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Authors

Malhi, Sahil

Bao, Vinh-Dan

Bhat, Namitha

et al.

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Breaking Barriers: Evaluating the Effectiveness and Feasibility of Animated Medical Education Videos in the Medically Underserved San Joaquin Valley

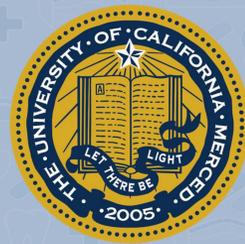
Sahil Malhi¹, Vinh-Dan Bao¹, Namitha Bhat², Supratik Nandi⁴, Ahmadzakaria Arjmand¹, Syed Ali¹, Sandie Ha³

¹School of Natural Sciences, Department of Molecular and Cell Biology, University of California, Merced, California, USA

²Division of Agriculture and Natural Resources, University of California, Merced, California USA

³School of Social Sciences, Humanities and Arts, University of California, Merced, California, USA

⁴University of California San Francisco Memory and Aging Center, Department of Neurology, California, USA



Background

Primary Care Physicians, by Region, 2020

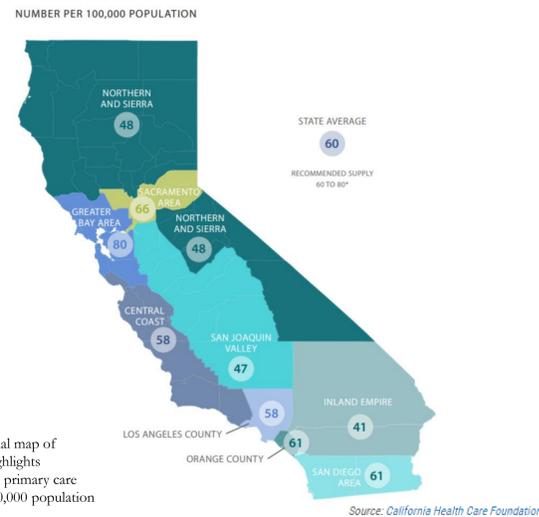


Figure 1: Regional map of California that highlights concentrations of primary care physicians per 100,000 population

- Assessments conducted by the University of California San Francisco (UCSF) have shown that the SJV has the lowest ratios of licensed MDs, DOs, NPs, and RNs per 100,000 population in California.³
- SJV residents are more likely to report that they are in fair or poor health. Furthermore, both the obesity rate, above 41%, and the infant mortality rate, at 0.6% of all live births, are about 50% higher than corresponding rates statewide.(CDPH)¹
- Increasing health literacy campaigns can help address these disparities by empowering SJV residents with the knowledge and skills necessary to make informed decisions about their health. By providing accessible and comprehensive health information through targeted educational initiatives, individuals in the San Joaquin Valley (SJV) can gain a better understanding of preventive measures, disease management, and available healthcare resources.

| Indicator | 12 SJV Counties | 8 Central SJV Counties | 4 SJV-Adjacent Counties | All 58 CA Counties | 46 Non-SJV CA Counties | Difference Between Highest and Lowest Groups |
|--|-----------------|------------------------|-------------------------|--------------------|------------------------|--|
| Primary Care Physicians * Rate per 10,000 People, Average Across Counties 2018 | 49 | 51 | 45 | 69 | 74 | 29 fewer in SJV-Adjacent counties |
| Other Primary Care Providers * Rate per 10,000 People, Average Across Counties 2020 | 64 | 68 | 58 | 71 | 73 | 15 fewer in SJV-Adjacent counties |

Source: SJVPHC RHEA

Objective

By utilizing animation software, our group wishes to determine the efficacy and feasibility of presenting animated “short-form” medical education videos to high school students in the classroom in order to improve health literacy.

Research Question

Does the utilization of animated videos as an educational intervention lead to an immediate enhancement in health literacy regarding fundamental medical concepts among high school students?

Hypothesis

The implementation of animated video interventions will demonstrate a significant improvement in health literacy levels among high school students, indicating the feasibility and efficacy of this educational approach

Methods

Inclusion/Exclusion Criteria

- Our target cohort will consist of approximately 400 high schoolers located in the city of Merced.
- Participants will be high schoolers within the ages of 14 – 18 years old.
- As an accurate representation of high schoolers in the city of Merced is desired, data will be collected from two high schools spread out across the city. Approximately 200 students, or 5 full classrooms, will be surveyed per school.
- Students will be required to return consent forms, signed by their parent or guardian prior to the study day.

Pre-Intervention Questionnaire

A pre-survey questionnaire will be administered to students prior to the intervention. Questions will consist of multiple-choice questions, true/false, and Likert scale questions, aiming to assess baseline knowledge of the topic being presented.

Study Design

- A collection of topics has been collected by the Tiny Health Tales team based on SJV-specific healthcare concerns that have been identified by a variety of sources.
- The video was created in conjunction with a local family medicine physician.
- Once the video-making process is complete, a visit to a high school classroom is arranged for data collection.
- Once collection is complete, generalized mixed models will be used to analyze survey data to determine the efficacy of our short-form videos.

Administration of Intervention

After participants complete the pre-survey questionnaire, the 5-minute intervention will be shown to participants. Teachers will be asked to make sure students are paying attention to the video being shown.

Survey Questions Examples

| Questions | Answer Choices |
|--|---|
| I have general knowledge of diabetes | Strongly Agree, Somewhat Agree, Neither Agree or Disagree, Somewhat Disagree, Strongly Disagree |
| The visuals and graphics used in the video were helpful in enhancing my understanding | Thyroid, Pancreas, Liver, Intestines |
| Where is insulin produced? | Free-Response Question |
| In your opinion, are animated videos (such as the one you watched) helpful in learning new topics? Why or why not? | |

Post-Intervention Questionnaire

After participants finish watching the intervention video, another survey will be given to assess the efficacy of the video. A primary objective is to determine whether students retained the information presented in the video

Future Directions

- As our group obtained UC Merced IRB approval very recently, the study is still in the early stages of data collection.
- It is our hope that our analyzed data will help provide valuable insights that may pave the way for innovative approaches to health education, ultimately empowering individuals in underrepresented communities with the knowledge needed to make informed health-related decisions.
- Once this initial study is complete, our group hopes to conduct follow-up studies to not only increase the validity of our results, but also to find new insights which will not be found in this current study due to its limited scope.
- Another potential change follow-up studies could incorporate is to recruit high schoolers from different cities/counties in the SJV, which would allow us to obtain more robust findings that are not just Merced-specific.
- Limitations of this study involve the analysis of long-term retention, as this study analyzes student’s short-term knowledge

Website Design

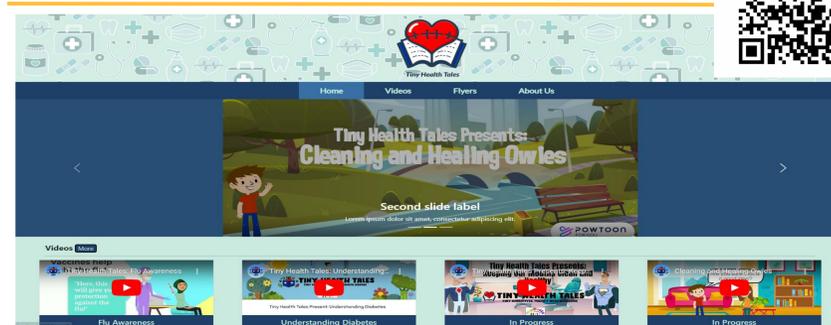


Figure 2: A screenshot of the Tiny Health Tales website, where all videos are uploaded for ease of use and convenience. Not only can teachers use this website, but also the parents of children who have any concerns regarding the content of our videos.

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Social Media Team: Christelle Baria, Misha Gerami
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Contact

tinyhealthtales@gmail.com
 Sahil: smalhi6@ucmerced.edu
 Vinh-Dan: vbao@ucmerced.edu

