

“The diet is not suitable for all...”: On the British and Irish Web-based Discourse on the Ketogenic Diet

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ABSTRACT

This paper is aimed at analysing the discourse tools and argumentative resources at work in the debate on the Ketogenic Diet (KD), an increasingly popular regimen with far-reaching clinical implications. The study centred on two small comparable corpora including web-based materials from relevant stakeholders in the debate on the KD, namely health institutions, charities and the press from the UK and Ireland. From a methodological point of view, the study consisted of two main stages: first of all, a quantitative analysis of phraseology focusing on lexical bundles; secondly, a qualitative study of patterns of argumentative discourse, for the purpose of identifying common argument schemes and their relationship in the overall argument structure. On the one hand, the British discourse on the KD broadly reflects the deeply-held conviction that the diet should be given proper consideration, especially in the treatment of drug-resistant epilepsy. On the other hand, the Irish discourse on the diet appears to be more complex and multi-layered. The role of the KD as a significant component of epilepsy treatment is acknowledged, but at the same time citations from influential figures often fulfil different argumentative commitments.

Keywords: argumentation; Ireland; Ketogenic Diet; phraseology; United Kingdom.

1. INTRODUCTION

As the study of ethical issues arising from advances in biology and medicine, bioethics has been an important subject of interdisciplinary inves-

tigation. Bioethicists mainly discuss questions inherent in the complex relationship among life sciences, biotechnology, medicine, politics, philosophy and the law. However, there is evidence that primary care ethics has also “acquired a definitive place on the ‘bioethics map’” (de Zulueta 2008, 5). Although primary care ethics is less concerned with the dramatic ethical issues common to both bioethical journals and the lay press than with basic problems afflicting individuals in their everyday life (Braunack-Mayer 2001; Tudor-Hart 2006), these can be agreed to be as relevant to the practice of medicine as they are to the business of living. In a wide array of countries including the United Kingdom, primary care has had to respond to the major challenges posed by new industrialised market-based models of healthcare. These are represented by the threat of substitution of services by others, new demands for accountability, generational change and the so-called ‘new managerialism’ (Harrison, Innes, and Van Zwanenberg 2001). This term was coined in the mid-1990s to describe the shift from a diplomacy style of management in the healthcare, where physicians retained most of the power within the system, to an interventionist and altogether more dynamic style, more appropriate for contemporary organizational life (Beardwood *et al.* 1999). Over the last few decades and as a result of this development, the healthcare system of Western countries such as Australia, Canada, the United Kingdom and the United States have witnessed an expansion of management influence over professional activities, with a managerial approach emphasising task completion and outcomes in the pursuit of evidence-based, cost-effective and efficient care (Beck and Melo 2014). Of all the interventions required to meet such challenges, de Zulueta (2008, 5) sees “corporate management” as the “most ethically problematic”, ranging as it does from clinical governance, priority setting, the formulation of guidelines and protocols, to public health needs assessment. As far as the latter is concerned, communication between health providers and lay people may be observed to play a key role.

Not surprisingly, public health communication has been thoroughly investigated over the past few years. The increasing interest for communicative processes originates from the widespread belief that healthcare discourse entails more than a simple transmission of information. As a field “concerned with creating, tailoring, and disseminating health promotion and disease prevention messages to the population as a whole” (Harvey and Koteyko 2013, 121), public health communication has not surprisingly been dealt with from a wide array of perspectives.

For instance, attention has been paid to print media representations of health and illness. Accordingly, Clerehan, Hirsch and Buchbinder (2009)

focus on medication information leaflets. These texts are designed to provide patients with clear and easy-to-navigate information to help them recognise adverse effects and understand their treatment regime. Leaflets are analysed by Clerehan, Hirsch and Buchbinder (2009) through a systemic-functional-linguistics approach assessing the relationship between genre structure and rhetorical elements as well as writer-reader relationship and factual content, in the attempt to identify textual moves and assess their function (definitory, informative or directive). Moreover, the diversity of channels of healthcare discourse – e.g., paper or web-based – is matched by a broad range of theoretical and methodological concerns on the analysts' part. First of all, the implementation of corpus methods has become an important acquisition of health-related discourse studies. Thus, Hunt and Harvey (2015, 151) lay emphasis on corpus linguistics as a suitable method for the analysis of authentic language, and they argue that it is “well-suited to pedagogical interventions for healthcare providers”, with the data-driven approach to language learning “proving a natural match for the ethos of evidence-based medicine”. Accordingly, they also choose keywords as salient lexical items in context, in order to describe how patients use language to express their concerns about eating disorders while at once negotiating their own anorexic identity.

Secondly, argumentation has taken on increasing importance as an analytical dimension. Hence, Snoeck Henkemans (2016) looks at patterns of pragmatic argumentation in over-the-counter medicine advertisements. Pragmatic argumentation appears crucial, since its positive variant implies the standpoint that a certain action (e.g., taking the drug) should be performed on the grounds that it will lead to a positive result (i.e., the patient's recovery). Through her fine-grained analysis, Snoeck Henkemans (2016) discerns a basic argumentative pattern for OTC medicine advertisements, and she presents an overview of the advertisers' strategic choices in terms of argument structure and the presentation of the argumentation.

The present paper draws on the research strands outlined so far. Its aim is to conduct a comparative analysis of the discourse on the Ketogenic Diet (KD) in the United Kingdom and the Republic of Ireland. Originating from late 19th/early 20th-century ideas that disease could be cured by exercise and diet, the Ketogenic Diet began to take shape in the 1920s, when a diet rich in fat and low in carbohydrate was correlated with a reduction in the number of epileptic seizures (Wheless 2004). Although the diet was largely used in the 1930s as well, the interest of physicians and researchers was gradually to be sparked less by the mechanisms of action and efficacy of the KD than by the newly discovered antiepileptic drugs.

These ushered in a new era of medical therapy, and the Ketogenic Diet seemed destined to fall into disuse. As Wheless (2004) states, however, substantial evidence from studies in the mid-1990s revived the fortunes of the Ketogenic Diet. In particular, data tended to suggest that the KD compared favourably with other new treatments for epilepsy in children, and its advocates began to call for its availability at every paediatric epilepsy centre. The putative benefits of the Ketogenic Diet are still the subject of much debate, which in turn is a strong motivation for this research, too. In this paper, the following questions are fielded:

- What is the current status of the discourse on the Ketogenic Diet in the two countries taken as an example?
- How is the KD mainly represented in web-based informative materials designed by relevant public-health stakeholders at large?
- How is the diet 'argued' in the sources under scrutiny?

In section 2, the materials under investigation and the methodological guidelines are presented. The findings of the study are then reviewed in section 3 and eventually discussed in section 4.

2. MATERIALS AND METHODS

The study was based on two small corpora. The first one, the so-called Keto_UK (138,653 words), instantiated the discourse on the Ketogenic Diet in the United Kingdom, a country known to host some of the key providers of ketogenic dietary therapies, such as the charity Matthew's Friends and Great Ormond Street Hospital in London. The second corpus, referred to as the Keto_Éir (21,358 words), was compiled for mainly comparative purposes as the Irish counterpart of Keto_UK, the Republic of Ireland being the English-speaking country nearest to the UK. In terms of corpus design criteria, first of all, geographical proximity was important for one main reason. The United Kingdom has played a crucial role in raising awareness of the KD at a European level, and it was considered interesting to observe whether and to what extent a country so close and linguistically homogeneous to it as Ireland might be seen as a receptive ear for the implementation of the regimen. In merely quantitative terms, secondly, one may argue that Keto_Éir is too small to even deserve to qualify as a corpus, the orthodox view being that the larger a corpus is, the better. In that regard, it is appropriate to provide a two-fold specification. To begin with, the size of Keto_Éir is as big as the available data allowed

for, at the time of corpus compilation. In addition, an increasing number of studies argue that, as opposed to the investigation of generalised findings noting the frequency of pragmatic phenomena in large corpora, an important research agenda now foregrounds a focus on small corpora and local pragmatic patterns. In addition to the importance of small corpora in data-driven learning (Aston 2011), therefore, “smaller corpora provide a platform for not only establishing the range and frequency” of a wide array of linguistic indicators, but also for sharpening our knowledge of “the role of different genres or contexts in characterising their use” (Vaughan and Clancy 2013, 53).

For both corpora, the sources of web-based materials included relevant stakeholders in the debate on the KD, including health institutions, charities and the press as mediators between expert voices and the public at large. Accordingly, the Keto_UK corpus includes texts from the following entities: Matthew’s Friends, Daisy Garland, the Epilepsy Society, Young Epilepsy, Epilepsy Action, Great Ormond Street Hospital Charity, and articles from *The Guardian* and *The Telegraph*. Likewise, the sources of the Keto_Éir corpus feature the Health Service Executive (HSE), Epilepsy Ireland, the Irish Nutrition and Dietetic Institute (INDI), Temple Street Children’s University Hospital, and articles from *The Irish Times* and the *Irish Independent*. Both the general search for corpus texts and the search for texts within each and every stakeholder’s website were carried out by using *ketogenic*, *Ketogenic Diet* and *epilepsy* as search words. Overall, the time span covered by both corpora includes the years between 2011 and 2016.

From a methodological point of view, the study consisted of two main stages. The first one was a corpus-based quantitative analysis of the top-ten most frequent lexical bundles of both corpora. In the context of the works on phraseology as a leading principle of discourse organisation, lexical bundles are aptly defined by Breeze (2013, 230) as “multi-word sequences that occur[red] most frequently in particular genres, regardless of whether or not they constitute[d] idioms or structurally complete units”. Bundles have attracted the attention of corpus and discourse scholars over the past fifteen years because of their versatility, as they were observed to be “lexical units that cut across grammatical structures” and “have identifiable discourse functions, suggesting that they are important for the production and comprehension of texts” (Biber 2006, 155).

Since the relevance of bundles to the analysis of internet-based communication with patients has also been confirmed by recent studies (Mazzi 2016), they were taken as a basis for this research as well. More precisely,

after the whole dataset was normalised, the most frequent bundles were extracted for each corpus by means of the Cluster function of the linguistic software package AntConc (Anthony 2006). They were then concordanced, i.e. analysed in the context of the respective corpus occurrences, in order to find out their preferred collocation patterns and thereby uncover the discourse strategies adopted in both corpora to represent the Ketogenic Diet, discuss its benefits and assess its problematic aspects.

In an attempt to provide the quantitative corpus analysis with adequate discourse-analytic findings, a second stage lay in a qualitative study of salient patterns of argumentative discourse across the two corpora. The texts where the collocational patterns documented earlier on were most widely attested were thus accessed for the purpose of identifying common argument schemes and their relationship in the overall argument structure. This resulted in a manual analysis of two inter-related elements. First of all, emphasis was laid on argument schemes as forms of reasoning that create “a specific justifying relationship between the applied argument or [...] the applied arguments and the standpoint at issue” (Van Eemeren, Houtlosser, and Snoeck Henkemans 2007, 137). Secondly, evidence was collected of argumentative patterns as sets of “argumentative moves in which, in order to deal with a particular kind of difference of opinion, in defence of a particular type of standpoint a particular argument scheme or combination of argument schemes is used” in a specific kind of argumentation structure (Van Eemeren 2016, 14). Therefore, argument structure was scrutinized as the overall articulation of schemes into simple or multiple argumentative patterns in those texts where explanatory passages about the characteristics of the KD are interspersed with or else replaced by more inherently argumentative traits influencing readers’ perceptions of the diet.

3. RESULTS

By generating the cluster lists mentioned in the prior section, the most frequent bundles were retrieved for the Keto_UK and Keto_Éir corpora. These are reported in *Table 1* below with their raw and per 1,000-word frequency.

For the sake of clarity, salient findings about the Keto_UK corpus are reported in the next sub-section (3.1), whereas those on Keto_Éir are presented in 3.2.

Table 1. – Top-ten most frequent bundles in Keto_UK and Keto_Éir.

KETO_UK BUNDLES	RAW FREQ.	PER 1,000-WORD FREQ.	KETO_ÉIR BUNDLES	RAW FREQ.	PER 1,000-WORD FREQ.
[the] ketogenic diet [is]	957	6.90	[the/a] ketogenic diet [is]	119	5.57
the diet is	74	0.53	as well as	15	0.71
of the diet	73	0.53	on the diet	14	0.65
on the diet	72	0.52	the number of	10	0.47
[if] you would like [any]	72	0.52	one of the	9	0.43
as a treatment	64	0.46	been shown to	9	0.43
and we will [be happy to]	61	0.44	a lot of	9	0.43
high-fat low-carbohydrate	50	0.36	Dr Wilhelm De Toledo	7	0.33
in the body	47	0.34	some of the	7	0.33
drug-resistant epilepsy	30	0.22	low-carbohydrate diet	6	0.28

3.1. Keto_UK: Ketogenic Diet as a dietary regimen worth gaining access to

In the Keto_UK corpus, the study of the selected lexical bundles in context has shed light on two main features of the UK discourse on the Ketogenic Diet: first of all, the attempt to carefully define what the diet is, how it is supposed to work as well as recent and/or ongoing research into it; secondly, a more or less tentative suggestion for patients to take action by requesting information about the diet, in order to make an informed choice about the most appropriate treatment.

To begin with, it appears to be of paramount importance to achieve complete clarity in defining the object of discourse, i.e. the Ketogenic Diet itself. Not surprisingly perhaps, this can be appreciated by looking at the co-occurrence patterns of *[the] ketogenic diet [is]*. In 9.4% of its corpus entries, the bundle is embedded within either interrogative sentences prefacing an upcoming definition – chiefly, *What is a ketogenic diet?* or *What can a ketogenic diet be used for?* – or declarative statements describing the main constituents of the diet, as in (1) below:

- (1) First developed in the 1920s, *the ketogenic diet* is a high-fat, low-carbohydrate and controlled-protein diet, which is used in the management of epilepsy in children. (*Young Epilepsy*)

In addition to the plain language of such occurrences, which hint at the overall amount of fats, carbohydrates and proteins in the diet, more specialized statements are attested. Typically, these are aimed at showing how the diet works, while at the same time explaining how it originated. In particular, after recalling reports from the 1920s on the beneficial effects of fasting on seizure control, 59.6% of the tokens of *in the body* collocate with the lemma *change*. This takes place in passages where the writers point out that the diet works by reproducing the metabolic alterations undergone by the body during starvation (2):

- (2) The diet was designed to mimic the metabolic changes that occur *in the body* during starvation, i.e. adaption to spare muscle protein breakdown and draw on energy reserves of body fat. (*Matthew's Friends*)

While outlining the background of the KD, Keto_UK corpus texts are interspersed with references to relevant research on the effectiveness of the diet against the onset of seizures and/or other illnesses. Accounts of applied research were detected to take two main forms. The first one is represented by generic references, whereby no specific researcher(s) or institution(s) are mentioned, and agentless passives are the preferred choice altogether. This applies to tokens such as those in (3) below. Of note, the two excerpts in the example respectively instantiate 35.9% of the occurrences of *as a treatment*, and 17.6% of those of *the diet is*:

- (3) Although clinical evidence is more limited, ketogenic therapy is also increasingly being explored *as a treatment* option for other disorders such as neurological cancers. (*Matthew's Friends*)

Increasingly *the diet is* being looked at in other neuro-metabolic conditions as well as Brain Cancer. (*Matthew's Friends*)

The second form in which research is reviewed is by referring to specific evidence, whether by quoting single expert voices – as in the first passage in (4) drawing on the expertise of a senior member from Boston College's Biology Department – or by setting out guidelines developed by leading institutions such as the UK National Institute for Health and Care Excellence in the second excerpt below:

- (4) “It [the ketogenic diet] enhances the metabolic efficiency of all your normal cells”, Seyfried says. “With cancer cells, they can only produce

the energy they need to grow via fermentation, which requires glucose. If you're limiting glucose, you're taking away their fuel [...]". (*The Guardian*)

Guidelines from the UK National Institute for Health and Care Excellence (NICE), updated in 2012, recommend 'Refer children and young people with epilepsy whose seizures have not responded to appropriate anti-epileptic drugs to a tertiary paediatric epilepsy specialist for consideration of the use of a ketogenic diet'. (<http://www.nice.org.uk>) (*Matthew's Friends*)

What (3) and (4) appear to share is more than a simple summary of state-of-the-art findings on the Ketogenic Diet. Rather, results are announced with a view to promoting the diet as both a proven therapy against drug-resistant epilepsy – cf. also the attributes *a recognised treatment* and *a proven form of therapy* in association with it – and one that holds promise as a treatment option for other disorders including neurological cancers. As we will see in the next sub-section, the latter was identified as an aspect differentiating the UK from the Irish discourse on the Ketogenic Diet very clearly.

In the British context, upbeat messages from research on the diet were ascertained as being closely tied to an overall strategy to establish the credentials of the diet. This can be seen from a few scattered occurrences of [*the*] *ketogenic diet* [*is*] as well as from an interesting pattern informing 13.8% of the corpus entries of *on the diet*. From a collocational perspective, there is a strong tendency of *on the diet* to co-occur with an indication of the improvements brought about by the diet and the generally short period of time in which they materialized.

The data so far would seem to imply that that UK associations, charities and media outlets of various sorts maintain a positive stance towards the administration of the diet, with Matthew's Friends as a driving force in promoting its benefits. However, it would be utterly incorrect to assume a lack of critical discussion about potential downsides of the diet.

Accordingly, it is possible to read the Epilepsy Society's Director of Clinical Genetics warning that "the ketogenic diet will result in seizure freedom for some but not for others", and the Society itself telling the story of a four-year-old who, despite taking "lots of antiepileptic drugs and being on the ketogenic diet", still "has some severe seizures". Moreover, more than a source in the Keto_UK corpus looks alert to the dangers of following a ketogenic dietary regimen without the supervision of qualified

medical staff. Hence, Prof Seyfried mentioned earlier on is reported by *The Guardian* to have stated that, “when done the correct way”, the diet ensures that “the blood parameters for the heart look beautiful”, while at the same time asserting that the diet “is not to be taken lightly and there are healthcare professionals who work specifically in administering it”. Finally, the registered charity Daisy Garland is adamant that the “risks of an unsupervised diet can result in malnutrition, chemical imbalances, vitamin deficiencies and may even result in death”.

More appropriately, therefore, the strategies unveiled by the use of bundles and their collocational as well as co-textual environments would be better accounted for as embedding a distinctively argumentative orientation. In particular, the UK discourse on the Ketogenic Diet may be said to be broadly supportive of the standpoint that epileptic patients have a right to gain access to information about the regimen, to the effect that the diet should be considered if anticonvulsant drugs fail in the desired objective. Not surprisingly, the standpoint is explicitly adopted in 26.6% of the occurrences of the bundle *drug-resistant epilepsy*, repeated just as in (5) below across texts published by Matthew’s Friends yet warmly endorsed by the other key players in the corpus as well:

- (5) All those with *drug-resistant epilepsy* should be able to gain access to these dietary treatments and be supplied with the correct information so that a properly informed decision can be made. (*Matthew’s Friends*)

Viewed pragma-dialectically, the standpoint often rests on symptomatic argumentation. This scheme is advanced when “a property, class membership, distinctive characteristic, or essence of a particular thing, person, or situation referred to in the argumentation also applies to the thing, person or situation referred to” in the standpoint (Van Eemeren, Houtlosser, and Snoeck Henkemans 2007, 154). In our case, as is shown in the schematization below, a symptomatic relationship is forged between the property of being lent credibility by scholarly research, and that of standing out as a proven form of treatment. Since the former is true of the Ketogenic Diet as of the argumentation proper (because Z is true of X...), the conclusion is warranted that the KD deserves the status of established therapy (Y is true of X). Taken together, the standpoint (S) in (5) above and the symptomatic argumentation are part of the simple argument structure reproduced in *Figure 1* below, where the standpoint appears to be supported by a single type of argumentative infrastructure, as it were.

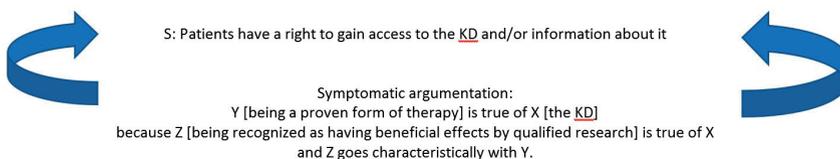


Figure 1. – Argument structure in the Keto_UK corpus.

3.2. Keto_Éir: A complex and multi-layered debate

As far as the Keto_Éir corpus is concerned, the debate on the Ketogenic Diet is less widely distributed than in Britain. In spite of the more limited number of sources in which it resonates, however, the discourse on the diet appears to be complex and multi-layered, as will be explained in the current section.

Predictably, the presence of definitions on the balance of nutrients in the diet, its biochemical effects and its therapeutic function was also established in the Irish texts. Most statements devoted to such preliminary aspects embed [*the/a*] *ketogenic diet* [*is*]. Interestingly, 27.7% of the definitional occurrences of the bundle are located in the same text, the short guide on the Ketogenic Diet published on the Health Service Executive's official website. One might guess that in its capacity as the country's leading health-care provider, the HSE undertook the vital task of disseminating concise yet reliable information about the diet, as in (6). The passage is of particular significance in that it succeeds in the serious attempt to clarify what is meant by "epilepsy that is difficult to control using medication", by specifying that that implies the use of no less than "two" appropriate anticonvulsants:

- (6) *The ketogenic diet* is an alternative treatment method for children who have epilepsy that is difficult to control using medication (in cases where the child has two or more epileptic seizures a week, despite using two or more appropriate anticonvulsant medications). (*Health Service Executive*)

Whether through institutional channels (cf. Epilepsy Ireland) or in the form of media accounts (e.g., *The Irish Times*), the dissemination of scientific knowledge regarding the diet encompasses the presentation of relevant research findings. As in the Keto_UK corpus, generic citations of research reports tend to co-exist with specific references to single investigations often within the same source. Nevertheless, the reception of the dietary regimen in the Republic of Ireland seems far more mixed than meets the eye.

On the one hand, the potential and the credentials of the diet in the treatment of drug-resistant epilepsy are hardly questioned. In fact, as is apparent from the concordance-based analysis, 9.3% of the entries of *[the/a] ketogenic diet [is]* and 28.6% of those of *on the diet* delve into the effectiveness of the diet, either more generically (cf. collocates such as *demonstrate the effectiveness; absolutely life-changing; an absolute miracle*) or more specifically, with reference to a decrease in the amount of seizures (i.e., *can reduce seizures by up 75pc; seizures decreased by one third*). Furthermore, the occurrences of *[the/a] ketogenic diet [is]* point to the increasing number of people advised to go on the diet (cf. *gaining in popularity*).

On the other hand, however, there is evidence of less favourable reactions in the Keto_Éir corpus. First of all, the Health Service Executive tends to advocate a cautious approach to the diet. Besides explaining what the regimen is all about, the HSE points out that the diet “has been used successfully in cases where controlling seizures using medication has proven difficult”, chiefly because the high levels of ketones in the blood “have been found to suppress epileptic seizures”. Nonetheless, the same text warns against using the diet without medical supervision, not least because “its effects have not been adequately studied in adults or children under one year of age”.

Secondly, the balanced judgments by the HSE can hardly be considered as voicing scepticism, if compared with the line of argument of both the Irish Nutrition and Dietetic Institute and, at least in part, the *Irish Independent*. In 6.7% of the tokens of *[the/a] ketogenic diet [is]* in the Keto_Éir corpus, the bundle derives a decidedly negative semantic prosody from its collocational surroundings – e.g., *is not easy to administer; could be very dangerous; should not be the first-line treatment*. Moreover, in virtually all occurrences, the negative views are not presented as the INDI’s or the *Independent*’s own, but rather as the informed judgment of an expert. A prime example of this is a passage where the person advising patients not to go on the ketogenic diet is no one less than Robert O’Connor, Head of Research at the Irish Cancer Society, namely the national charity for cancer care and the leading provider of all information relating to cancer prevention, detection, treatment and support.

How can such hostility be reconciled with the overtly positive thinking dominating the first instances discussed in this section? And why do the most scathing criticisms come from leading oncologists rather than, say, consultant neurologists? The answer might be that much of the debate on the Ketogenic Diet in Ireland has been triggered by the recent publication of *The Ketogenic Kitchen*, a controversial book co-authored by Irish

nutritionist Patricia Daly and restaurateur Domini Kemp, both of whom are cancer survivors. As early as in the opening pages of the book, Kemp and Daly (2016, 2) claim not only that “for decades the diet has been used very successfully to treat epilepsy, especially in children”, but also that “the most exciting developments have been seen in the last decade or so, when this way of eating – the keto lifestyle – has been shown to be beneficial in the management and treatment of illness, particularly cancer”. Not surprisingly, dieticians and oncologists felt personally involved, whether directly (INDI) or indirectly with a national newspaper as a mediator.

As a result of that, the (lack of) correlation between the Ketogenic Diet and cancer treatment sometimes has the lion’s share in the Irish discourse on the diet, with epilepsy slipping into the background. Not once is the latter even mentioned in the *Keto_Éir* texts from INDI, while the ongoing controversy over the role of the KD in treating cancer also persists as a defining trait of many an article published by the *Independent*. So much so that such texts were observed to share a distinctively argumentative orientation, with a homogeneous argument structure exemplified through excerpts from the INDI text *Ketogenic Diet not suitable for cancer patients*. At the heart of the structure is the standpoint that the Ketogenic Diet should not be recommended to anyone being treated for cancer. In turn, the standpoint rests on two main arguments lending independent support to it.

The first one is an argument from expert opinion, whereby “someone is defending the standpoint that a certain opinion is true or acceptable by referring to himself as an expert or by mentioning that an expert – other than the arguer – has asserted the same opinion” (Wagemans 2011, 331). In our case, as is clear from (7) below, the INDI refers to a variety of expert voices to legitimize the standpoint:

- (7) John Kennedy, a consultant medical oncologist at St James’s Hospital in Dublin and chairman of the Irish Cancer Society, said, however, that he would “certainly not recommend a ketogenic diet for anyone being treated for cancer”. [...]

Derek Power, a consultant medical oncologist at the Mercy University Hospital, Cork, and a member of the Irish Society of Medical Oncology, said that malnutrition, poor appetite and alterations in metabolism were common cancer symptoms, which led to severe muscle wasting in 50 per cent of patients. [...] One of the main claims of the ketogenic diet is that by cutting out carbohydrates, it starves a tumour of glucose. “This is untrue and there is no science, not a single human trial, to back this up”, Dr Power said. “In a ketogenic diet muscle and fat is broken down by the

body and converted to glucose which feeds a tumour. Many of the clinical trials on the ketogenic diet in humans have been abandoned”, he added. Lorraine Walsh, consultant radiation oncologist at the Mid-Western Radiation Oncology Centre, University Hospital Limerick, said that she was frequently asked by patients for her opinion on various “supposed beneficial cancer diets” including the ketogenic diet. “I always deliver the same consistent answer to patients – absolutely none of these diets or homeopathic remedies has ever been scientifically proven to improve a patient’s outcome from any form of cancer”. (*Irish Nutrition and Dietetic Institute*)

Taken together, Dr Kennedy’s opinion that the KD should not be recommended, Dr Power’s statement that there is no scientific basis for the diet’s putative role in starving tumours, and Dr Walsh’s denial that patient outcomes have ever been demonstrated to be improved by the diet, form an integral part of the INDI’s argument from expert opinion, as schematized in *Figure 2* (from Wagemans 2011, 337):

- 1 O [the KD should not be recommended for cancer patients] is true or acceptable.
- 1.1 O is asserted by experts E (Kennedy), F (Power) and G (Walsh).
- 1.1.1a E, F and G are experts in the relevant field H.
- 1.1.1’ Accepting that O is asserted by E, F and G renders acceptable that O is true or acceptable.

Figure 2. – Argument from expert opinion in the Keto_Éir corpus.

In order to strengthen the standpoint, the INDI then advances a second argument. This is not an argument *ad rem* debating the issue around which the difference of opinion revolves – i.e., the contribution of the KD to cancer treatment – but rather an argument targeting Daly’s own credibility as a nutritionist:

- (8) Ms Daly also offers “general cancer nutrition support” using a ketogenic diet and charges cancer patients US\$455 per month (€399), with 80 per cent of her work coming from online consultations. Ms Daly [...] trained and lectures at the privately owned Irish Institute of Nutrition and Health (IINH). It says its programmes have been “rigorously inspected, audited and approved by” Quality and Qualifications Ireland (QQI), the state body to which private providers can apply to have their programmes validated. QQI, however, said that this was “not correct” and that the IINH was not currently offering programmes leading to QQI-recognised awards. [...] It was not possible to get accreditation for the diploma in nutritional therapy – Ms Daly’s qualification – as it was not recognised as a healthcare profession in Ireland, Mr Burton added. He agreed that the reference to QQI on the website was incorrect. [...] In 2013 Ms Daly

was invited by the Irish Cancer Society to share her knowledge in an unpaid talk to some of the society's staff and nurses about the "benefits of a nutritionist's consultation" for cancer patients. On her website, Ms Daly says that she has ventured into motivational speaking and describes the society as one of her clients. The society said it was not a client of Ms Daly. (*Irish Nutrition and Dietetic Institute*)

In short, the INDI puts forward argumentation *ad hominem*, where someone attacks somebody else "either directly by depicting them as stupid, bad or unreliable (abusive variant) or indirectly by casting suspicion on the opponent's motives (circumstantial variant) or pointing out a contradiction in the other party's words or deeds (tu quoque – you too! – variant)" (Van Eemeren 2001, 143). In (8), one would hardly suggest that Ms Daly comes out of the INDI's picture smelling of roses. In fact, she is portrayed as both greedy (*charges patients US\$ 455 per month [...], with 80% of her work coming from online consultation*) and grossly unreliable, lying as she is accused of doing about her own qualifications (*QQI [...] said that this was "not correct" and that the IINH was not currently offering programmes leading to QQI-recognised awards*) as well as her clients (*The society said it was not a client of Ms Daly*). In line with the formalisation of direct *ad hominem* arguments in Walton (2010, 8), the INDI's argument could be schematized as in *Figure 3*, where A is of course Ms Daly herself:

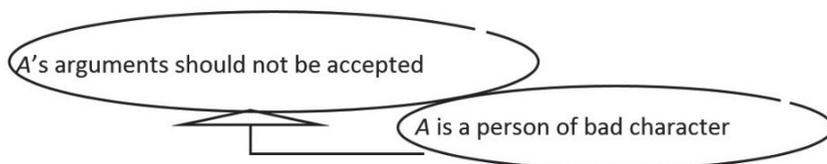


Figure 3. – Argumentation *ad hominem* in the Keto_Éir corpus.

Moving from the INDI to the *Irish Independent*, one may note that a similar argument structure is created. In the first place, the voices of Kemp and Daly's critics are again those of respected oncologists, e.g. Dr Kennedy and the whole of the Irish Cancer Society. Additionally, *ad hominem* argumentation appears to develop in a somewhat peculiar fashion. As is shown in (9) below, much of the journalist's reasoning remains in the implicit. Bearing in mind that Kemp and Daly are known to be cancer survivors, however, it might be inferred that Ms Gibson's utter inconsistency – between *claims of having cured brain cancer through diet* and the admission *that she lied about ever being ill* – and the resulting unreliability of hers somehow

spill over into Kemp and Daly's own reputation. Although (9) may not be read as levelling the defamatory allegation that Kemp and Daly also lied about their illness, the extract tends to leave one with the impression that being ill should not be taken at face value as a basis for speaking authoritatively, to say the least:

- (9) The debate about Kemp and Daly's book comes in a week where it emerged that an Australian wellness blogger's claims of having cured her own brain cancer through diet and lifestyle changes were entirely bogus. Belle Gibson, author of app and lifestyle blog *The Whole Pantry*, as well as a book of recipes, has admitted that she lied about ever being ill. (*Irish Independent*)

In both *INDI* and *Independent*, the framework for the writer's argument structure is that of multiple argumentation, where further arguments are advanced in the event that "the previous argument has failed or that the arguer expects that it might fail" (Snoeck Henkemans 2003, 411). In our case, argumentation *ad hominem* is raised in response to a potential objection to the prior argument from expert opinion, something in the order of: "Alright, the opinion of senior oncologists should be heard, but after all, Daly is also an expert and in addition, both she and Ms Kemp recovered from cancer themselves". In that regard, the *ad hominem* is functional to lowering Kemp and Daly's profile as experts from a community of practice, a status in contrast fully enjoyed by the experts quoted earlier on. Overall, therefore, the argument structure discussed in the last part of this section could be outlined as in *Figure 4*.

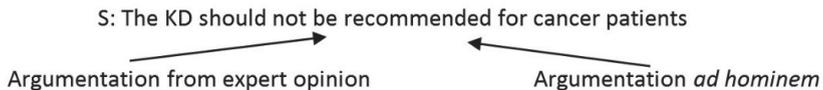


Figure 4. – Argument structure in *INDI* and *Irish Independent* texts.

4. DISCUSSION AND CONCLUSIONS

The analysis in this paper allows for a plausible answer to the research questions posed in the introduction. First of all, the status of the discourse on the Ketogenic Diet was observed to be somewhat different across the United Kingdom and the Republic of Ireland. On the one hand, we are witness to a wide array of sources evaluating the therapeutic use of the

KD and weighing its benefits in the UK. From newspaper coverage to the many pages published online by leading actors such as Matthew's Friends, the size of the Keto_UK corpus itself reflects the deeply-held conviction that the diet should be given proper consideration, especially in the treatment of drug-resistant epilepsy. Not surprisingly, on the other hand, the discourse on the KD in Ireland does not look as ramified as in the UK, no doubt for geographical reasons as well. Ireland being a smaller country, the voices on the Ketogenic Diet retrieved as part of the Keto_Éir corpus design are from the same kind of stakeholders – again, recognized charities and the press, with the Health Service Executive as an umbrella body, so to speak – yet they belong to a few predominant sources rather than a plurality of subjects.

In the second place, the representation of the Ketogenic Diet in the web-based materials of both corpora is characterized by both similarities and differences. To begin with, corpus evidence shows that the collocational patterns of the lexical bundles studied in the two corpora may be heterogeneous, as was observed for the use of *on the diet*. However, it is noteworthy that a continuum appears to exist between Keto_UK and Keto_Éir in terms of the overall information packaging shaping the discursive practices of the stakeholders involved. In both corpora, accordingly, appropriate emphasis is laid on the definition of the diet, its key-constituents and the underlying mechanisms. Furthermore, the vast majority of texts include reports into research findings related to the KD and its effectiveness with a view to different age-groups and conditions. The citation of research findings, whether generic or more specific, is an element that was associated with interesting argumentative implications relevant to the third research question formulated at the outset.

In the third place, moving on to the strategies worked out in both corpora to 'argue' the diet, the intersection of the two main stages of analysis, i.e. the corpus-based and the discourse-analytic, highlighted two major aspects. The first is that citing valuable sources was found to be the starting point of simple argumentative patterns, where the standpoint advocating access to (information about) the diet was supported by symptomatic argumentation in the Keto_UK corpus. In the Keto_Éir, conversely, the role of the KD as a significant component of epilepsy treatment is acknowledged, but at the same time citations from influential figures often fulfil different argumentative commitments. More precisely, in the context of an intense debate fuelled by Kemp and Daly's (2016) volume, citations frequently activate argumentation from expert opinion. Within a pattern of multiple argumentation, the argument scheme was isolated alongside

argumentation *ad hominem*, with both supporting the standpoint that the Ketogenic Diet should not be recommended to cancer patients.

On a methodological note, finally, the integration of quantitative perspectives with qualitative insights proved effective in pursuing the investigation more thoroughly. On the one hand, corpus findings confirmed that lexical bundles play an important role in organising discourse, because they enabled us to identify as well as to quantify usage patterns related to basic textual functions such as definition and citation practices. On the other hand, the results from the argumentative analysis allowed for the retrieval of argument schemes and patterns that might have gone unnoticed had the study been limited to quantitative evidence, only.

What is strongly argued here is that both stages of the methodology outlined in section 2 are necessary to a comprehensive understanding of web-based materials on such complex issues. First of all, the study of bundles is crucial to mapping out a few general strategies of corpus texts at a preliminary level. Secondly, the study of argumentative discourse sheds light on a number of more or less explicit commitments surrounding the explanatory surface of many a text. For instance, accounting for widespread schemes and patterns may show, among other things, how writers “can maneuver by either limiting or broadening the scope of the standpoint in a certain way, depending on what is most beneficial at that point in the discussion” (Andone 2014, 64). That was apparent in the texts by the Irish Nutrition and Dietetic Institute, where the limitation of the scope of the standpoint to the role of the Ketogenic Diet in cancer treatment only, with no mention of its value in epilepsy therapy, seemed instrumental in reinforcing the point that Kemp and Daly’s advice was not to be heeded, and the KD not to be administered to cancer patients.

The combination of corpus methods and discourse evidence envisaged here would benefit from either the prospective expansion of both Keto_UK and Keto_Éir over the next few years, or the inclusion of a third corpus for comparative purposes. Even in its current status, however, the study opens up paths of further research into dimensions only briefly mentioned in this paper. For example, it would be highly interesting to focus on a specific part of the two corpora, namely the stories of individual patients who were or are still reported to be on the Ketogenic Diet. Data could thus provide evidence on the role of emotionality in the construction of the argumentative discourse of people who might have sought relief in the diet, in comparison or in contrast to conventional anticonvulsant drugs.

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