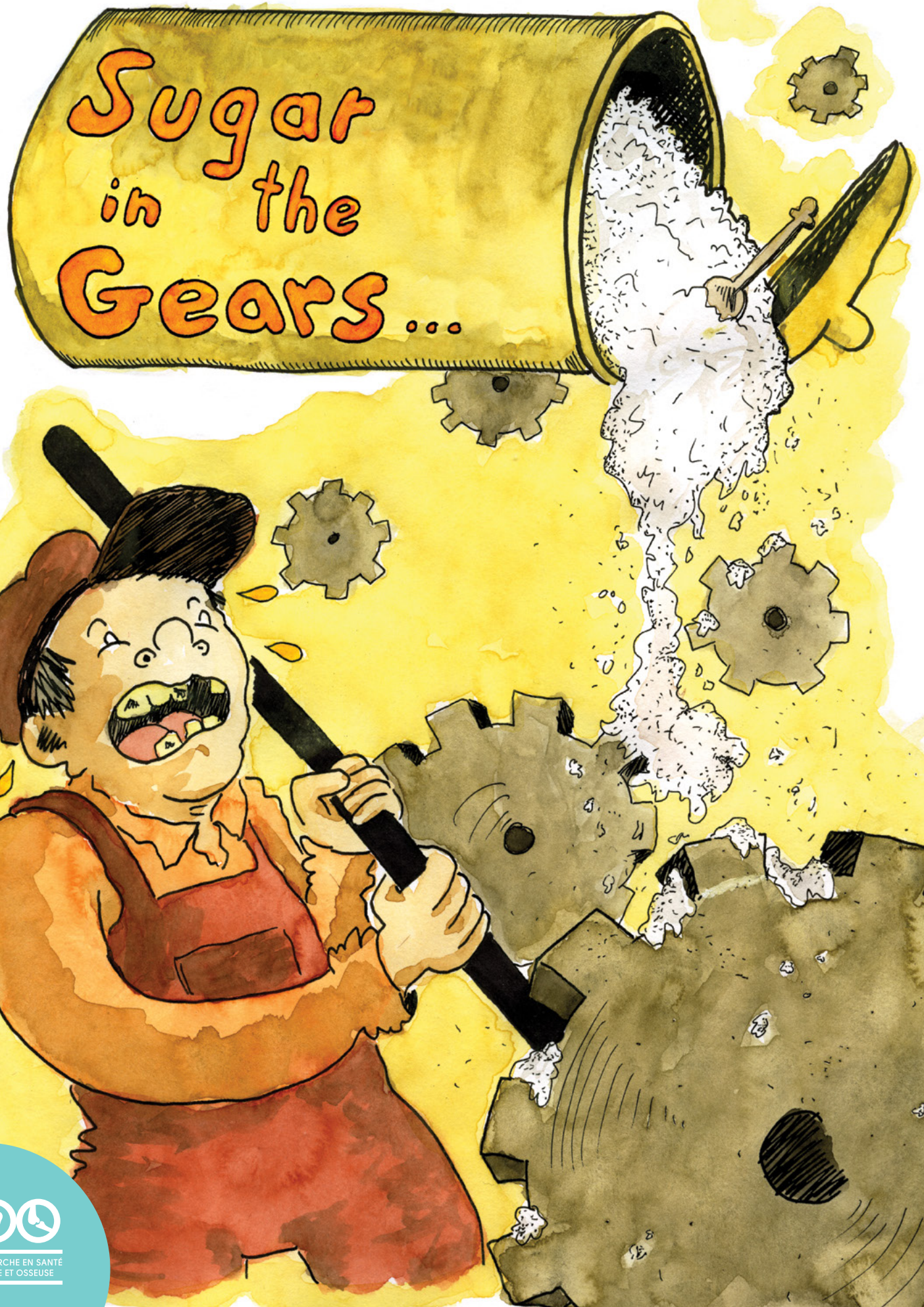




FOREWORD

Science is intimidating for the average person. Scientific studies are all too often explained in a clinical manner, the subject matter is advanced and complicated to understand... Consequently, it is easy to believe, wrongly, that researchers are disconnected from the general public. Their projects, therefore, remain generally unrecognized and unappreciated, while false information flourishes and becomes more attractive.

Research into oral and bone health is particularly unpopular. There is a general tendency toward denial: this field of expertise elicits aversion, since it is too often associated with pain (fractures) or even disgust (oral infections, oral cancer, etc.).

This collection has the mission of reversing this tendency by informing you of major advances in the field. We want to show you what health research is and share our passion with you. Research is one of the drivers of humanity, but researchers must better communicate and explain how their work contributes to the welfare of individuals, the environment, and society.

In order to highlight the research and its members in an original way, the Network for Oral and Bone Health Research (RSBO for "Réseau de recherche en santé buccodentaire et osseuse") retained two artists in residence, Daniel Ha and Martin PM. For more than a year, Daniel and Martin met with our researchers across Quebec and visited their labs. In the following pages, you can read and enjoy their comics, and thereby discover along with them, the extraordinary work being done by our researchers.

We hope that these pages will inspire you and allow you to see the scientific research in the field of oral and bone health with new eyes. Perhaps it will elicit among the younger crowd the desire to study the sciences and, who knows, become researchers themselves?

RSBO Art and Science Committee

Dr. Christophe Bedos, RSBO Director

Dr. Argerie Tsimicalis, Researcher and RSBO Member

Dr. Marta Cerruti, Researcher and RSBO Member

Dr. Andrée Lessard, RSBO Manager

Martin Patenaude-Monette, RSBO Artist in Residence

Daniel Ha, RSBO Artist in Residence

WHAT IS IT?

WHAT IS THE RSBO?

For more than 25 years, the Network for Oral and Bone Health Research (RSBO for “Réseau de recherche en santé buccodentaire et osseuse”) tirelessly supports Quebec researchers and their students in the pursuit of excellence in fundamental, clinical, and epidemiological research. The Network numbers more than 100 researchers and over 300 students predominantly from McGill University, Université de Montréal and Laval University, as well as their affiliated hospitals (notably CHU Sainte-Justine, Shriners Hospitals for Children-Canada, Montreal General Hospital, Jewish General Hospital and Montreal Sacred Heart Hospital).

The RSBO network is funded primarily by the “Fonds de recherche du Québec – Santé” (FRQS). It also relies on partnerships with associates from different backgrounds, notably professional organizations in the field of oral and bone health as well as associations which represent the most underprivileged people in our society. This is how the RSBO network brings together the stakeholders in our social fabric – scientific community, clinicians, populations and users of healthcare services, as well as administrators, decision makers and industries – with an eye toward producing knowledge on health and oral and bone diseases, but also to take this knowledge and apply it.

The actions of the RSBO network fall within the national strategies for promoting health as well as those set forth by the World Health Organization. The Network aims to promote the health and welfare of the Quebec population, to reduce inequalities in healthcare, but also to contribute to the economic and social vitality of Quebec. Actions taken by the RSBO network can, in fact, stimulate the retention or return to employment of more vulnerable people, develop highly qualified personnel, generate the development of new technologies, or encourage scientific entrepreneurship and the production of patents.

Transmitting knowledge is one of the major goals of the RSBO network. This is why we created the Art and Science Committee, which promotes scientific research and health of the Quebec society through the arts. The RSBO network considers that sciences and the arts, far from being antithetical, can in fact mutually feed each other, combine, and ultimately, benefit the entirety of the population.

ART & SCIENCE

This comic collection is a creative and original way to raise awareness in our fellow citizens about research done here, especially on a subject like oral and bone health, which can be quite off-putting for the uninitiated. And yet, the research we are doing is fundamental for all of us.

The idea of doing a collection of comics is exactly right coming from the RSBO Art and Science Committee, and a great approach to demystifying everything that happens in our mouth, from the effect of sugar on our teeth to oral ecology, as well as 3D technology to foster stronger bones, and other activities which take place between our nose and our chin...

Due to its excellence in research, the Network is supported by the “Fonds de recherche du Québec – Santé” (FRQS). It seems so very pertinent and important to me that the general public better understand the research being done since, in the end, it is they who benefit from it, even if they don't realize it.

At a more basic level, it is important to raise awareness concerning science and research in the general population: the methods, approaches, questions, and uncertainly, but also the discoveries, results, and accomplishments! It is important to increase the number of opportunities to present science to the population, young or old, so that scientific expertise becomes the first instinctive source we turn to when we ask questions on any particular subject. Calling on art is definitely a good way to stimulate curiosity.

I commend the Network for its initiative in raising awareness for its expertise and projects, and perhaps generating interest among the new generations of students who are wondering about their future. Who knows? Perhaps, despite a little bit of apprehension, this comic collection might help you better appreciate your next visit to the dentist!

*Rémi Quirion,
Chief Scientist of Quebec*

SUGAR IN THE GEARS



MARY ELLEN MACDONALD, PH. D.

Associate Professor, Faculty of Dentistry McGill University

Why don't we take a look at the history of oral health?

How long ago were the first toothbrushes used?

The first mention of tooth decay?

Dr. Mary Ellen Macdonald is a medical anthropologist. She is interested in a holistic approach to oral health, a field of research which considers individuals as a whole. Therefore, on top of their medical condition, the social, political, and cultural environments are also included in order to paint a complete portrait of an individual's health.



MARTIN PM

Martin Patenaude-Monette, also known as Martin PM, hails from Montreal. He brushes his teeth at least twice a day, but usually three times. However, he is not quite as rigorous when using dental floss, which he consents to using occasionally, especially when he has a piece of popcorn stuck between his teeth. Curious by nature, he is interested in scientific research, social issues, and politics. He sees comics as a powerful medium for addressing scientific and social issues, by combining text and images.

www.martinpm.info

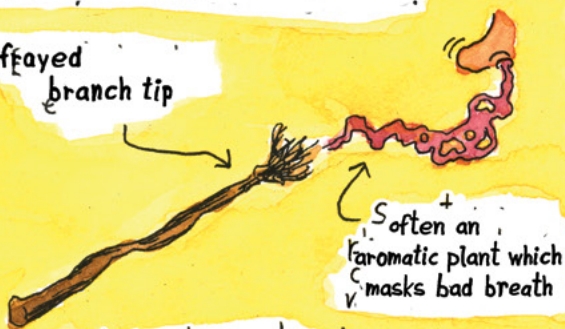
[instagram.com/martinpm.bd](https://www.instagram.com/martinpm.bd)

Did you ever wonder **when** humans began brushing their teeth?



We found the earliest rudimentary toothbrushes around 3000 BCE in the Babylonian and Egyptian civilizations.

frayed branch tip

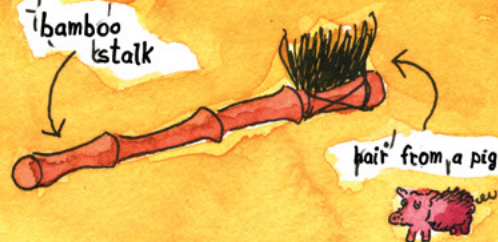


Soften an aromatic plant which masks bad breath

It was usually chewed rather than used to brush the teeth.

The first real brushes were seen in China in the 15th century.

bamboo stalk



hair from a pig

However, the use of these tools was sporadic and often reserved for the elite.

Even without brushes, our ancestors' teeth in the Middle Ages were healthier than ours.

I have the antidote against rotting!



Expectation

Why, my good Squire?



Our pride is not diminished by decay!

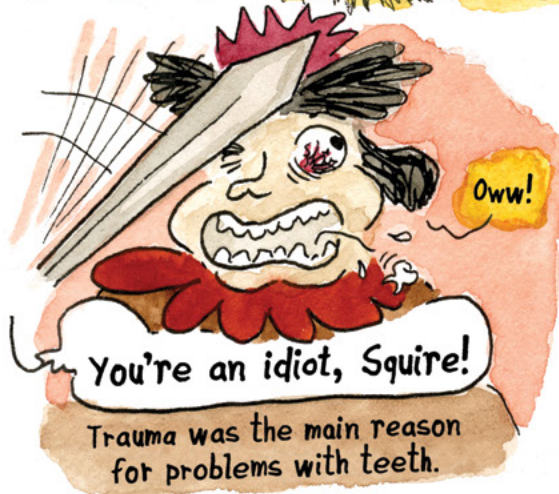


Reality



Of course, Sire!

Our ancestors mostly ate stews and bread made with whole grain cereals: barley, oats, rye.



Refined sugar, from the Orient, was first eaten by the nobility.



At one extreme of this spectrum, Louis XIV overindulged in candied fruit and other sweets.



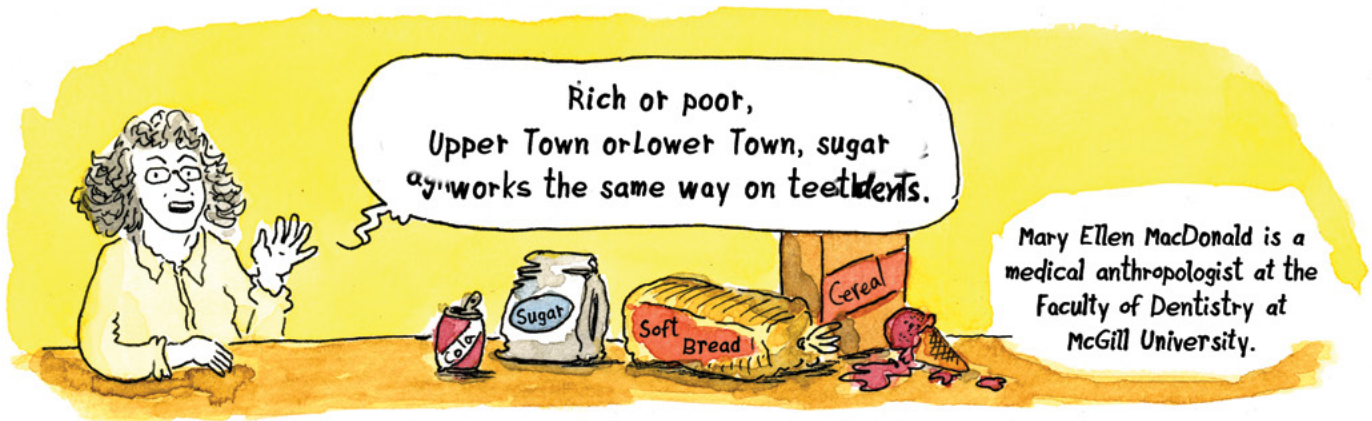
There were consequences to his teeth...



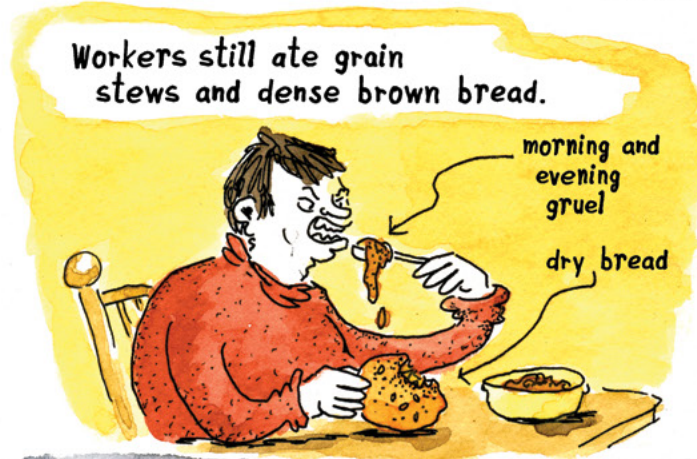
An operation to remove his last teeth left him with a hole in his palate...



Sugar eventually made it to the table of the bourgeoisie and then even those of modest means.



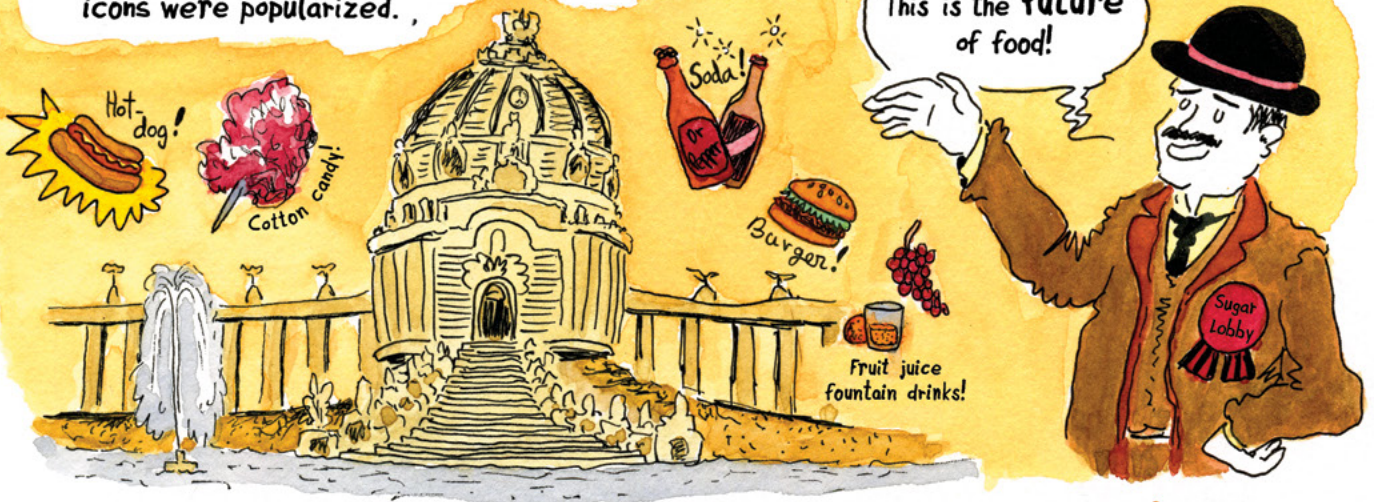
With the Industrial Revolution in England in the 18th century came urbanization, labourers, and the democratization of sweet tea.



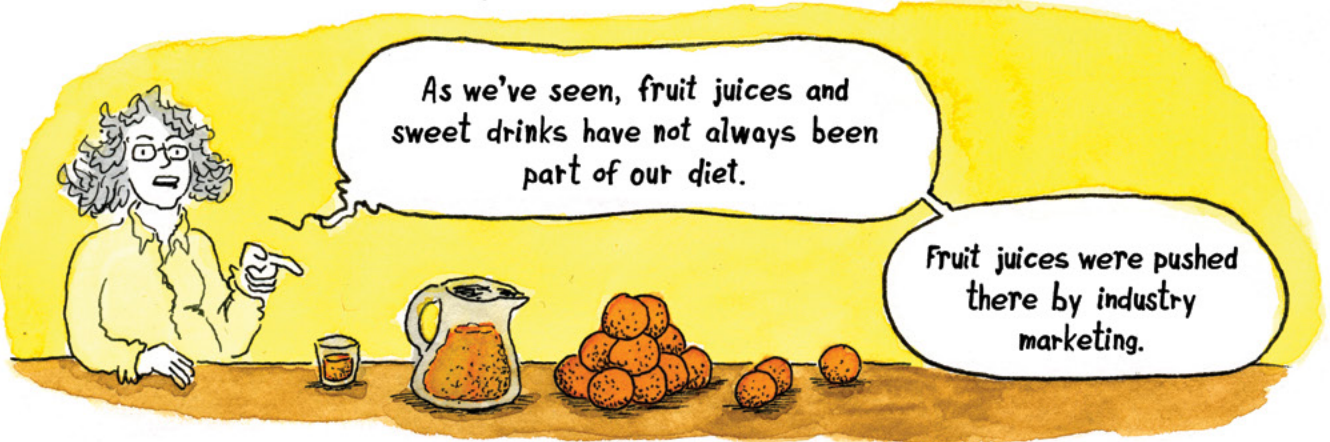
These profound social changes happened one after the other until confectionery became affordable in the 19th century. Even children could buy candy for a penny!



The turning point was perhaps the St. Louis World's Fair in 1904, where several fast-food icons were popularized.



Cotton candy is 100% pure sugar. It's easy to understand that it has no nutritive value. But what about fruit juices?



Haven't we seen this before?



A good home-made glass of orange juice is like drinking a Coke.

A declaration which was highly controversial, but which proves to be true if we take a look at sugar content.

29g



=



21g



oranges

Fruit juice
...apple 27g
...cranberry 31g
...grape 38g

Olivier Bernard aka "The Pharmafist", on the TV show "Tout le monde en parle", Radio-Canada, Nov. 27, 2016.

A glass of



contains as much sugar as

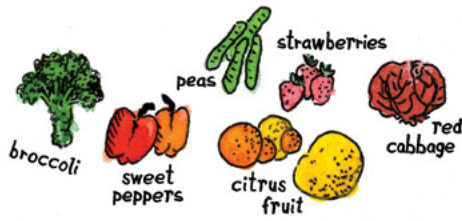
2 fruit



(but without the fibre!)

These 500mL are enough to fulfill the daily Vitamin C needs of a child.

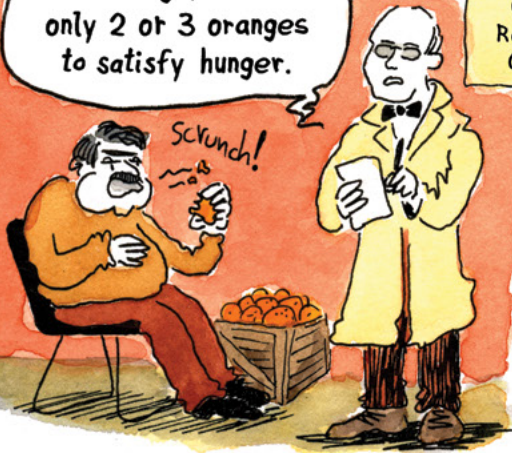
However, we can get this precious vitamin C from places other than juice.



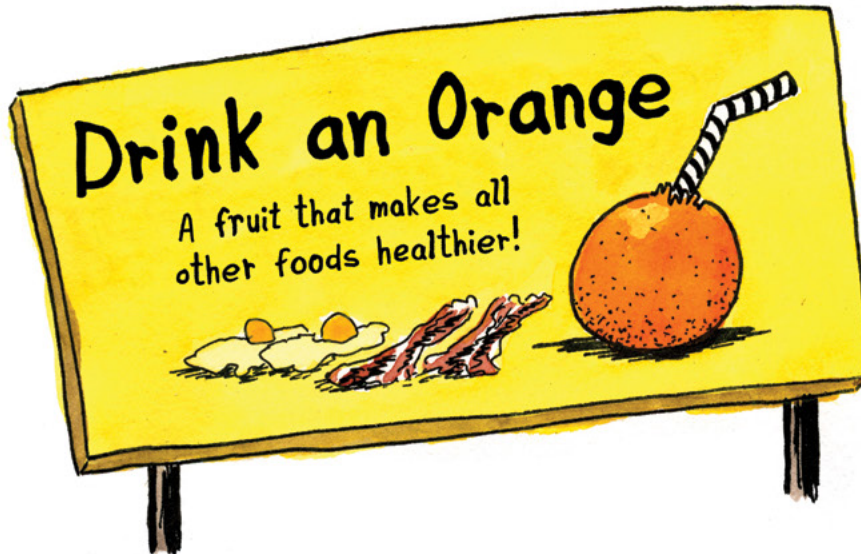
In the 1920s, American orange farmers were concerned more with the overabundance of oranges than with vitamin C.



On average, it takes only 2 or 3 oranges to satisfy hunger.



By transforming them into juice, the volume of oranges swallowed is tripled or even more!



It's marketing that made orange juice into a breakfast staple and a "healthy" drink despite its high concentration of sugar and altered nutrients...

Now, we fully understand the link between sugar and tooth decay.



So why don't we do anything about it?



Most health professionals have agreed to adopt a holistic approach.

In other words, considering a person as a whole, not just their tooth decay.

* See the comic on Oral Ecology.

In practice, however, lots of researchers and therapists work isolated from others. Each one focuses on one very precise aspect of health or a disease.



Medical anthropology calls upon social sciences, linguistics, biology, and culture to better understand health and well-being.

It seeks to understand how knowledge about health is socially constructed by various systems...



It studies health at different levels...



It also studies how we make sense of the experience surrounding disease and healthcare.



Or the cultures surrounding medical professionals: how they interact among themselves, whether it's by collaborating while defending their field of study, etc.



You each have precise treatments, but have you thought about working together on prevention with respect to patients' vulnerabilities?

Researchers and other professionals are often more open to a point of view that comes from somewhere completely outside their area of expertise.

Like medical anthropology, which is sort of out in left field with respect to other colleagues with similar expertise



Lots of health problems come from our faulty systems.

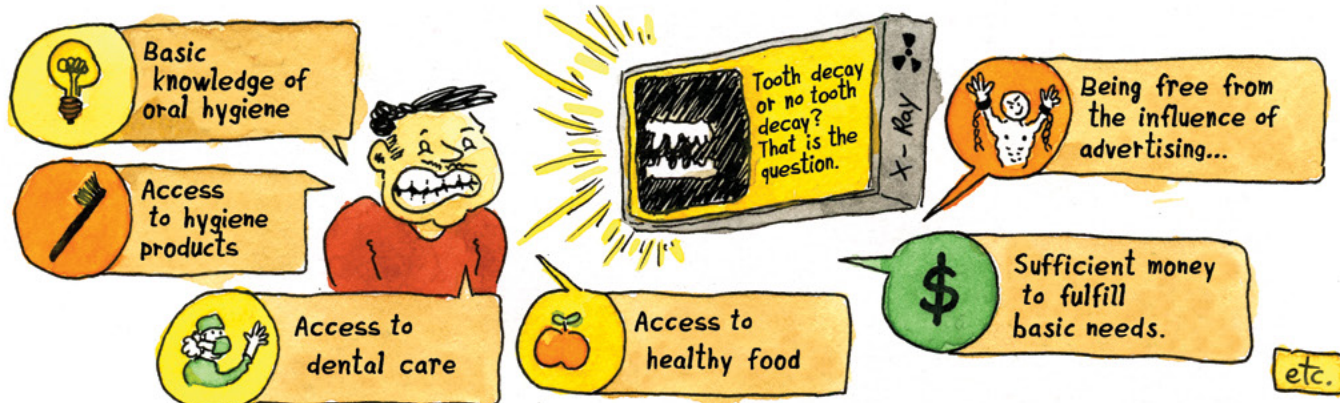


No matter if we develop the best treatment in a lab, sometimes the heart of the problem lies elsewhere...



Everywhere in the world, developing tooth decay is associated with consuming sugar. However, the intensity of the problem is not simply related to individual choices.

(ex: drinking juice or not, brushing your teeth 3 times per day, etc.)



From Squire to the hole in Louis XIV's palate, we can see that oral hygiene isn't only a question of using a toothbrush.

Waiting room

Are your teeth also suffering from the abuse of sweets?

Not at all. Feasting has nothing to do with it. It's my master's slaps they suffer from.



MartinPM

ACKNOWLEDGEMENTS

The RSBO network thanks its partners



Martin PM

I would like to thank the RSBO network, particularly Christophe and Andrée, for having had the courage to begin this artistic endeavour. Thank you for the freedom to create. Thanks go to Daniel for having shared his ideas and his experience with me all during these months of creation. Thanks to the members of the RSBO network who welcomed me into their laboratories. Thanks to Laurène, Estelle, Jacinthe and Lucile for their comments, rereads, and suggestions. Thanks to Laurène for sharing their story. Thanks to Cécilia and Martin, who greatly helped us climb the last summit toward the publication of this collection.

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