



Oral Nutritional Supplements and Dental Health

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Background

- Malnutrition affects >3 million people in the UK, and >33 million people in Europe annually [1]
- The majority (93%) of malnourished individuals are living in the community, with the remaining 7% in care homes and hospitals [1]
- NICE expert guidelines recommend the initiation of Oral Nutritional Supplements (ONS) if patients are malnourished or 'at risk' of malnutrition [2]
- However, these supplements can contain over 34g of sugar per 200ml serving

Objectives

- To list the sugar content of commonly prescribed ONS in the UK and Republic of Ireland
- To carry out a systematic review into the effects of ONS on the dentition

Methods

Part 1:

- A list of NHS-recommended ONS was compiled
- Nutritional information was obtained from the manufacturers' website

Part 2:

- A systematic review was conducted following the PRISMA guidelines.
- 4 databases were searched: Medline (via Ebsco), Embase, Web of Science Core Collection, Google Scholar
- The following search terms were used ""Dental health"" "periodont*" "caries" "dental""candida" AND "oral nutritional supplements"
- Risk of Bias was assessed using ROBINS-I tool

Results

Part 1:

Twelve ONS commonly prescribed in the UK and Ireland[3,4] were listed and nutritional information data was extracted from the manufacturer's websites. They were tabulated (*Table 1*) in order of decreasing sugar content and colour coded using the NHS traffic light system with red indicating high sugar levels and amber indicating medium sugar levels.

| Product | Serving size | Sugar content (g) per serving |
|-------------------------------|--------------|-------------------------------|
| Foodlink Complete™ with fibre | 57g Sachet* | 35.0 |
| AYMES® Shake | 57g Sachet* | 27.3-34.2* |
| Foodlink Complete™ | 57g Sachet* | 34.0 |
| Scandishake® Mix | 85g Sachet* | 30.4 |
| Nutriplete® Shake | 57g Sachet* | 25.9-30.8 |
| AYMES® Shake Compact | 57g Sachet** | 22.7-29.5 |
| Ensure® Shake | 57g Sachet* | 28.7 |
| Complan® Shake | 57g Sachet* | 27.5* |
| Fortijuce® | 200ml | 27.2 |
| Fresubin® Powder Extra | 62g Sachet* | 20.9-24.9* |
| Ensure® Plus Juce | 220ml | 20.7 |
| Resource Fruit | 200ml | 20 |

Table 1: List of shake style & pre-formed ONS

*reconstituted with 200ml whole milk **100ml whole milk

Results

Part 2:

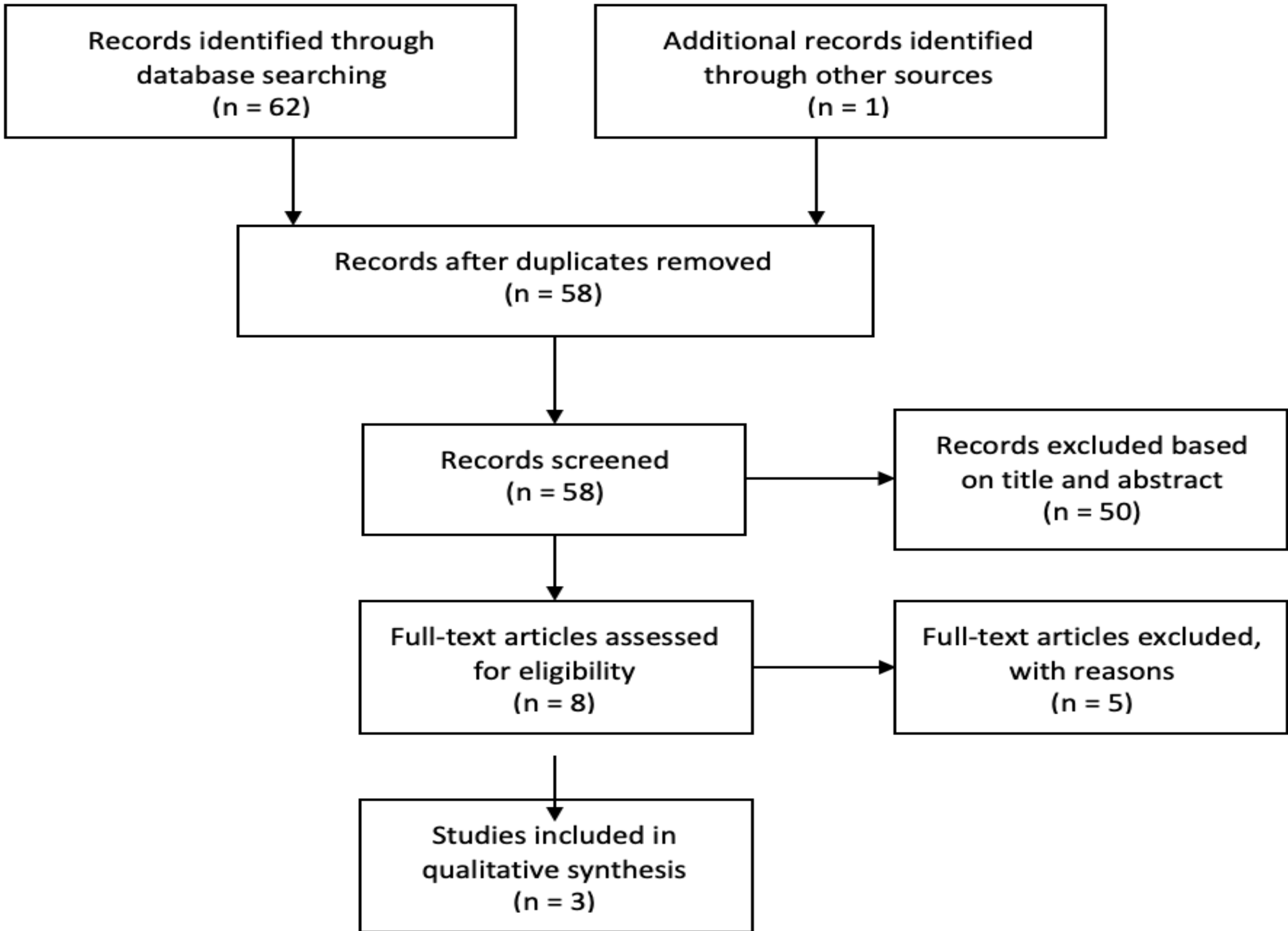


Table 2: PRISMA flow-chart for systematic review

3 studies (2 *in vitro*, 1 *in vivo*) were included in the qualitative review

| Study & year | Main findings | Risk of bias |
|----------------------------|---|--------------|
| Castro et al, 2019 [5] | ONS caused greater biofilm acidogenicity - > Higher cariogenicity No statistical difference in dentine demineralization or microorganisms present | Low |
| Jung et al, 2020 [6] | E. coli , S aureus and C. albicans all grew in part open dairy ONS C. albicans also grew in dairy free ONS | High |
| Stillhart et al., 2021 [7] | All tested ONS were potentially cariogenic due to decreasing biofilm pH levels | Low |

Table 3: Main findings of the systematic review

Discussion

Different brands and types of ONS vary widely in sugar content. It is important for dentists to establish if a patient is taking ONS as it may be necessary to implement preventative dental treatment plans in these cases.

There is a shortage of research looking into the effect of ONS on the oral environment, however there is evidence from both *in vivo* and *in vitro* studies that ONS have cariogenic potential.

Clinical significance

- ONS can increase a patient's risk of caries
- Dentists and patients should be aware of their dental implications
- They may need to liaise with the patient's medical/nutritional team in order to manage the patient's nutritional needs without neglecting their dental needs

Conclusions

- Some commonly prescribed ONS have high sugar levels
- Studies have shown ONS to have cariogenic potential
- Further studies are needed to confirm the cariogenic effect these have *in vivo* and to investigate if they have any other effects on the oral environment

References

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