

Insights from a retrospective chart audit of oral nutrition supplement use in long-term care

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Background: Prescribing oral nutritional supplements (ONS) in long-term care (LTC) has steadily increased over time. This study aimed to develop insight into ONS use and prescription practices from a retrospective chart audit in LTC.

Methods: A standard tool collected data on background/demographics, nutritional assessment, intervention and monitoring information. A chart audit was conducted on 38 residents prescribed with ONS in 4 LTC homes.

Results: In 68% (n = 25/38) of the charts, researchers were able to determine whether residents received ONS daily. Ninety-six percent (n = 24/25) received ONS on a daily basis. In 13% (5/38) of the charts, weight loss, poor appetite, and/or blood glucose control were indications for ONS. In 21% (n = 8/38), there were attempts to increase caloric intake using food and/or fortified foods. Of the charts reviewed, 84% (n = 32/38) had documentation of monitoring (eg, weight, dietary intake) and of these, 72% (n = 23/32) had documentation done annually. Only 34% (13/38) of the charts had prescriber information and the most common prescriber of ONS were physicians (85%, n = 11/13).

Conclusions: There is limited information collected regarding ONS use and prescribing practices are inconsistent. Guidelines, policies, and education are required to support ONS practice in LTC homes and should involve dietitians.

Keywords: Diet, Oral nutrition supplement, Long-term care, Seniors

Background

Older adults living in long-term care (LTC) are nutritionally vulnerable due to multiple physical, psychological, and socio-cultural factors^[1]. Aging affects older adults' abilities to consume a nutritionally sound diet and/or to utilize the nutrients necessary for optimal nutritional health and quality of life^[2]. Oral nutrition supplements (ONS), are ready-made energy dense multi-nutrient liquid supplements intended to help those who are unable to meet their nutrition requirements through food^[3]. The expectation is that when used appropriately in nutritional care plans, older adults will benefit from functional and clinical improvements including weight gain/maintenance, improved wound healing, increased albumin and total protein levels, improved cognition,

and potentially reduced rates of mortality^[4-6]. A recent systematic review of the literature based on 12 studies showed that the ONS use over a 6-month period resulted in weight gain^[7]. It has also been suggested as ONS may benefit older adults with significant weight loss, widespread use is not recommended citing issues of excess weight gain, unnecessary waste, and increased costs^[8-11].

Nevertheless, the use of ONS in LTC has increased over time^[8,9,12,13] and questions about inappropriate prescribing, lack of guidelines, increasing costs and efficacy of the supplements have been raised^[14]. Although dietitians are best trained in nutritional assessment and intervention, general practitioners (GPs) and nurses typically prescribe ONS^[8,10,12,13] with GPs being the most frequent^[8,13]. GPs and nurses have little or no formal training in nutritional assessment and prescribing ONS^[12,13]. Studies suggest a need for ongoing training for health care professionals responsible for prescribing ONS, and providing education and using guidelines was effective in decreasing the number of inappropriate prescriptions. The quality of information given to ONS prescribers is an important consideration given that for some, the only training they receive is from sales representatives^[13]. Given the lack of widely accepted standards or guidelines on who prescribes ONS and why, ONS are prescribed for multiple reasons such as: weight loss, poor appetite, specific medical conditions, dysphagia, dementia, malabsorption, and in palliative care^[5,6,8,9,15].

Most studies regarding ONS in LTC facilities have been conducted in the United States, United Kingdom, and Ireland and rely primarily on qualitative interviews or surveys with health professionals which are prone to memory and recall bias. Chart audits appear to be one of the most objective methods to gather information on ONS prescribing practices as the intention of

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charts is to document patient status and delivery of care, as it occurs^[16]. Therefore, the purpose of the study was to gain insights on ONS use and prescription practices from a retrospective chart audit in LTC in the Regina Qu'Appelle Health Region (RQHR), Saskatchewan, Canada.

Methods

Participant selection

Charts of residents reviewed would include all residents over age 65 years living in one of the 4 LTC facilities in a large health region in Saskatchewan, Canada, who were prescribed with ONS at any time within the previous 12-month period. From a total of 354 residents, 40 residents were identified as meeting criteria selection. Subsequently, data from 2 residents' charts were not included as they did not meet the inclusion criteria. Therefore, a total of 38 charts were reviewed.

Chart audit

A standard data collection tool was developed based on ONS prescription studies in the literature^[8,10,12–14] to ensure consistency and limit variation in the data extraction from the charts. The tool was pilot tested by extracting information from 2 charts from one of the selected facilities. On the basis of the pilot test, minor revisions were made. The tool included 4 sections: (a) background information/demographics, (b) nutritional assessment, (c) intervention, and (d) monitoring.

Demographic data

Demographic data (eg, age, sex) were collected to identify possible trends. The residents' ages were also used to ensure that inclusion criteria for the study were met.

Nutritional assessment

Anthropometric measurements on nutritional assessment such as height, weight, and ideal body weight were recorded. In addition, diet histories, calorie counts, biochemical markers (eg, albumin, sodium, potassium, urea, creatinine, calcium, phosphorus, magnesium, iron, and vitamin B₁₂), and the presence of chronic diseases and/or conditions of the resident were collected.

Nutrition intervention

Documentation of intervention efforts to improve nutritional status using food (eg, snacks, nutrient dense foods, fortified foods), nutrition support (ie, tube feed) before prescribing ONS, information about the ONS formula, the time of day ONS was received, reasons for prescribing ONS, profession of the prescriber and advice and/or recommendations or instructions on ONS to the resident was collected.

Monitoring

Documentation of monitoring and/or discontinuation of ONS and by whom was noted. Any use of nutritional assessment measurements (eg, height, weight, ideal body weight, calorie counts, biochemical markers) and which type, used during monitoring was also collected. Regular monitoring while on ONS

is essential for identifying nutritional status, potential side-effects, compliance, and the continued need for supplementation^[17].

Data collection

Service provider progress notes (eg, physicians and nurses) were reviewed to collect demographic data and to identify documentation of ONS prescription practices such as nutritional assessment, intervention methods and monitoring of ONS. Assessment forms, medication records, and physicians' orders were reviewed when available. Each audit took ~30–40 minutes, depending on the size of the chart. Ethics approvals were obtained for the chart review from the health region and university Research Ethics Boards.

Data analysis

Responses for each question were coded and entered into a database (Microsoft Excel). The frequency of the responses was noted and reported as percentages. Qualitative data were recorded and compiled into a word document that was analyzed by the researchers for common themes.

Results

ONS prescription

In 68% (n = 25/38) of the charts, researchers were able to determine whether residents were receiving ONS daily or not. Of these, 96% (n = 24/25) of residents were receiving ONS on a daily basis, while one resident did not. In 32% (n = 12/37) of the charts it was unclear whether it was received daily. Of the residents receiving ONS daily, the duration of ONS receipt was not documented in 17% (n = 4/24) of the charts. Of the charts with documented durations of ONS receipt, 65% (n = 13/20) had received ONS for ≤ 6 months and 35% (n = 7/20) had received ONS for ≥ 6 months (Table 1). In 66% (n = 25/38) of the charts, an initial date of ONS receipt/prescription was recorded, while 34% (n = 13/38) of the charts did not record an initial date. Of those with a known date of prescription/initial ONS receipt, 20% (n = 5/25) were before January 1 to get the full year of data.

In 89% (n = 34/38) of the charts, documentation of the brand of ONS that residents received was recorded with the most common brand prescribed was Resource 2.0 (74%; n = 25/34) followed by Ensure (32%, n = 11/34) (Table 2). The supplements were most often provided with meals (97%, n = 31/32) or at evening nourishment (75%; n = 24/32). In 34% (n = 13/38) of the

Table 1
ONS prescription.

	Frequency of ONS Use			Duration of ONS Use		
	Daily	Not Daily	Total	Documented	Not Documented	Total
No. charts	24	1	25	20	4	24
%	96	4	100	83	17	100
	Frequency of documented duration					
Months	0–3	4–6	7–9	10–12	> 12	Total
No. charts	5	8	2	4	1	20
%	25	40	10	20	5	100

ONS indicates oral nutritional supplements.

Table 2
Brands of oral nutritional supplements prescribed for residents.

Brand	No. Residents (%)
Resource 2.0	25 (74)
Ensure	11 (32)
Glucerna	2 (6)
Boost Fruit Beverage	2 (6)
Thick Protein Drink	1 (3)

charts, the prescriber of ONS was clearly identified as physicians (85% (n = 11/13), a nurse (8%, n = 1/13), and speech language pathologists 8% (n = 1/13). The prescriber's identity was unclear in 66% (n = 25/38) of the charts reviewed **Table 3**.

Nutritional assessment

The following measures were recorded in the charts: height (32%; n = 12/38), ideal body weight (42%; n = 16/38), weight (90%; n = 34/38), and comments on dietary intake (82%; n = 31/38). In 61% (n = 23/38) of the charts, information for weight, and from other assessments such as the Braden scale, System Wide Admission and Discharge Department assessments, Minimum Data Sets, swallowing assessments and admission assessments were recorded.

Intervention

In 21% (n = 8/38) of the charts, there was documentation of attempts to increase caloric intake using food and/or fortified foods such as using residents' favorite foods (50%; n = 4/8), milk shakes (25%; n = 2/8), whipped cream (12.5%; n = 1/8), and protein powder (12.5%; n = 1/8). There was also documentation of recommendations and/or instructions to the residents about their regular food and fluid intake and/or supplements in 13% (n = 5/38).

Monitoring

In 84% (n = 32/38) of the charts reviewed, documentation of monitoring (eg, weight, dietary intake) was recorded. Of these, 72% (n = 23/32) had documentation done annually and 22% (n = 7/32) had documentation done only on occasion when something was observed to be atypical. Many charts had multiple providers documenting monitoring. In 84% (n = 27/32) of the charts, the monitoring was recorded by nurses, 13% (4/32) by special care aides, 6% (n = 2/32) by speech language pathologists, 63% (n = 20/32) by food service supervisors, 6% (n = 2/32) by physicians, and 9% (n = 3/32) from unidentified staff/professionals.

In the charts that contained documentation of nutrition monitoring, the following nutritional assessments were documented during the residents' receipt of ONS: dietary intake (100%;

Table 3
Time oral nutritional supplements is received.

Time	No. Residents (%)
With meals	31 (97)
Evening nourishment	24 (75)
With medications	1 (3)
In-between meals, no snack	1 (3)
In-between meals, with snack	1 (3)
Other	1 (3)

n = 32/32), weight (97%; n = 31/32), biochemical markers such as vitamin B₁₂ (6%; n = 2/32), height (3%; n = 1/32), ideal body weight (3%; n = 1/32), and other (16%; n = 5/32) such as the Braden scale, swallowing assessments and Minimum Data Set. Only one chart contained clear documentation of discontinuation of ONS with the reason being the patient refusing ONS.

Discussion

This study provided insights into prescription practices and the use of ONS at LTC facilities. Information such as the frequency of ONS receipt (eg, daily use), the time it was received (eg, with meals, with snacks, etc.) and the brand of ONS prescribed were recorded in the majority of the charts reviewed. ONS were found to be given most often with meals and/or snacks, which is consistent with the current literature^[14]. The rationale for the frequency of ONS receipt and brand selection was not recorded. ONS is typically prescribed for lack of appetite, weight loss and acute illness, although best practices suggest it primarily helps with weight gain on a short term basis. In 66% (n = 25/38) of the charts, ONS prescribers' identities were not clear. When prescribers' identities were available, most were identified to be physicians. This finding appears to be inconsistent with a study completed within the same health region based on the interviews with dietitians in LTC facilities, which suggest nurses are the most common prescribers of ONS^[14]. It is likely that the physicians indicate the need for supplement in the residents' charts and the nurses translate these orders into the care plan as the nurses and other health professionals do not have the order-writing privileges. This was noted in the chart review in the present study. Operationally within the LTC, it may be that the nurses are primarily responsible for translating the physicians' orders into the care plan and this may have influenced the perception of the other staff including the dietitians.

Assessment tools (eg, Braden scale) which are recommended^[17], were used in 2 of the 4 LTC facilities before prescribing ONS. Comments regarding residents' dietary intake (eg, "weight stable with supplements") may not be an accurate assessment method, as charting style varies among staff and facilities. There is currently no standard method for charting dietary information among the LTCs within the health region. A standard method of charting for dietary information may allow for a more consistent reporting of residents' eating patterns, creating a more complete picture of residents' nutritional intake. Standard charting methods may also allow for comparison of ONS prescription practices among facilities in the RQHR. To standardize charting of dietary information, further electronic charting with provision for easy completion (eg, check boxes) should be explored along with education and training opportunities.

The literature recommends the use of food as an initial intervention to increase dietary intake^[10,17]. In this study, only 21% (n = 8/38) of residents' charts contained documentation on attempts to increase dietary intake using methods other than ONS. These findings may suggest that the facilities are using ONS as a primary intervention to increase residents' dietary intake. This is reflected by a recent study in the same health region which found the prescription of ONS had increased^[14]. The literature indicates inappropriate and widespread use of ONS as costly^[9], therefore it may be prudent for referrals to be made for a comprehensive nutritional assessment by a Registered Dietitian to determine the best strategy to optimize intake and to further

explore whether using food, including fortified foods, as a primary intervention would result in better care at a lower cost. Dietitians could provide educational in-services to health providers on different ways to use foods, including the fortification of foods to increase residents' intake before initiating ONS. A cost comparison could be conducted on the use of food and ONS as primary interventions to determine which are more cost effective and beneficial to older adults.

The rationale for ONS prescription was not clearly identified in the majority of charts reviewed. In 13% ($n = 5/38$) of the charts weight loss, poor appetite, and/or blood glucose control were documented as indications for ONS. The lack of documentation of reasons in most charts observed in this study is consistent with other studies^[9,14]. Guidelines and education for ONS use may help to ensure appropriate ONS prescribing practices and improved patient care^[9,12]. Not surprisingly the literature indicates that failing to use valid criteria for ONS prescriptions increases the number of inappropriate prescriptions^[9,12].

Regular monitoring while on ONS is critical to identify nutritional status, potential side-effects of the ONS, compliance, and a continued need for supplementation^[17]. The majority of charts (84%; $n = 32/38$) contained some monitoring, most often in the form of written comments on dietary intake and recorded weights. Standard monitoring parameters could be helpful for the evaluation of ONS use and should be considered as a component of guidelines on ONS practice.

Strengths and limitations

The data collection tool was based on the literature and was pilot tested before data collection to ensure standardization and to minimize differences in recording technique. Testing the tool helped identify limitations and enabled the modification of the tool before data collection. Strong attention was paid to confidentiality/ethics and the quality of the data by doing the chart review within the facilities and the researchers working in teams of 2 to extract the data from the charts.

Charts were used in this study to obtain insight on prescribing ONS for residents in LTC. Interviews regarding ONS practice can only provide one individual's perspective at a time, whereas charts contain records of resident care from numerous health professionals. Although information on ONS practice was limited in the charts reviewed, when available, it provided researchers with a broader picture of each resident's nutritional care.

The findings from this study may not accurately represent ONS practice in all RQHR LTC homes due to the convenience sample of LTC homes that participated. For future research, selecting a larger and more representative sample throughout RQHR LTC homes may provide a more accurate depiction of ONS practice within the region. In many cases, sections of residents' charts were not always legible, potentially introducing errors in transcription of information. In future, chart audits could be complemented by interviews with the health professionals responsible for prescribing the ONS for the residents and the actual residents' consumption of ONS. This also suggests the need for electronic charting some of the LTCs have been moving towards.

Conclusions

The findings show significant implications for practice including: the need for consistent and accurate documentation using

standardized formats (eg, checklists) with the need to explore alternatives such as standard guidelines or policies for prescribing ONS (eg, "food first" approach, evidence informed and case managed use of ONS), evaluation and research around ONS practices, improved and consistent education for all LTC staff (eg, nursing and others), and a clear delineated role for dietitians in ONS management.

Limited information was documented in the charts relating to the rationale and practice of ONS. In addition, there were also no standard guidelines on ONS prescription, use, or monitoring. Guidelines could be developed by dietitians based on existing research at the national level. In addition, implementation of standardized charting methods for dietary information could be beneficial. This would provide a more complete picture of residents' intakes, more accurate nutritional assessments, and better nutritional interventions appropriate for each individual resident. Standardized charting would also enable further research and comparisons among facilities.

The guidelines for ONS could detail intervention methods such as using "food first" to increase intake. They could also be designed to help determine indications for initiating ONS, the appropriate type of ONS (eg, influenced by residents' chronic conditions like diabetes), monitoring practices (eg, weight, dietary intake, compliance with ONS) for residents who are taking ONS, and indications for discontinuing ONS use. Specific criteria in the guidelines could include measurable variables such as: weight loss over time, set number of days with decreased and/or poor intake^[14], anthropometric measures, and set period of time with poor wound healing. Education on the use of the created guidelines is imperative to achieving appropriate ONS prescription practices^[12]. Existing guidelines on ONS use and prescription, such as those developed by Stratton and Elia^[17], may be developed and piloted.

This study has identified a need for involvement and a role for dietitians in ONS prescribing and use in LTC facilities. Johnson et al^[18] suggested a regional standard for dietitians to be employed by all the LTC facilities. Dietitians have been professionally trained to assess nutritional status and develop appropriate intervention strategies, including provision of ONS. Dietitians, as key resources for nutrition and ONS information, could also better educate physicians and nurses on the use of the ONS guidelines.

Ethics approval and consent to participate

Ethics approval was obtained from the health region and university Research Ethics Boards.

Availability of data and material

The data sets generated during and/or analyzed during the current study are not publicly available as we do not have ethical approval to do this.

Authors' contribution

All authors were responsible for identifying research questions and the overall study design. The team collaboratively contributed to the data management, analysis, and interpretation of the study's results. All authors were responsible for the drafting of this manuscript and have read and approved the final version.

Conflict of interest statement

The authors declare that they have no financial conflict of interest with regard to the content of this report.

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