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**REVIEW ARTICLE**

## **Oral Nutritional Supplements (ONS) to support the dietary needs of older patients**

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### **INTRODUCTION**

As older patients tend to eat less and their bodies become more catabolic in nature, the nutritional status of these patients usually decrease with age [1, 2]. Nutrition support is vital when it comes to caring for hospitalized older patients because when their nutritional status is compromised, this will result in higher comorbidities, increase length of hospital stay and higher mortality. In a super-aging society like Japan, where more than 25% of the population are more than 65 years old, nutrition support can be challenging as it is not easy to achieve adequate oral intake in these older patients. Therefore, the use of oral nutritional supplements (ONS) plays an important role in the nutrition support of hospitalized older patients.

### ***ONS, nutritional status and quality of life***

Several studies have shown that ONS can improve the nutritional status of patients, especially if the compliance or acceptance rate of patients towards ONS is high [3, 4]. When combined with physical activity, ONS improved the nutritional status, functional status and quality of life in frail institutionalized older adults [5]. These findings support the use of rehabilitation with ONS in hospitalized patients.

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ONS not only improved indices of nutritional status during the 90-day observation period but was also able to decrease mortality after discharge from hospital [6]. However, it is unclear whether these results are replicable with all ONS and specialized ONS usually come with a higher cost. In terms of improving patient's quality of life, ONS have also been demonstrated to be more effective than dietary advice in malnourished home residents [7]. It would therefore make sense to incorporate the use of ONS along with dietary counselling for older patients.

### ONS and clinical outcomes after hospitalization

Almost all medical practitioners and clinical guidelines would agree that improvement in nutritional status usually leads to better clinical outcomes for patients. There is evidence showing that ONS significantly reduce hospital re-admissions [8-10]. A meta-analysis of 8 randomized controlled trials with most of the patients higher than 65 years in age showed reduced hospital re-admissions with the use of ONS [8]. A large, retrospective study involving more than 44 million adult inpatient episodes during an 11 year period also demonstrated that the use of ONS decreases hospital length of stay, episode cost, and 30-day readmission risk [9]. Recently, similar results were also reported in patients with chronic lung disease (COPD) [10]. Although intervention with ONS was associated with significantly higher costs during a 3-month period, it was still deemed cost-effective according to international thresholds [11]. It should be noted that although the cost of ONS differs geographically, oral and enteral supplementations are still less expensive than parenteral nutrition.

**Table 1.** Comparison of patient characteristics between those given ONS and those not given ONS.

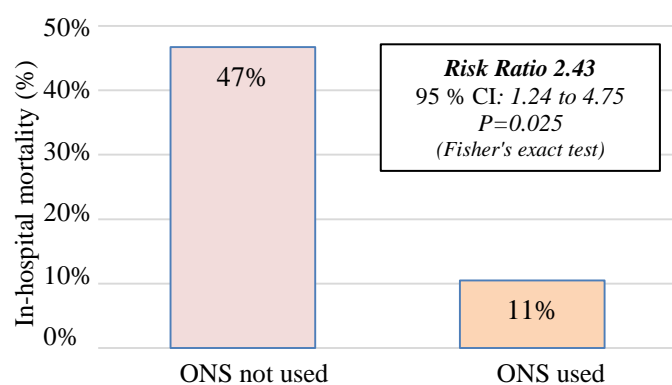
Characteristic	ONS not used (n=15)	ONS used (n=19)	P value†
Age (years)	84.0 ± 7.6	84.0 ± 8.1	0.954
Serum albumin (g/dL)	2.5 ± 0.6	2.5 ± 0.5	0.200
Body mass index (kg/m <sup>2</sup> )	17.1 ± 3.2	17.7 ± 3.7	0.629
Lymphocyte count (/μL)	1157 ± 502	1268 ± 489	0.298
C-reactive protein (mg/dL)	2.6 ± 2.2	3.3 ± 4.5	0.781

Values expressed as mean ± SD.

†: Student t-test or Mann-Whitney U test.

### ONS and mortality

Although ONS have been shown to improve the nutritional status of older patients, evidence concerning mortality is not yet well established despite a recent trial where ONS reduced mortality at 90-days after hospital discharge [6]. Systematic reviews or meta-analysis of medical and surgical patients as well as patients with cirrhosis were not able to demonstrate the beneficial effect of ONS on mortality [12, 13]. A Cochrane Database systematic review also showed that ONS, given alone or with dietary advice did not improve the survival of patients with disease-related malnutrition [14]. For chronic renal disease, although ONS have not been shown to improve mortality in patients with end-stage renal disease in one study [15], intradialytic ONS improved survival in patients undergoing hemodialysis [16]. In our institution, 34 warded patients (85% of patients more than 75 years old) with insufficient nutritional intake who were referred to our Nutrition Support Team (NST) during a two month period were prospectively observed. We found that patients who were given ONS had significantly lower in-hospital mortality rates compared to those who did not receive supplementation (Figure 1). This was despite the fact that both groups were similar in terms of age, nutritional status (measured using serum albumin levels, body mass indices and total lymphocyte counts) and inflammatory status (measured using C-reactive protein levels) at baseline (Table 1). Large scale studies are warranted to establish the presumably positive effect of ONS on mortality.



**Figure 1.** The effect of ONS use on in-hospital mortality of patients.

## CONCLUSION

In conclusion, although evidence may be lacking in terms of long term aspects such as mortality, there is reasonably solid evidence to support the general use of ONS in the nutrition support of hospitalized older patients with inadequate oral intake. The use of ONS may increase the total nutritional intake of older patients and reduce unnecessary enteral tube feeding, which can be a cause of discomfort. By improving the nutritional status of older patients, positive clinical outcomes and quality of life can be expected. Nevertheless, since there is a wide variety of ONS available in resource-rich countries such as Japan, the appropriate use of these supplements through proper education as well as consultation with NSTs will be necessary to obtain optimal results.

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