagnose anorexia in older adults. However, 22% reported not knowing any tools that could be used to diagnose anorexia in older adults. Responses were also not mutually exclusive.

Treating older adults with anorexia

Of all respondents, almost 30% (29.9%) reported using tools and resources developed by experts most or all of the time to care for their older patients with anorexia (*Table 4*). Still, 19.1% preferred to use their own clinical judgement or rarely used a tool or resource developed by experts, whereas just over 16% (16.4%) of respondents were not aware of tools or resources developed by experts to care for their older patients with anorexia.

The most used interventions used to treat older adults diagnosed with anorexia were treating swallowing disorders if present (78%), addressing dentition issues (76%), incorporating energy- and protein-fortified foods in the diet (75%) and recommending oral nutritional supplements (74%). The fewest respondents reported prescribing appetite stimulants (22%). Responses were not mutually exclusive. The majority agreed or strongly agreed that they were confident in providing nutritional (62%) recommendations for their older patients with anorexia. Although the prescription of physical exercise as an intervention was only selected as being used on average (47%), the majority of respondents did agree or strongly agreed being confident in providing activity recommendations (59.4%).

Referral of older adults with anorexia of aging

Referrals for further assessment and treatment of anorexia in older adults was most often initiated by registered nurses/nurses (41%), followed by dietitians/registered dietitians/nutritionists (37%), general practitioners/physicians (34%) and specialist physicians/medical doctors (28%). When asked if sufficient specialists were available for referral, 42.8% responded 'yes' most or all of the time. An equal number of respondents reported that there were insufficient numbers of specialists available to them for assessment or treatment (42.4%) (*Table 5*).

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Table 2 Domain (screening): Screening for anorexia of aging (*N* = 1545)

	N	Statistic
Is appetite in older adults assessed at each visit?		
Yes	1031	66.7%
No	359	23.2%
Unsure	55	3.6%
Not applicable for my practice setting	91	5.9%
Missing system	9	0.6%
Are older adults weighed at each visit using a weighing scale?		
Yes	641	41.5%
No	731	47.3%
Unsure	48	3.1%
Not applicable for my practice setting	114	7.4%
Missing system	11	0.7%
How often should older adults be screened for appetite loss (select all that apply)?		
At each appointment	838	54%
At least annually	373	24%
When the older adult has lost a determined percentage of body weight (example: >10% body weight in the last 3 months)	807	52%
When the older adult or family member expresses concern	480	31%
I do not know	48	3%
I do not screen older adults for appetite	41	3%
Who is responsible for screening older adults for appetite loss (choose all that apply)?		
The primary treating physician	1023	66%
The nurse (nurse or advanced practice nurse)	915	59%
Physician assistant	137	9%
The dietitian/registered dietitian/nutritionist (non-physician)	778	50%
Medical or nursing assistant	125	8%
Physical therapist	168	11%
Pharmacist	108	7%
Social worker	80	5%
I do not know	58	4%
No one	70	5%
Other (free text)	0	
Not applicable for my practice setting	41	3%
The tools used in my practice setting to screen older adults for appetite loss include (select all that apply):		
Appetite, Hunger and Sensory Perception Questionnaire (AHSPQ)	24	2%
Council on Nutrition Appetite Questionnaire (CNAQ)	35	2%
Functional Assessment of Anorexia and Cachexia Therapy (FAACT)	19	1%
Malnutrition Screening Tool (MST)	64	4%
Malnutrition Universal Screening Tool (MUST)	92	6%
Mini-Nutritional Assessment Short Form (MNA-SF)	597	39%
Nutritional Risk Screening (NRS)	59	4%
Rapid Geriatric Assessment (RGA)	30	2%
Simplified Nutritional Appetite Questionnaire (SNAQ)	55	4%
Visual Analogue Scale (VAS)	30	2%
Informal clinical interview	325	21%
Tool developed by my organization or association	43	3%
We do not use a tool to screen older patients for appetite loss	464	30%
I do not know	146	9%
I do not screen older adults for appetite loss	699	29.4%
Other (free text)	0	

Attitudes and perceptions in the care of older adults with anorexia of aging

Commonly held perceptions and attitudes can impact the care that is provided to older adults with anorexia (*Table 6*). Respondents (38.7%) believed that anorexia is unavoidable in older patients, whereas 32% disagreed or strongly disagreed.

The majority of respondents (82.6%) agreed or strongly agreed that the regular use of standardized tools to evaluate older patients for weight loss is critical. Almost half of the respondents (49.2%) agreed or strongly agreed with the statement that 'Lack of high-quality evidence to guide the care and treatment of older patients with anorexia makes it challenging for me as a clinician to choose treatment'.

Over half (54.5%) reported that they rarely or never have access to an interprofessional team with experience in the care of older adults with anorexia, whereas 34.4% reported that they did have access to an interprofessional team most or all of the time.

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Table 3 Domain (defining/diagnosing): Defining and diagnosing anorexia of aging (*N* = 1545)

	N	Statistic
In the absence of an explicit cause such as acute illness, anorexia in older adults is most accurately defined as:		
Loss of appetite and/or low food intake in older adults	877	56.8%
Unintended weight loss in older adults	224	14.5%
Sarcopenia or loss of muscle mass, strength and/or function	120	7.8%
Nutrition risk, malnutrition or undernutrition in older adults	227	14.7%
Frailty in geriatric patients	91	5.9%
Missing system	6	0.4%
Causes of anorexia in older adults include (select all that apply):		
Diminished smell and taste in older adults	1207	78%
Changes in hormones that alter satiety control mechanisms	799	52%
Early satiety from slowed gastric emptying	1000	65%
Poor dentition	1305	84%
Chronic inflammation	790	51%
Constipation	1068	69%
Osteoarthritis	257	17%
Osteoporosis	183	12%
Loss of motor skills/independence of ADLs	1254	81%
Risk factors for anorexia in older adults include (select all that apply):		
Social isolation	1325	86%
Inability to travel to access food	1080	70%
Lack of sufficient resources to buy food	1016	66%
Chronic medical conditions (e.g., congestive heart failure, chronic obstructive pulmonary disease and diabetes)	1246	81%
Cognitive changes/dementia	1398	90%
Depression	1255	81%
Infection	853	55%
Dysphagia	1342	87%
Polypharmacy/side effect of medications	1225	79%
Anorexia in older adults may directly or indirectly result in (select all that apply):		
Malnutrition	1437	93%
Dehydration	1306	85%
Frailty	1392	90%
Impaired muscle function/sarcopenia	1382	89%
Anaemia	1166	75%
Pressure ulcers	1113	72%
Decreased energy	1156	75%
Depression	929	60%
Altered mental status	1035	67%
Confusion/impaired cognitive functioning	977	63%
Urinary tract infections	745	48%
Death	1036	67%
I use the definition and/or diagnostic criteria from professional organizations to support and confirm my identification of or diagnosis of anorexia in older adults (select all that apply):		
American Society for Parenteral and Enteral Nutrition (ASPEN)	158	10%
European Society for Clinical Nutrition and Metabolism (ESPEN)	196	13%
SARC-F	224	14%
Frailty scores	389	25%
Designated national/regional guidelines	90	6%
My institutional guidelines	133	9%
My own clinical judgement	518	34%
I do not know any tools to diagnose anorexia in older adults	340	22%
Other (free text)	0	
I do not diagnose or screen for anorexia in older adults	233	15%

Abbreviations: ADLs, activities of daily living; SARC-F, Strength, Assistance with walking, Rising from a chair, Climbing stairs and Falls.

The majority of respondents (80.6%) reported involving caregivers, such as family members as collaborators in supporting older adults with anorexia.

Although 41% reported not participating in any continuing education (CE) or continuing professional development (CPD) on nutrition, 26% reported participating in continuing education/continuing professional development (CE/CPD) on nutrition for older patients and 22% reported participating in CE/CPD on nutrition for all patients.

Comparison by profession

To assess potential differences across professions, responses to select survey items were compared across five professions that were represented in the greatest numbers (primary care/general practice physicians, specialist physicians, pharmacists, dieticians/registered dieticians/nutritionists and physical therapists). The majority of respondents across all five professions chose 'loss of appetite and/or low food intake' as the

Table 4 Domain (treating): Treating anorexia of aging (N = 1545)

	N	Statistic
I use tools and resources such as evidence-based guidelines developed by experts to care for my older patients with anorexia.		
Yes, all of the time	140	9.1%
Yes, most of the time	322	20.8%
Rarely	295	19.1%
No, I prefer to use my own clinical judgement	315	20.4%
No, I am not aware of tools and resources to care for my geriatric patients with anorexia	254	16.4%
No, I do not use tools and resources because I do not have access to them	43	2.8%
Not applicable for my professional role/responsibility	110	7.1%
Missing system	66	4.3%
When a diagnosis of anorexia in older adults is made, evidence-based or consensus developed interventions may include (select all that apply):		
Incorporating energy- and protein-fortified foods in the diet	1163	75%
Recommending oral nutritional supplements (e.g., Boost and Ensure)	1147	74%
Addressing dentition issues	1179	76%
Treating swallowing disorders (if present)	1204	78%
Prescribing appetite stimulants (e.g., megace and dronabinol)	340	22%
Prescribing antidepressants	519	34%
Prescribing physical exercise	724	47%
Prescribing nutritional counselling	904	59%
Revising current prescriptions that are causing side effects	980	63%
Treating constipation	995	64%
Reviewing already prescribed medications	1003	65%
Referring to specialist for psychosocial support	526	34%
Referring to support services (e.g., social worker, financial counsellor and transportation assistance)	594	38%
Screening for abuse and/or neglect	496	32%
Other (free text)	0	
I do not know	32	2%
Not applicable for my professional role/responsibility	33	2%
I am confident in providing nutrition recommendations for older patients with anorexia.		
Strongly agree	336	21.7%
Agree	622	40.3%
Neither agree nor disagree	304	19.7%
Disagree	114	7.4%
Strongly disagree	26	1.7%
Not applicable for my professional role/responsibility	68	4.4%
Missing system	75	4.9%
I am confident in providing physical activity recommendations for older patients with anorexia.		
Strongly agree	270	17.5%
Agree	647	41.9%
Neither agree nor disagree	313	20.3%
Disagree	133	8.6%
Strongly disagree	19	1.2%
Not applicable for my professional role/responsibility	81	5.2%
Missing system	82	5.3%

most accurate definition of anorexia in older adults. Nevertheless, dieticians/registered dieticians/nutritionists more often use tools and resources developed by experts to care for older patients with anorexia than other professions (51%). Physicians (primary care/general practice and specialists) were more likely to use their own clinical judgement (32% and 26%, respectively) as compared with the other professions. Across the five professions, there is consistency in agreeing or strongly agreeing that lack of high-quality evidence to guide the care and treatment of older patients with anorexia made it challenging for them as clinicians (range 47–52% across the professions) (*Table 7*).

Discussion

This international, educational needs assessment explored professional practice gaps across multiple HCPs who are involved in the care of older patients with anorexia. It found gaps in use of a definition of anorexia of aging and in diagnosing and treating older adults with anorexia (Box 1). There was general consistency in respondents selecting the most accurate definition of anorexia in older adults in the absence of an explicit cause. This definition was consistent across professions implying that generally HCPs agree on how to define geriatric anorexia. According to this international survey,

Table 5 Domain (referrals): Referring patients with anorexia of aging (*N* = 1545)

	N	Statistic
In my practice setting, referrals for further assessment and treatment of anorexia in older adults are most often initiated by the following healthcare team member(s):		
General practitioner/physician	528	34%
Specialist physician/medical doctor	432	28%
Physician assistant	86	6%
Advanced practice nurse (e.g., nurse practitioner)	179	12%
Registered nurse/nurse	633	41%
Pharmacist	79	5%
Dietitian/registered dietitian/nutritionist (non-physician)	567	37%
Occupational therapist	101	7%
Physical therapist	158	10%
Social worker	154	10%
Psychologist	48	3%
Mental health counsellor	19	1%
Speech language pathologist/speech therapist	192	12%
Dentist/dental hygienist	134	9%
Other (free text)	0	
Not applicable for my professional role/responsibility	113	7%
There are sufficient specialists available for me to refer my older adult patients with anorexia for additional assessment and/or treatment.		
Yes, all of the time	119	7.7%
Yes, most of the time	542	35.1%
Rarely	271	17.5%
No	384	24.9%
Not applicable for my professional role/responsibility	133	8.6%
Missing system	96	6.2%

anorexia of aging is best defined as a result of loss of appetite and/or low food intake in older adults.

Respondents were most likely to use their own clinical judgement or frailty scores when diagnosing older adults with anorexia. In the last decade, five systematic reviews synthesized data on several aspects of anorexia of aging.[5,8,36,37,38] From a diagnostic perspective, 18 instruments were identified, mainly using Likert scales or visual methods.[5] However, only one of these reviews investigated diagnostic instruments,[5] plus the lack of consensus from professional societies might have interfered in educational acquisition from HCPs. The use of frailty instruments might be related to the close relationship between weight loss and physical frailty. The use of own clinical judgement might reflect HCPs who have a good understanding of definitions and criteria and therefore have incorporated them into their own clinical judgement processes or could highlight an educational opportunity. Less than one third of respondents reported using a tool or resource developed by experts most or all of the time in their care for older adults with anorexia, with 16% of respondents unaware of a tool or resource to use. When comparing by the top five professions, dietitians/registered dietitians/nutritionists reported significantly higher use of tools and resources as compared with the other professions, which may indicate an opportunity to engage members of that profession in the interprofessional education of their healthcare colleagues.

Less than 50% of respondents reported that they weighed older adults on a weighing scale at each visit. For those who reported that they did not weigh older adults, it is unclear whether older adults were weighed on a weighing scale with a regular frequency but less than each visit. Because outcomes for older adults are improved if interventions are implemented before significant weight loss occurs, this is an area for further evaluation and education.

Appetite however is reported by most of the respondents to be assessed at every visit. It is unclear whether respondents who reported that they did not assess appetite at each visit did so on a less frequent basis. As screening for appetite is a crucial step to assessing risk for undernutrition, determining best practices for frequency of assessment is an area of further exploration. The MNA-SF is the most frequently used tool; besides this, clinicians mostly conduct an informal interview. Other screening tools were not used to screen older adults for appetite loss at all or were used infrequently by respondents in this assessment; however, there was generalized agreement that consistent use of screening tools was valuable. This is a comprehensive situation due to the lack of a consensus on diagnosing anorexia of aging. Previously, there are several instruments that were used to identify anorexia.[5] The discrepancy between intent and actual use in practice is an area that should be further explored. It is unclear whether HCPs chose not to use a screening tool that might be readily available, whether HCPs were aware of screening tools at all or whether HCPs were aware but did not have access to screening tools at the point of care.

There was also a lack of consistency in how often respondents believed that older adults should be screened for appetite loss, which could contribute to HCPs' failing to regularly assess and identify older adults with or at risk for anorexia.

Table 6 Domain (attitudes and perceptions): Perceptions and attitudes in the care of older patients with anorexia of aging (*N* = 1545)

	N	Statistic
Anorexia is unavoidable in geriatric patients.		
Strongly agree	166	10.7%
Agree	432	28.0%
Neither agree nor disagree	339	21.9%
Disagree	394	25.5%
Strongly disagree	100	6.5%
Missing system	114	7.4%
The regular use of standardized tools to evaluate older patients for weight loss is critical.		
Strongly agree	592	38.3%
Agree	684	44.3%
Neither agree nor disagree	122	7.9%
Disagree	24	1.6%
Strongly disagree	4	0.3%
Missing system	119	7.7%
Lack of high-quality evidence to guide the care and treatment of older patients with anorexia makes it challenging for me as a clinician to choose treatment.		
Strongly agree	167	10.8%
Agree	594	38.4%
Neither agree nor disagree	390	25.2%
Disagree	233	15.1%
Strongly disagree	40	2.6%
Missing system	121	7.8%
I have access to an interprofessional team with experience in the care of older adults with anorexia.		
Yes, all of the time	118	7.6%
Yes, most of the time	414	26.8%
Rarely	320	20.7%
No	522	33.8%
Not applicable for my professional role/responsibility	54	3.5%
Missing system	117	7.6%
I involve caregivers such as family members as collaborators in supporting the older adult with anorexia.		
Strongly agree	459	29.7%
Agree	787	50.9%
Neither agree nor disagree	155	10.0%
Disagree	22	1.4%
Strongly disagree	4	0.3%
Missing data	118	7.6%
I participate in continuing education/continuing professional development on nutrition for (select all that apply):		
All patients	335	22%
Older patients	406	26%
Older patients with anorexia	218	14%
I do not engage in continuing education/continuing professional development on nutrition	640	41%

In fact, longitudinal studies evaluating appetite trajectories among older adults are lacking.[8,36] In the absence of high-quality evidence, guidelines or consensus from specialist in the field could mitigate this problem. Dissemination of guidelines with recommendations on the frequency of appetite assessment with an education that reinforces the guidelines could likely improve awareness of the need for consistent assessment.

Primary treating physicians, nurses and dietitians/registered dietitians/nutritionists were identified as the professions most responsible for screening older adults for appetite loss and, therefore, may be the professions that should be the target audience for education. This was somehow surprising as approximately 30% of medical specialists were geriatricians.

Respondents described treating swallowing/dentition issues most frequently for older patients with or at risk for anorexia, followed by strategies to increase nutritional intake, evaluating and treating medication-related side effects and prescribing nutritional counselling, exercise and psychological support. Prescribing antidepressants or appetite stimulants was reported less frequently as was screening for abuse or neglect. Evidence for all those strategies is really limited based on three systematic reviews of anorexia management.[5,36,37] The strongest evidence for treatment relies on oral nutritional supplementation.[5,37]

Overall confidence in providing nutritional and exercise activity recommendations was high across the respondents in this assessment; however, unsurprisingly, dietitians/registered dietitians/nutritionists were most confident of the professions in providing nutrition recommendations whereas physical therapists were most confident in providing activity recommendations. In fact, the evidence of physical exercise on anorexia is low, involving one study.[38]

Table 7 Comparisons by profession (GP/primary care, specialist, pharmacist, dietitian/nutritionist and physical therapist)

	GP/primary care physician	Specialist physician	Pharmacist	Dietitian/ nutritionist	Physical therapist
Definition of anorexia of aging.					
Loss of appetite and/or low food intake	163	287	58	149	63
Unintended weight loss	51	82	11	37	14
Sarcopenia or loss of muscle mass	20	40	14	13	9
Nutrition risk, malnutrition or undernutrition	38	66	15	27	19
Frailty	14	19	17	14	3
Missing	2	2		1	
Total	288	496	115	241	108
I use tools and resources such as evidence-based guidelines developed by experts to care for my older patients with anorexia.					
Yes, all of the time	19	46	6	49	4
Yes, most of the time	38	136	14	73	21
Rarely	64	81	21	43	28
No, I prefer to use my own clinical judgement	93	131	19	25	14
No, I am not aware of tools and resources to care for my geriatric patients with anorexia	55	65	28	26	19
No, I do not use tools and resources because I do not have access to them	8	10	2	4	1
Not applicable for my professional role/responsibility	3	13	16	7	17
Missing	8	14	9	14	4
Total	288	496	115	241	108
Lack of high-quality evidence to guide the care and treatment of older patients with anorexia makes it challenging for me as a clinician to choose treatment.					
Strongly agree	27	45	7	33	18
Agree	122	200	47	92	35
Neither agree nor disagree	73	117	32	46	26
Disagree	49	87	16	36	16
Strongly disagree	5	18	1	8	3
Missing	12	29	12	26	10
Total	288	496	115	241	108
There are sufficient specialists available for me to refer my older adult patients with anorexia for additional assessment and/or treatment.					
Yes, all of the time	23	41	7	21	8
Yes, most of the time	96	182	24	99	30
Rarely	62	94	13	37	20
No	86	129	41	43	27
Not applicable for my professional role/responsibility	9	26	20	22	14
Missing	12	24	10	19	9
Total	288	496	115	241	108
I have access to an interprofessional team with experience in the care of older adults with anorexia.					
Yes, all of the time	16	38	4	25	10
Yes, most of the time	75	137	27	72	26
Rarely	73	107	15	45	20
No	112	175	48	68	39
Not applicable for my professional role/responsibility	1	11	12	6	2
Missing	11	28	11	25	11
Total	288	496	115	241	108
I involve caregivers such as family members as collaborators in supporting the older adult with anorexia.					
Strongly agree	74	166	20	88	30
Agree	168	271	68	110	45
Neither agree nor disagree	32	29	14	14	21
Disagree	1	2	1	4	2
Strongly disagree			1		
Missing	13	28	11	25	10
Total	288	496	115	241	108

Abbreviation: GP, general practice.

Referrals for further assessment and treatment of older adults with anorexia fell primarily to nurses/registered nurses. Dietitians/registered dietitians/nutritionists and physicians were also identified as professions that initiated referrals. As these professions appear to bear the most responsibility for referral, education focused on these professions in areas of promptness in referring, specialists for referral and follow up of referrals may be warranted. Respondents were equally split when asked if sufficient specialists were available for referrals. By profession, dietitians/registered dietitians/nutritionists may report greater availability of referral resources as they could be considered specialists as a profession.

Perhaps once an older adult has been referred to a profession that functions in a specialty practice area, there are more resources that become available, as compared with a primary care or general practitioner who may find that access to resources is more challenging.

More respondents believed that anorexia is unavoidable in older adults as compared with those who disagreed or strongly disagreed with the statement, implying that a significant portion of the HCP workforce may view anorexia as a normal part of aging. The belief that anorexia is unavoidable is not the same as a conviction that it cannot be treated. A similar perspective could be laid upon cancer cachexia or sarcopenia/muscle loss, which most people find normal or part of the disease, but still important to treat/prevent. Addressing attitudes and perceptions associated with aging for HCPs, as well as with older adults and their families, is an important area for education. HCPs must be able to describe what normal, healthy aging looks like and support older adults to achieve healthy aging. Assuming that anorexia is 'normal' reduces the chance that HCPs will screen, identify and treat older adults who are at risk for or experiencing anorexia.

While the majority of respondents reported that the regular use of standardized tools to evaluate older patients for weight loss is critical, descriptions of their behaviour in practice demonstrate otherwise. This discrepancy will require further analysis to identify root causes.

Lack of high-quality evidence to guide the care and treatment of older adults with anorexia is a significant concern for respondents in this assessment.[5,7,8,36,37] Providing regular, up-to-date information and accessible education for HCPs is critical to improve the care of older adults.

Aggregate survey responses reflect that more than 50% of respondents rarely or never have access to an interprofessional team with experience in the care of older adults with anorexia. This might reflect global differences in healthcare systems and healthcare delivery, and understanding those differences and adapting educational interventions to regional context will be important for success.

There were relatively low rates of engagement in CE/CPD among respondents in this assessment despite the likelihood that those who chose to engage in and complete this assessment are more vested in the clinical topic area and patient population as compared with those who did not participate. There is opportunity to establish the relevance of CE/CPD for a wide range of HCPs who may not be aware of the significance for their practice setting and/or patient populations.

Box 1. Anorexia of aging education: Insights and gaps

- The majority of respondents agreed or strongly agreed to be confident in providing nutritional and/or exercise recommendations for their older patients with anorexia.
- In the absence of an explicit cause, most respondents selected loss of appetite and/or low food intake as the most accurate definition for anorexia in older adults.
- To diagnose anorexia in older adults, most of the respondents used their own clinical judgement and/or frailty scores. Concerningly, over a fifth of the respondents was not aware of any tools that could be used in the care for anorexia of aging.
- Most of the respondents assessed appetite at each visit, although not all older adults are always weighed at each visit. Apart from the MNA-SF, other tools to screen for appetite loss are not frequently used; most of the time, the reporting clinicians conduct an informal interview.
- Registered nurses/nurses, dietitians/registered dietitians/nutritionists, general practitioners/physicians and, to a lesser extent, specialist physicians/medical doctors are responsible for referral for further assessment and treatment of anorexia in older adults.
- Treatment of anorexia of aging is focused on treating swallowing disorders if present, addressing dental issues and increasing the patient's nutritional intake, via energy- and protein-fortified foods and/or oral nutritional supplements. To a lesser extent, appetite stimulants are being prescribed.
- While over one third of the respondents considered anorexia as unavoidable in older patients, almost half of them believed that there is a lack of high-quality evidence to guide the care and treatment of older patients with anorexia, which makes it challenging to choose treatment.

Strengths and limitations

The strengths of this study included the international and interdisciplinary approach and its large number of respondents (n = 1545). The respondents had clinical expertise in the management and care of anorexia in older adults. Specialist physicians and primary care physicians had the highest level of response. This response correlates with their roles in the management and care of anorexia in older adults. The outcomes of the survey are highly relevant to develop effective educational programmes for practicing clinicians and for the training of new practitioners.

Participation to the survey was voluntary; therefore, findings may be biased towards those who are most actively involved in the care of older adults and those most interested in anorexia or nutritional disorders. Results primarily reflect the experiences of physicians/medical doctors, pharmacists, dietitians/registered dietitians/nutritionists and physical therapists. There were few respondents who identified as faculty, students/trainees or non-clinical. The results therefore most likely reflect the opinions of those HCPs who were the most confident in treating older adults with anorexia.

Conclusions

Findings from this mixed-methods educational needs assessment demonstrate areas of consistency across world regions and professions, while also identifying opportunities for additional exploration and/or intervention that may improve the care and outcomes of older adults at risk for or who have been diagnosed with anorexia.

HCPs in this assessment recognized a consistent definition of anorexia in older adults, the risk factors and potential impact of anorexia of aging, and the best interventional strategies to treat this. HCPs are also generally confident in their nutritional and activity recommendations and engage caregivers such as family members in supporting older adults with anorexia at high rates.

There was significant variation in areas such as how often appetite should be assessed in older adults, how often older adults should be weighed and which tools and resources should be used to screen and to diagnose older adults with anorexia. An alarmingly high number of HCPs seemed to believe that anorexia is a normal part of aging, and therefore, there is significant risk that they will not take steps to identify or treat older adults. Future research should explore whether anorexia and weight loss investigation and management in older adults are part of the formal educational curriculum of HCPs.

Finally, access to referral resources and interprofessional care teams were identified as system-level barriers that may need to be addressed by more comprehensive strategies.

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