

SCIENCE COMICS: TEACHING MEDICINE AND RELATED FIELDS

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WHAT IS COMICS?

- In the past decades comics have emerged as an increasingly popular form of communication, able to engage readers of different age groups and cultural backgrounds.
- In terms of education, comprehension and retention of information is improved by inclusion of both visual and text dimensions of information (Aleixo & Sumner, 2017).

CONT

- Many teachers and educators have used comics in their classroom, mostly to support students with low literacy skills (Aleixo and Norris, 2010; Crawford, 2004; Frey and Fisher, 2008; Schwarz, 2006).



SCIENCE COMICS AS TOOLS FOR SCIENCE EDUCATION AND COMMUNICATION

- Autobiographical comics about illness, known as “graphic medicine”, provide a different picture such as:
 - They capture what it's like to be sick, undergo treatment or take on caring responsibilities.
 - They visualize physical, cognitive and emotional symptoms that are difficult to communicate.
 - They inject a human element into medicalized spaces, pushing back against data-driven, objective notions of the human condition.

CONT

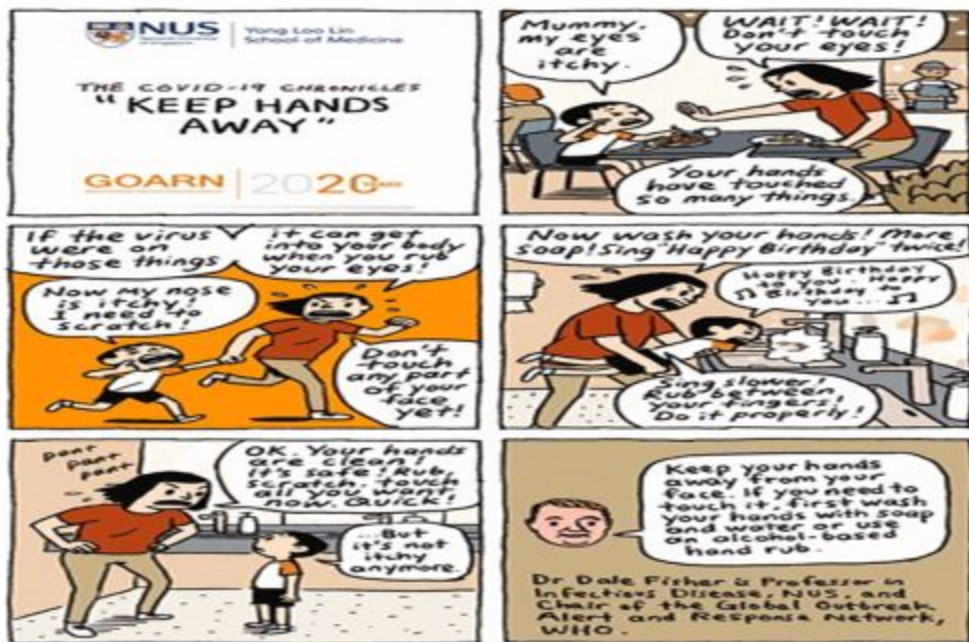
- Comics have been used for promoting health and the psychological means of coping with childhood diseases, such as cancer and diabetes, including Captain Chemo comics and Omega Boys vs Diabetes.

Title	Author	Medical topic	Summary	Publisher (year of publication)
<i>Mom's Cancer</i>	Brian Fies	Lung cancer	The author's account of the challenges of navigating the health care system after his mother develops cancer.	Harry N. Abrams (2006)
<i>Cancer Vixen</i>	Marisa Acocella Marchetto	Breast cancer	A hip, urban woman develops breast cancer and attempts to deal with the impact on her love life, personal relationships, and self-image.	Pantheon Books (2006)
<i>Cancer Made Me a Shallower Person</i>	Miriam Engelberg	Breast cancer	The author's brutally honest and funny account of her experiences after developing breast cancer at age 43.	Harper Perennial (2006)
<i>Stitches</i>	David Small	Childhood cancer	The author's recollection of his dysfunctional childhood and what happens when he develops neck cancer and loses the ability to speak.	W. W. Norton & Company (2009)
<i>Monsters</i>	Ken Dahl	Herpes	A man is convinced he has herpes and is tortured by anxiety, isolation, and fear as he tries to deal with the disease.	Secret Acres (2009)
<i>Special Exits</i>	Joyce Farmer	Aging, death, and dying	A memoir chronicling the declining health of the author's parents, and the challenges of coping with the fragility of life.	Fantagraphics (2010)
<i>Tangles</i>	Sarah Leavitt	Alzheimer's disease	When the author's mother develops Alzheimer's disease, the family is transformed and Sarah must figure out how to be engaged despite living far away.	Skyhorse Publishing (2012)
<i>Years of the Elephant</i>	Willie Linthout	Suicide, grief	A grieving father attempts to understand and cope with his son's suicide.	Ponent Mon S.L. (2010)
<i>Psychiatric Tales</i>	Darryl Cunningham	Mental illness	A series of stories about psychiatric illnesses derived from the author's experience working on a psychiatric ward.	Bloomsbury USA (2011)
<i>Marbles: Mania, Depression, Michelangelo, and Me</i>	Ellen Forney	Bipolar disorder	The author's search to understand and cope with the diagnosis of bipolar disorder and what this means for her creativity.	Gotham (2012)
<i>Lighter Than My Shadow</i>	Katie Green	Anorexia	A memoir about the author's struggles with an eating disorder and her recovery.	Random House UK (2013)
<i>Can't We Talk About Something More Pleasant?</i>	Roz Chast	Death and dying	The story of an only child trying to cope with the challenges of watching her parents age and eventually die.	Bloomsbury USA (2014)
<i>The Bad Doctor</i>	Ian Williams	Doctor's perspective	A fictional account of a physician's doubts and worries about his life and medical responsibilities.	Myriad Editions (2014)

EXAMPLE 1: *“WHY SHOULD WE STAY 2M AWAY FROM OTHERS WHEN SOCIALLY DISTANCING?”* BY DR CILÉIN KEARNS (ARTIBIOTICS)



EXAMPLE 2 : THE 'COVID-19 CHRONICLES' SERIES FROM THE NUS YONG LOO LIN SCHOOL OF MEDICINE



EXAMPLE 3 : BRIAN FIES' MOM'S CANCER (2004)



Mom's Cancer was published online in 2004, and found a readership of other carers supporting their loved ones through cancer treatment. © Brian Fies

EXAMPLE 4: *JULIA WERTZ'S THE INFINITE WAIT (2012)*



Julia Wertz used simple black and white graphics to tell the story of her lupus diagnosis. © Julia Wertz

**EXAMPLE 5 : COVID-19 COMICS FROM DOCTORS, CAREGIVERS, PATIENTS
VOICE TO THE HUMANS IN THE STORY**

Amy and I are both physicians
working through the pandemic.

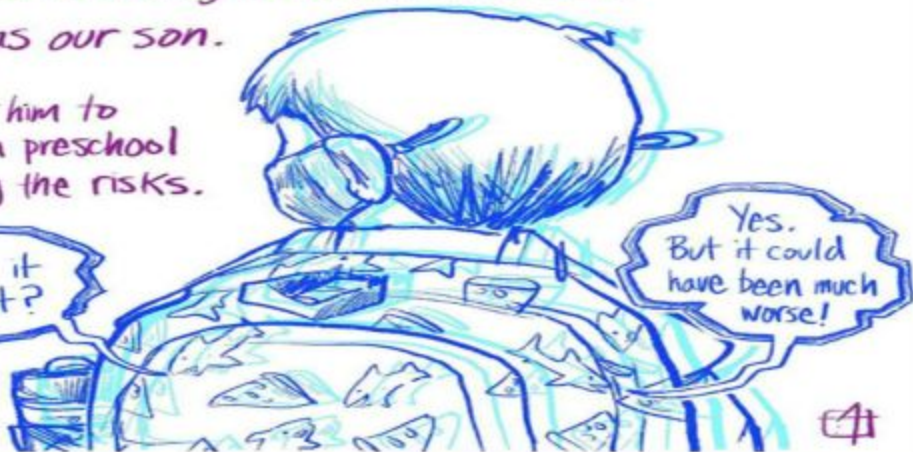
We didn't bring COVID home from work.

It was our son.

We sent him to
in-person preschool
knowing the risks.

So was it
worth it?

Yes.
But it could
have been much
worse!



EXAMPLE 6 : ADVENTURE IN SYNTHETIC BIOLOGY COMIC BOOK

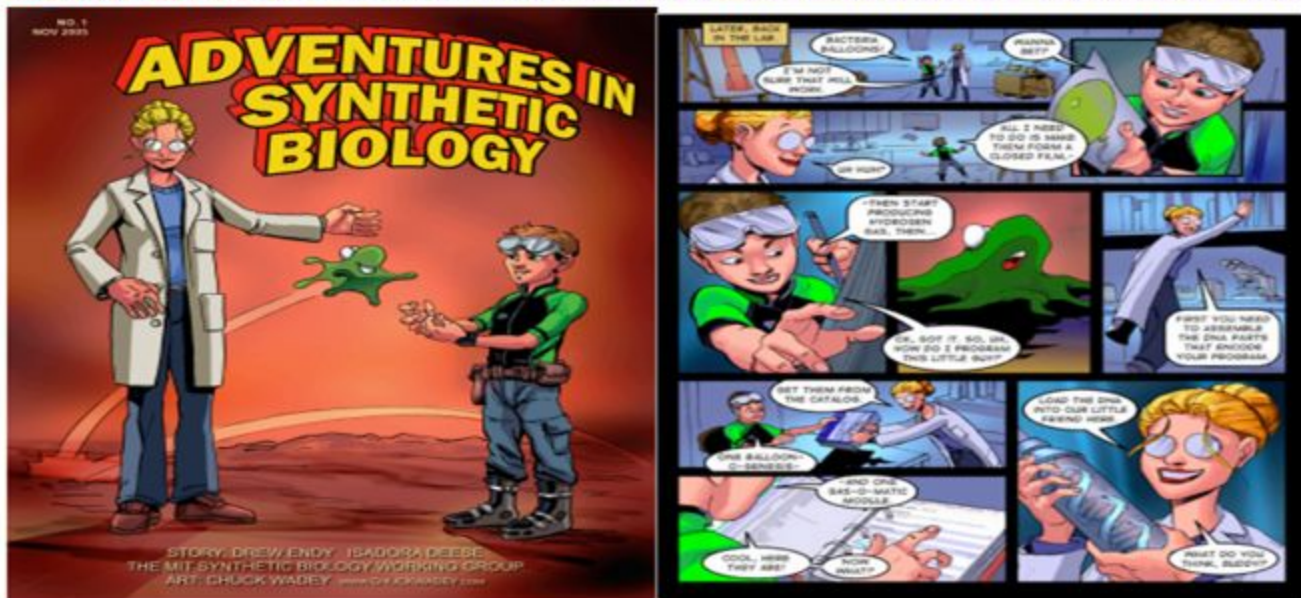


Image 5. A cover and an excerpt from the *Adventures in Synthetic Biology* comic book. Reprinted with permission.

ADVANTAGES

- Comics appear to significantly:
 - improve understanding and recollection of medical conditions (Diamond et al., 2016; Tekle-Haimanot et al., 2016),
 - improve compliance with medical instructions (Delp and Jones, 1996; Tjiam et al., 2013),
 - facilitate interactions between patients and doctors (Anderson, Wescom and Carlos, 2016) and between patients and their communities (McNicol, 2014; McNicol, 2017),
 - improve community engagement with medical issues (Leung et al., 2014; Wang, Acevedo and Sadler, 2017).

ADVANTAGES

- With their narrative and images, comics have proven to be effective in:
 - engaging and shaping students' attitudes toward science in a positive way
 - facilitating their learning
 - stimulating imagination
 - improving their understanding
 - favour the development of logical thinking
 - delivering a substantial amount of information in a short, appropriate and effective way

DISADVANTAGES

- Most science educational comics are not freely available
- The lack of clear models for how comics may be integrated in classroom practice (Lapp et al., 2011)

CONCLUSION

- Comics are an interesting medium for communicating medicine
- Comics can be used as a vehicle to present science in graphic narratives, harnessing the power of visuals, text, and storytelling in a memorable and engaging format.