

«I'm very interested in the possibility of ketone metabolism playing a role in the metabolic benefits of fibers».

Ketogenic diet on Twitter. A pilot study

Stefania M. Maci

Università degli Studi di Bergamo

- Background
 - What the ketogenic diet (KD) is
- Lit review
- Aim
- Methodological approach
- Results
- Discussion and conclusions

- Ketogenic diet (KD)
 - Developed in the 1920s
 - rich in fat and low in carbohydrates
 - Correlated with a reduction in the number of epileptic seizures
 - As from 1960s KD:
 - Treatment for obesity (Bueno 2013; Paoli et al. 2014)
 - In the 1990s, KD rejuvenated for the treatment of
 - child epilepsy and other neurological diseases (Falcicchia et al. 2018; Rho 2017)
 - migraine (Barbanti et al. 2017)
 - pain (Masino & Ruskin 2013)
 - neurological disorders (Kossoff 2013)
 - Cf <https://charlifoundation.org/> & www.matthewsfriends.org
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- «Ketogenic diets are characterized by a reduction in carbohydrates (usually to less than 50 g/day) and a relative increase in the proportions of protein and fat» (Paoli et al. 2013: 789)
- «Ketogenic diet (KD) is an established treatment for refractory pediatric epilepsy and a promising therapy for diverse neurological diseases» (Barbanti et al. 2017: S111)
- «A period of low carbohydrate ketogenic diet may help to control hunger and may improve fat oxidative metabolism and therefore reduce body weight.» (Paoli 2014: 2101)

From the medical perspective

- Efficacy of KD on epileptic children
 - Rubenstein et al. (2005); Groomes et al. (2011); McNamara et al. (2013); Walker et al. (2015); Selter et al. (2015); Kossoff et al. (2002, 2009, 2011, 2013; 2016); Kossoff (2016)
- Efficacy of KD in relation of pain and inflammation
 - Masino et al (2013)

From the linguistic perspective

- Health literacy and KD (in particular in the treatment of such chronic diseases as autism, epilepsy or other neurological diseases and the communication of the dietary requirements)
 - Cavalieri (2019, in press); Cavalieri & Diani (forthcoming); Bondi & Sezzi (in press); Diani (in press); Poppi & Lazzaretti (in press)
- Argumentative resources and the role of emotion on argumentation around the KD debate
 - Mazzi (2018; in press)

- Web 2.0 has changed the process of medical knowledge (e-health) transference due to social media (Dynell 2014)
- Web-based social media are re-engineering the doctor-patient interaction (Hawn 2009)
 - Web-blogs
 - Video-chats
 - Social networks
- A lot of studies investigating the role of digital media in the dissemination of medical discourse (Vicentini 2012; Grego & Vicentini 2015; Luzón 2015; Tessuto 2015; Turnbull 2015a, 2015b; Mattiello 2017).
- However, to the best of my knowledge no empirical research has been conducted on the use of Twitter for KD to enhance health literacy

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- The aim of this talk is to present how the discourse around the KD debate is developed on Twitter
 - How is KD presented/described on Twitter?
 - Can Twitter be a *locus* where (e-)health literacy can be developed?

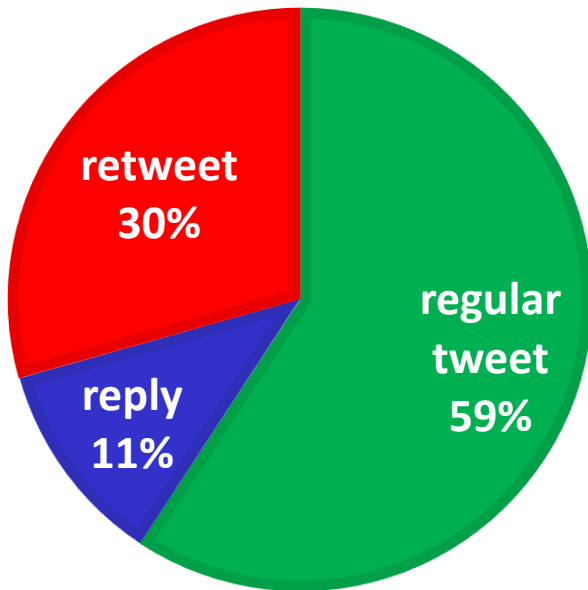
Methodological approach

- Tweets exported in 14-22 April & 9-17 May 2019
 - Socialbearing.com
- Keyword: *keto**; *ketone*
- Hashtags:
 - #keto; #ketodiet; #ketodietapp; #ketofam; #ketofood; #ketogenic; #ketogenicdiet; #ketolife; #ketolifestyle; #ketorecipes; #ketosis; #ketoweightloss
 - KD as an acronym for *ketodiet/ ketogenic diet*
- 11,331 tweets from all over the world
 - Quantitative analysis (Sketchengine; WMatrix)
 - Qualitative analysis

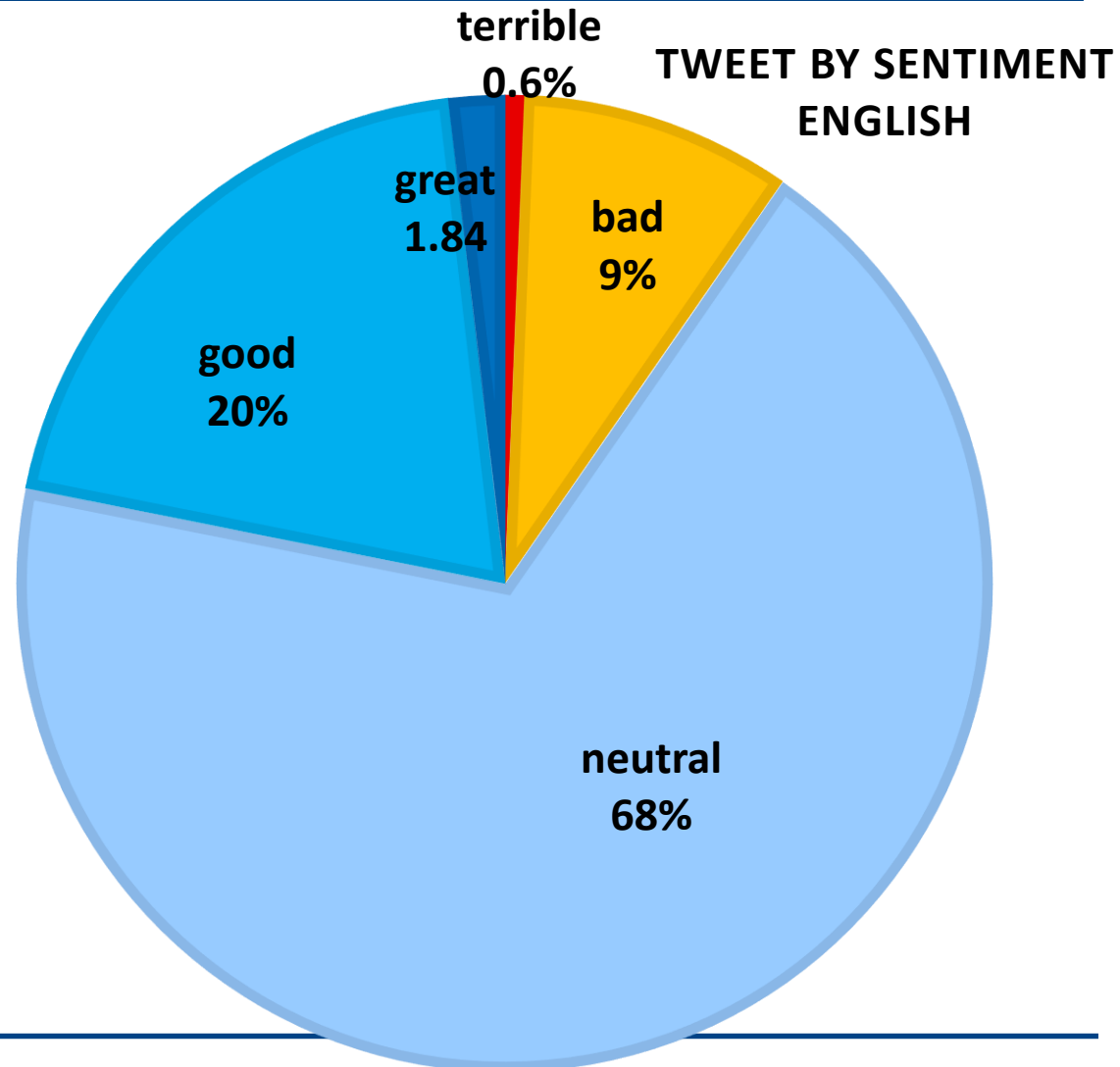
Results: 11,331 tweets from all over the world

=> 4,547 tweets in English (tokens: 83,189; types 59,471)

TWEET BY TYPE
ENGLISH



TWEET BY SENTIMENT
ENGLISH



2-6-grams word

Word	↓	Count ?	Word	↓	Count ?	Word	↓	Count ?	Word	↓	Count ?								
1		ketogenic diet	141	...	14		on the keto diet	12	...	27		a diet	9	...	40		this diet	6	...
2		keto diet	117	...	15		<u>ketogenic diet is</u>	12	...	28		Best keto diet for fat loss	9	...	41		on a ketogenic diet	6	...
3		Keto diet	45	...	16		diet to	11	...	29		Best keto diet for fat	9	...	42		<u>keto diet is</u>	6	...
4		<u>the ketogenic diet</u>	39	...	17		The ketogenic diet	10	...	30		Best keto diet for	9	...	43		diet with	6	...
5		<u>the keto diet</u>	36	...	18		keto-diet-now pic.twitter.com	9	...	31		Best keto diet	9	...	44		diet that	6	...
6		a ketogenic diet	35	...	19		keto diet for fat loss is	9	...	32		on a keto diet	8	...	45		diet in	6	...
7		diet is	29	...	20		keto diet for fat loss	9	...	33		ketogenic diet has	8	...	46		diet but	6	...
8		diet for	27	...	21		keto diet for fat	9	...	34		keto diet and	8	...	47		diet I	6	...
9		diet and	19	...	22		diet has	9	...	35		the diet	7	...	48		or ketogenic diet	5	...
10		Ketogenic diet	18	...	23		diet for fat loss is available	9	...	36		<u>ketogenic diet for</u>	7	...	49		on the ketogenic diet	5	...
11		<u>keto diet for</u>	14	...	24		diet for fat loss is	9	...	37		diet pic.twitter.com	7	...	50		of a ketogenic diet	5	...
12		a keto diet	14	...	25		diet for fat loss	9	...	38		diet as	7	...					
13		the Keto diet	13	...	26		diet for fat	9	...	39		your diet	6	...					

keto diet is what

1. A *low carb diet*

1. The **keto diet is** a *very low carb diet* that makes the body think it is fasting.
2. (b) BEGINNERS GUIDE TO KETO DIET. The ketogenic or **keto diet is** a *diet low in carbohydrates*, consisting mainly of high-fat foods

2. The **keto diet is** *chemically starving your cells*

3. I'm sorry, but I think the **keto diet is** kinda ridiculous.

4. The **keto diet is** actually REALLY bad for you. No wonder all Keto guys enjoy coffee

Keto diet for what

- keto diet for *fat loss* (9 hits)
- keto diet for loosing weight (1 hit)
- keto diet for cancer/diabetics/bipolar disorder (4 hits overall)
- keto diet for X amount of time (13 hits)

Ketogenic diet is what

ch You do know you can lose, maintain or gain body fat on a ketogenic diet, right? A
idea than eating whole grains is to stop eating all grains and starchy vegetables. A #
ey were doing it wrong". No, they weren't. It's just wrong in general. 🧐 @vicebaeee
youtu.be/zrRDnLJdmQ via @YouTubeWorks for me, I've never felt better A keto or
th and performanceWhat can you eat? Here is a recipe you will like #AALI A keto or
#KetoTransformation pic.twitter.com/mmabQNufi A keto sandwich. So delicious A
tion, including insulin, may be gone within a few days. #keto #diabetes #t2dm #if A
nsive needs to be adjusted sometimes quickly as well. So there is significant risk if a
Ketogenic #Diet drsaday.com/2019/03/05/the... pic.twitter.com/lcvKss3yg3 The #
etone bodies in migraine prevention.buff.ly/2ZfGiEf pic.twitter.com/QzQFI2fIF3 The
need of hundreds of units of insulin evaporate in days or weeks. A thread 1/8 The
ow.ly/l18j50q2akB#keto #ketogenic #diet #weightloss #supplements #health The

ketogenic diet is not a weight loss diet, it is a body composition normalisation diet.
ketogenic diet is slowly being recognized as the best lifestyle choice for #diabetics
ketogenic diet is great for losing weight @vincentninja68 @bulkbiker @jerryteixeira
ketogenic diet is a very low-carb diet, which can help you burn fat more effectively,
ketogenic diet is a very low-carb diet, which can help you burn fat more effectively,
ketogenic diet is more powerful than any drug I've ever prescribed to treat diabetes
ketogenic diet is potent. There is significant risk of hypoglycemia if a patient
ketogenic diet is used in a patient at risk of complications due to their background m
ketogenic diet is sometimes recommended for children whose seizures have not resp
ketogenic diet is a powerful tool to treat T2D. For many patients it is absolutely life ch
ketogenic diet is an intervention that the physician, patient, & dietitian all need to be
ketogenic diet is one treatment option for children with #epilepsy whose seizures are

Ketogenic diet for what

mitochondrial function. " Listening to @ChrisPalmerMD discuss **ketogenic diets for** **psychiatric indications**. #imhc2019 pic.twitter.com/DbgqG7J8Mr

at causes muscle loss? @DrFeinman's fundraiser for studying **ketogenic diet for** **cancer**. facebook.com/search/top/?q=... Wow, grateful for the sup

ld me about it when we were discussing my choice to use the **ketogenic diet for** **clinical therapy** @ElementalEcho @KetoMojoGogo @DrRalphNap

s mostly using weights to tone up @mookpixie I've been on a **ketogenic diet for** a few weeks, **losing excess fat** and no more blood sugar crashes. C

LD. (Followed by #LCHF). @MrEwanMorrison I was on a strict **ketogenic diet for** **two years plus** some mitochondrial function supplements. Last ye

the-sc... #carnivore #keto #yes2meat Anyone recommending **ketogenic diet for** **cancer patients** talks out their posterior. Not only is it useless, it a

o get on your next grocery shopping trip, if you're following a **ketogenic diet for** **diabetes reversal or other reasons**. #keto #diabetic #lowcarb ow.l

Hungarian diabetologist recommends the use of a Paleolithic **Ketogenic diet for** **pregnancy diabetes**. One day after starting with PKD, there is no i

the crazy diet: Cleanse Your Body With The Ultimate Plant-Based **Ketogenic Diet for** **Weight Loss, Burn Fat, Boost Energy, and Ca** toptenlist.info/keto-v

n good shape by giving them the right food to eat. Consider a **Ketogenic diet for** **your pup today!** It is so hard to Keto when you don't like eggs om

ixme5J Ketogenic Diet :The Step by Step Guide For Beginners. **Ketogenic Diet For** **Weight Loss**. amzn.to/2uDDpxb By Jamie Ken Moore Ketogenic Di

n/recipes/health... New post (Eric Westman, M.D.: Update on **Ketogenic Diet for** **Obesity, Diabetes, and Metabolic Syndrome**) has been published

ore: bit.ly/2W1fitt pic.twitter.com/8LOqZp4Rj7 The Complete **Ketogenic Diet for** **Beginners: Your Essential Guide to Living the Keto Lifestyle** bit.ly/2

mic Metastatic Cancer ncbi.nlm.nih.gov/pmc/articles/P... The **ketogenic diet for** **type II bipolar disorder**" mood stabilization that exceeded that ach

Ketogenic diet as a medical treatment in 47 (ca.10%) concordances out of 426

Keto diet as a medical treatment in 4 (ca.1.5%) concordances out of 251

- Actually we find heart conditions improve on Atkins like diet. No wonder they are trying ketone supplements for heart failure. It's now shown clearly that SGLT2i generates ketones which is a superfuel for the ailing heart. The same effect produced by a **ketogenic diet**.
- Dr. Christopher M. Palmer shares the results of his new paper that suggests that a **ketogenic diet** may play a role in treating schizophrenia. #ketogenicdiet #schizophreniatreatment
[ow.ly/YN7650qODLs](https://www.ow.ly/YN7650qODLs)
- On a **ketogenic diet**, anti-hypertensive needs to be adjusted sometimes quickly as well. So there is significant risk if a **ketogenic diet** is used in a patient at risk of complications due to their background meds or due to lack of proper supports and supervision.
- Pilot study of a **ketogenic diet** in relapsing-remitting MS nn.neurology.org/content/6/4/e5... "KD is safe, feasible, and well tolerated in subjects with relapsing MS. KD improves fatigue & depression while also promoting weight loss & reducing proinflammatory cytokines»
- Dr. Feinman's fundraiser for studying **ketogenic diet for cancer**
- get on your next grocery shopping trip, if you're following a **ketogenic diet** for diabetes reversal or other reasons
- The **ketogenic diet** for type II bipolar disorder mood stabilization

(all the rest about its success in losing weight or in keto recipes or in keto products)

- The good folks over at Perfect **#Keto** are giving all of our followers 15% off everything in the store. Unlike other supplements, these are designed specifically for the needs of those on the **#ketogenic diet**
- These almond butter cups are the bomb 🤯 The **#fatbomb** 🤯 Being on a **#ketogenic diet** doesn't mean you have to do without the flavors that you love. It just means letting your creativity
- **ketogenic diet** is great for losing weight
- Is the **ketogenic diet** the latest fad diet, or is there science backing this diet?
- One of the trendiest diets of late is no doubt the **ketogenic diet** - it consists of high-fat, moderate-protein and minimal carbohydrates
- Try **Keto**. That's how I lost my weight so fast
- Thanks for trying Slimfast **Keto**
- • Anyone recommending **ketogenic diet** for cancer patients talks out their posterior

- Health literacy should start from new knowledge to be integrated with existing knowledge in order to make appropriate decisions as to whether to adopt a new treatment, that is KD (Cavalieri, in press)
- In Twitter,
 - the diet can be defined as a dietary / medical treatment when it is *ketogenic*
 - The diet is mainly defined as an aesthetic treatment when it is *keto*

Z99	Unmatched	14076	26.31	B3	Medicines and medical treatment	194	0.36
Z5	Grammatical bin	10242	19.15	X2.1	Thought, belief	191	0.36
Z8	Pronouns	3676	6.87	Q2.1	Speech: Communicative	184	0.34
F1	Food	3001	5.61	A14	Exclusivizers/particularizers	183	0.34
A3+	Existing	1268	2.37	N5+	Quantities: many/much	181	0.34
N1	Numbers	643	1.20	A2.1+	Change	180	0.34
M6	Location and direction	625	1.17	Z2	Geographical names	177	0.33
A1.1.1	General actions / making	530	0.99	Z3	Other proper names	167	0.31
A9+	Getting and possession	479	0.90	A5.1+++	Evaluation: Extremely Good	162	0.30
Z6	Negative	472	0.88	N4	Linear order	160	0.30
T1.3	Time: Period	471	0.88	T1.1.3	Time: Future	157	0.29
B1	Anatomy and physiology	464	0.87	X2.2+	Knowledgeable	154	0.29
Z1	Personal names	436	0.82	T2+	Time: Beginning	149	0.28
01	Substances and materials generally	398	0.74	P1	Education in general	149	0.28
A7+	Likely	361	0.67	E2+	Like	135	0.25
02	Objects generally	352	0.66	I1	Money generally	133	0.25
A2.2	Cause&Effect/Connection	349	0.65	S2	People	132	0.25
S8+	Helping	332	0.62	X2.4	Investigate, examine, test, search	127	0.24
M1	Moving, coming and going	325	0.61	M2	Putting, pulling, pushing, transporting	126	0.24
A5.1+	Evaluation: Good	297	0.56	I1.2	Money: Debts	121	0.23
N5.1+	Entire; maximum	278	0.52	A1.5.1	Using	118	0.22
Q2.2	Speech acts	268	0.50	N5-	Quantities: little	117	0.22
T1.1.2	Time: Present; simultaneous	242	0.45	A6.1-	Comparing: Different	117	0.22
Z4	Discourse Bin	241	0.45	N3.2+	Size: Big	116	0.22
A13.3	Degree: Boosters	240	0.45	A6.2+	Cause/Effect/Connected	114	0.21
N5	Quantities	236	0.44	A12+	Easy	113	0.21
B2-	Disease	234	0.44	K5.1	Sports	112	0.21
N5++	Quantities	225	0.42	X5.2+	Interested/excited/energetic	109	0.20
N3.5	Measurement: Weight	213	0.40	L3	Plants	108	0.20
S6+	Strong obligation or necessity	211	0.39	S9	Religion and the supernatural	108	0.20
L2	Living creatures: animals, birds, etc.	210	0.39	N3.7-	Short and narrow	106	0.20
X7+	Wanted	207	0.39	Z7	If	105	0.20
F2	Drinks and alcohol	204	0.38	X8+	Trying hard	104	0.19
				X3.4	Sensory: Sight	103	0.19
				B2+	Healthy	100	0.19
				T3-	Time period: short	100	0.19

EVALUATION: GOOD

good	A5.1+	77	0.14
great	A5.1+	69	0.13
well	A5.1+	23	0.04
super	A5.1+	16	0.03
positive	A5.1+	14	0.03
improve	A5.1+	10	0.02

- *Good* luck/idea
- *Great!*
- *great* recipes
- *great* ideas
- *Well, ...*
- *Super* easy
- *super* fast
- *Positive* #feedback
- *Improve* metabolism
- *Improve* health
- *Improve* athletic performance

EVALUATION: EXTREMELY GOOD

best	A5.1+++	81	0.15
perfect	A5.1+++	44	0.08

- *Best* keto food
- *Best* ketogenic diet
- *best* keto recipes
- *Best* accurate keto strips
- *Perfect* time to start keto diet
- *Perfect* kit for diabetics
- *Perfect* solution for those on keto
- *Perfect* keto chocolate ice cream

RELIGION AND SUPERNATURAL

Easter S9 39 0.07

god S9 5 0.01

magic S9 5 0.01

myths S9 4 0.01

- KETO IS THE TRUE *GOD*
- *magic* bar
- *magic* ketone drinks
- Diet *myths*
- *myths* surrounding the ketogenic diet

Conclusions

- KD used for medical reasons
- On Twitter, KD diet is mainly presented as a diet low in carbohydrates
- In tweets narratives, it is mainly found as ***ketogenic diet*** or ***keto diet***
- ***Ketogenic diet*** can refer to the diet used as a medical treatment
- ***Keto diet*** refers to the diet used as an aesthetic treatment

Conclusions

- The key semtags found with Wmatrix are those compatible with medical treatments and diet for losing weight
- 3 semtags are particular: those related to evaluation (*good/extremely good*) and religion (*magic/god-like*)
- The analysis has revealed that they are actually related to the prodigious qualities of ***keto*** products for losing weight

- **Twitter apparently is the *locus* where (e-)health literacy has still to be developed => work to be done in this direction**
 - **This investigation can open up paths of further research into dimensions only briefly mentioned in this presentation**
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- www.matthewsfriends.org

Supplementary slide: #keto #ketogenic

Results: 11,331 tweets

Tweets by sentiment

