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Using Comics to Promote Colorectal Cancer Screening in the Asian American and Pacific Islander Communities

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Abstract There are unaesthetic aspects in teaching people about the early detection of colorectal cancer using the fecal immunochemical test. Comics were seen as a way to overcome those unaesthetic aspects. This study used the Asian grocery store-based cancer education venue to pilot-test the clarity, cultural acceptability, and alignment of five colorectal cancer education comics intended for publication in Asian American and Pacific Islander (API) community newspapers. After developing the colorectal cancer education comics, API students asked shoppers to review a comic from their collection and provide feedback on how to make the comic clearer and more culturally pertinent to API readers. To evaluate viewers' responses, the students gathered such unobtrusive data as: (1) how many of the predetermined salient information points were discussed as the student educators interacted with shoppers and (2) how many comics the shoppers were willing to review. Shoppers were also asked to evaluate how effective the comics would be at motivating colorectal cancer screening among APIs. The students were able to cover all of the salient information points with the first comic. As evidence of the comics' capacity to engage shoppers' interest, shoppers willingly evaluated all five comics. Using multiple comics enabled the educators to repeatedly address the four

salient colorectal cancer information points. Thus, the comics helped student educators to overcome the unesthetic elements of colorectal cancer discussions, while enabling them to engage shoppers in animated discussions, for far more time than with their conventional didactic educational methods.

Keywords Asian · Pacific Islander · Cancer · Colorectal cancer · Education · Disparities · Screening · Comics · Literacy

Introduction

Cancer is the leading cause of death within the Asian American and Pacific Islander (API) community, the second fastest growing racial group in the USA [1, 2]. Among APIs, colorectal cancer is the third highest cause of cancer-related mortality and the third and fourth most commonly diagnosed cancer in API males and females, respectively [2].

Colorectal cancer evolves from symptomless polyps, which develop on the inside of the colon or rectum [3]. With the early removal of polyps, nine out of ten cases of colorectal cancer can be prevented or successfully treated by removing the pre-cancerous polyps [4, 5]. Thus, the American Cancer Society declared the early detection of colorectal cancer a top priority, with specific recommendations for colonoscopy, sigmoidoscopy, and fecal screening [6].

Screening rates for colorectal cancer are lower among APIs than non-Hispanic whites [7]. Both cultural and socioeconomic barriers contribute to these lower rates. Of the cultural barriers, the hesitancy to discuss health concerns in a non-native tongue, the lack of awareness of the importance of screening guidelines, and the varying levels of English proficiency and health literacy can impede discussions of health issues [7–9]. The anxiety and fear of invasive procedures, such as the colonoscopy, the

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absence of early warning symptoms of colorectal cancer, and the focus on the larger needs of the family over oneself can also contribute to the underuse of early cancer detection options [10–12]. Among the socioeconomic barriers, the lack of health insurance coverage, limited discretionary income, and sub-optimal access to health information, resources, and services can also lower screening rates among APIs [7, 8, 10].

Promoting the use of the fecal immunochemical test (FIT) is one way to reduce the barriers APIs face to colorectal cancer screening. FIT, a low-cost way to find pre-cancerous colorectal abnormalities early, is usually covered by insurance, is non-invasive and low-risk, can be done at home, and is comparatively accurate with annual use [3, 13–15].

These features made FIT a good screening method to promote in a colorectal cancer education module that was being developed for inclusion in the *Asian Grocery Store-Based Cancer Education Program* (the *Program*) [16]. While the *Program* had begun as a research project to promote breast cancer screening among APIs, the participating university undergraduate students believed that the program could be sustained by converting it into a university-sanctioned, student-run club [17]. As the students began to develop the colorectal cancer education module, they became concerned that the unesthetic aspects of conveying colorectal cancer information would be culturally unacceptable when disseminated at grocery stores.

Instead, students elected to create a collection of culturally aligned, educational comics with eye-catching images and minimal text about colorectal cancer for publication in API community newspapers [18]. While comics are perceived as light-hearted and accessible to diverse literacy levels, they can be highly informative [19]. Comics' visual images can help to overcome language barriers and content sensitivity, as well as to make complex content more readily understandable. The appeal of comics was anticipated to help overcome cultural barriers to screening.

Comics were used during World War II to educate soldiers about avoiding a variety of health risks [20]. More recently, health providers and public health professionals have teamed up to create comics that simplify complex health topics, such as comics that educate young adults about HIV and other sexually transmitted infections [21]. Researchers at the Kyoto Prefectural University of Medicine found that 93.8% of patients preferred the use of comics in medical situations, and that comics may be more helpful for patients than a doctor's lengthy explanation [22]. Emergency department research demonstrated that 77% of participants were more likely to comply with release instructions when accompanied with cartoon illustrations [23].

Given the evidence of comic's effectiveness in previous public health initiatives, the authors developed comics that would promote FIT screening among APIs. Including humor about colorectal cancer was anticipated to add lightness, while

helping to reduce the heaviness of a cancer discussion and the unesthetic aspects of the topic. In addition, health comics can be widely disseminated through community newspapers, a popular source of information among individuals 50 years of age and older, the recommended age group for colorectal cancer screening [3, 24].

Method

Hypothesis This study tested the hypothesis that comics can be used to disseminate awareness of colorectal cancer to the API community and the FIT as an accessible screening method.

Theoretical Frameworks This community-based intervention was grounded on three theoretical frameworks. One, the health belief model, includes six constructs that define how health-promoting actions can be encouraged [25]. The second, the communication theory model, includes elements of transmitting, receiving, and processing information that are important to triggering desired behavioral change [26]. The third, the tipping point model, identifies the elements needed to trigger a social change epidemic and recognizes the role that “sticky (memorable and easy-to-share) messages” play in launching a social epidemic [27].



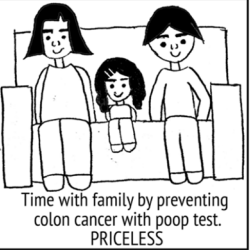
The Intervention Using Comics To create comics at a reading level accessible to English-as-a-second language readers, the Dolch list of words usually mastered by third grade was used [28]. The comics also included notes that explained terms above the third-grade level, such as colorectal cancer, screening, and the FIT. Figure 1 shows the template in which each comic was displayed.

Student educators delivering the *Program's* other modules helped the authors to define how to incorporate the promotion of the FIT into the comics. There was unanimous agreement that their parents and grandparents enjoyed reading comics. They also recommended that since APIs place great value on the family unit, the comics should relate to the community's everyday family and social life [12]. Thus, the central characters of the comics were involved in simple, family-oriented situations.

While colorectal cancer screening recommendations target those age 50 and beyond, the student educators recommended creating comics that would stimulate all members of API families to discuss colorectal cancer control [3]. Thus, the comics were developed for five specific audiences: Comic 1—Adult daughters and their father, Comic 2—Grandparents and their grandchildren, Comic 3—Nuclear family-focused, Comic 4—Adult sons and their mother, and Comic 5—Couples and friends (see Figs. 1 and 2).

Fig. 1 Template for displaying each comic. Comic 3 focused on stimulating discussions of colorectal cancer screening within the nuclear family

**GET FIT
Episode 3**

 <p>Anti-Wrinkle Cream \$50</p>	 <p>Men's Hair Loss Treatment \$40</p>	 <p>Time with family by preventing colon cancer with poop test. PRICELESS</p>
--	--	---

NOW AT THE COMFORT OF YOUR OWN HOME.
GET TESTED WITH FIT.

What is colon cancer? Colon or colorectal cancer starts in the large intestine or rectum. it can go unnoticed until it has spread to a larger area, making it harder to treat.

Who should get screened? People ages 50 to 74 years and younger people with a family history of colorectal cancer should be screened regularly.

Why should I get screened for colorectal cancer? Colorectal cancer is the 3rd highest cause of death in Asian Americans!

How do I get screened for colorectal cancer? FIT is a colorectal cancer stool test kit that can be done in the comfort of your home. FIT should be done yearly and is affordable (free with Medicare), painless and safe, and does not require a special diet.

Where can I get a FIT kit? Talk to your doctor or call your local free clinic at (619) 515-2300.

Even after the *Program's* student educators had honed the comics, there remained the concern that the students' sense of humor might not align well with that of the older members of their communities. To resolve this concern, the students elected to vet the comics with grocery store shoppers. A single team of two students vetted the comics weekly with shoppers from January to April, 2016, increasing the odds that the comics would be delivered in a consistent manner.

Throughout the *Program*, cancer education interactions with shoppers were recorded as a "brief discussion" when the predetermined number of salient points had been discussed [17]. Four points were identified for colorectal cancer: (1) with early detection, treatment is more effective; (2) FIT is a reliable, inexpensive test for colorectal cancer; (3) the easy-to-use FIT should be done every year for best results; and (4) if abnormalities are reported, see your doctor immediately.

As shoppers approached or left the store, the student educators asked them if they would spend a few minutes looking at "an educational comic intended to benefit their community." If the shoppers agreed, the educator thanked and handed them the clipboard with the five comics without any further explanation. After the shoppers read the top comic, the educators asked them four questions to stimulate discussion:

1. Do you understand the message?
2. How can we make this comic more relevant to APIs?

3. Would these be culturally acceptable in your community?
4. To what degree would the comic encourage APIs to use the FIT, using a one-to-ten scale, with one being "very unlikely" and ten being "very likely?"

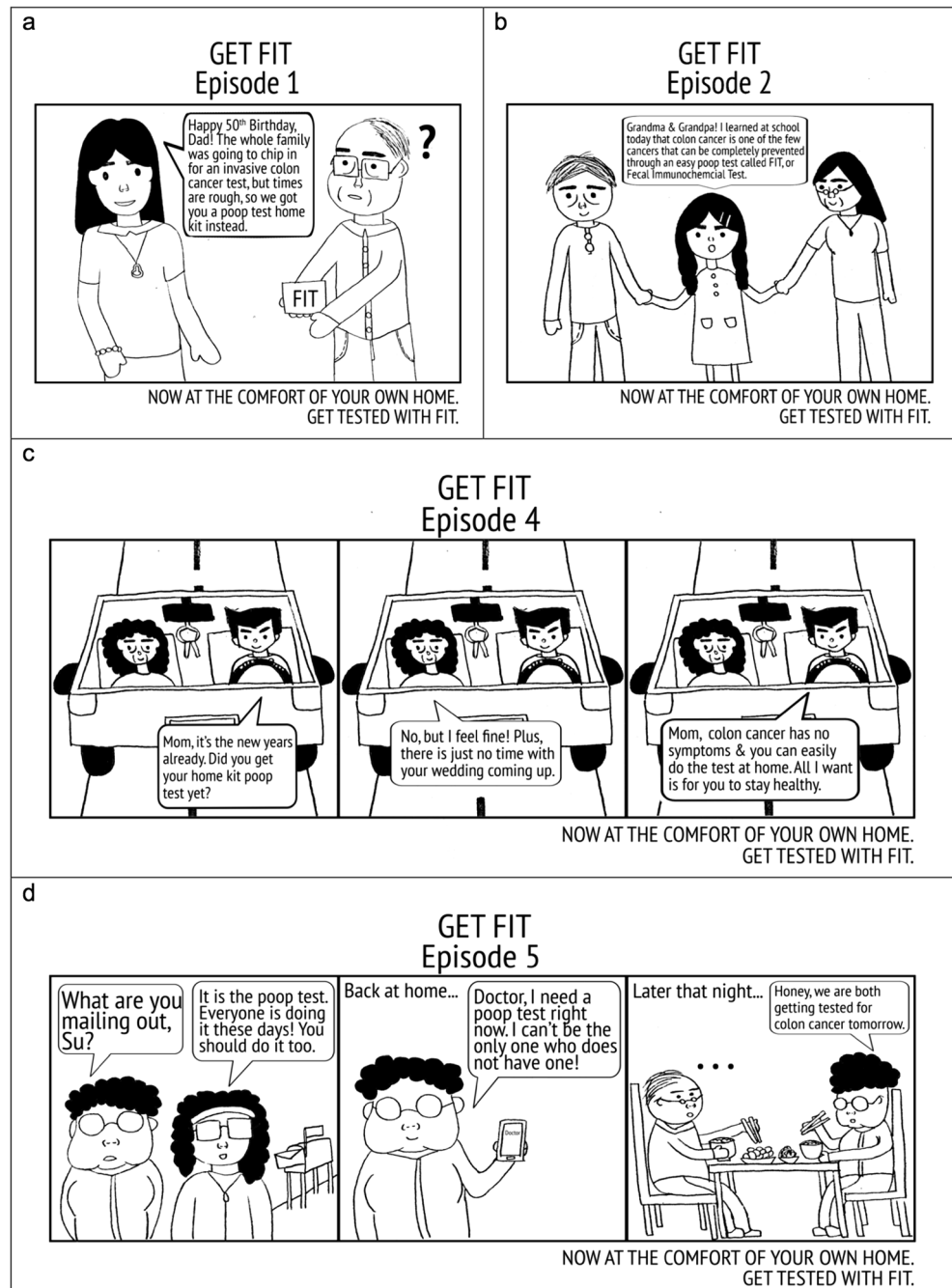
As the shoppers answered these questions, the educators made notes about how many of the four salient points were discussed, along with the shoppers' responses to the above questions.

This was intended to be the end of the process. However, shoppers could readily see that there were additional comics below the comic they had just reviewed and were asked if they would like to see another comic. The process was to be repeated for as many of the five comics as the shoppers were willing to vet. When the shoppers indicated a desire to terminate the discussion or when they had reviewed all five comics, the educator asked two final questions:

1. Which of the comics would the community like best (i.e., be most memorable and easily repeatable (sticky))?
2. Would you please share what you had learned about colorectal cancer with others?

Unobtrusive Measures to Evaluate the Comics' Capacity to Convey Information The authors defined several unobtrusive measures to assess the comics' capacity to trigger colorectal cancer discussions with APIs [29, 30]. The first measure was to count the number of

Fig. 2 Other comics evaluated. **a** Comic 1 focused on stimulating adult daughters to discuss colorectal cancer screening with their fathers. **b** Comic 2 focused on stimulating grandchildren to discuss the value of colorectal screening with their grandparents and for grandparents to consider the benefits of being screened for colorectal cancer. **c** Comic 4 focused on stimulating adult sons to discuss colorectal cancer screening with their mothers. **d** Comic 5 focused on stimulating friends and couples to discuss colorectal cancer screening



shoppers who were willing to engage in a discussion about the comics versus refused. A second was whether the educator could cover all four of the salient colorectal education points when discussing the first comic. A third measure was shoppers' willingness to evaluate more than one comic. The fourth measure was the shoppers' willingness to respond to the request to comparatively score the comics. The fifth measure was the educators' ability to repeatedly cover all four salient information points when reviewing the additional comics.

While additional data were gathered, it was done solely for the purpose of improving the comics and their cultural alignment.

Description of the Participants The 131 API shoppers who accepted the students' invitations to review a cancer education comic were predominantly women, secondary to the delivery venues being at Asian grocery stores. While no other socio-demographic data were gathered from the shoppers, the student educators' impressions were that the participants were

from diverse API ethnic sub-groups, ages, levels of English and health literacy, and other socio-demographic characteristics. In further support of these impressions, the participating grocery stores catered to the differing culinary and cultural characteristics of the Chinese, Filipino, Indian, Korean, and Vietnamese communities.

Results

Between seven and eight of every ten shoppers who were approached agreed to view a comic. This refusal rate was comparable to that experienced with the *Program's* other educational modules.

Regardless of which comic was offered first, it was possible to trigger a discussion of all four salient information points with the 131 participants, the primary educational goal of the comics. After giving feedback on the first comic, all shoppers willingly continued the process of evaluating the remaining four comics.

The participants spent between 7 and 15 min interacting with the educators as they evaluated and scored the five comics. By having the shoppers review the additional comics, the educators had the opportunity to discuss the four salient information points repeatedly. Additionally, the majority of the shoppers initiated a continued discussion regarding the purpose of the comics with the student educators after the review of the comics had been completed.

When asked about the clarity of the messages being conveyed by the comics, most shoppers said that the messages were clear and could demonstrate their understanding of the messages. Among the shoppers who believed more clarity was needed, the predominant recommendations focused on the need to include more information about FIT screening. When asked how the comics could be made more clearly relevant for API readers, the most common suggestions were to add Asian-specific elements to the comics, such as chopsticks, rearview mirror decorations, Asian facial features, Asian names, and Asian clothing.

When shoppers were asked about the cultural acceptability of the comics for their community, they universally reported that the comics would likely be well accepted. When estimating how motivating the comics would be in promoting FIT screening among APIs, the comics scored a cumulative average of 6.83, with one being “very unlikely” and ten being “very likely.” Individually, the comics scored differently: Comic 1 (5.81), Comic 2 (6.53), Comic 3 (8.08), Comic 4 (6.71), and Comic 5 (7.02).

When asked which comic was “the best,” shoppers consistently selected Comic 3 (see Fig. 1), suggesting that it was the most memorable comic. Student educators also noted that Comic 3 triggered the most outbursts of spontaneous laughter

and positive responses. Comic 3's selection as the best comic was consistent with the comic's score of 8.08.

Finally, shoppers were asked if they would pass the colorectal cancer screening information along to others. Given the amicable and non-confrontational nature of the API culture, full concurrence with this request was anticipated and indeed, received. This question had been posed primarily with the hope of prompting shoppers to reflect on the benefits of sharing this information with their loved ones.

As the shoppers' recommendations for improving various elements of the comics grew to the point of consensus, the modifications were made. Subsequent shoppers were shown the subtly modified comics and the rapid cycle improvement process was repeated. When no new ideas were forthcoming, the student educators concluded that the point of saturation had been attained for the five comics.

Discussion

The authors began this project with the goal of developing culturally aligned, educational comics about colorectal cancer screening to help overcome low English and health literacy levels and the distasteful elements of discussing colorectal cancer control. The cumulative average score of the comics and the individual scores of the five comics indicated that they would likely have an above average chance of encouraging APIs to use the FIT screening kit. These comparisons would make it possible to select the best comic(s) for a flyer or campaign.

As the student educators were creating their culturally aligned cancer education comics, they began to realize that the comics were also enabling them to very effectively convey the salient colorectal cancer information points to the community at the grocery store venue. The non-esthetic aspects of the topic seemed diminished by the novelty of the opinion gathering process.

Another unexpected observation was the amount of time shoppers were willing to engage in the discussions of the comics. Achieving a brief discussion, in which all four salient facts were discussed with as many shoppers as possible, was the desired goal. Instead, the conversations lasted much longer, as the shoppers reviewed all five comics, enabling educators to accomplish repeated brief discussions with the same shoppers. As a result, the salient points were also discussed from five different comic-triggered perspectives. Thus, while evaluating the comics for the educators, the community was being effortlessly engaged in in-depth discussions about colorectal cancer screening.

Kimura et al. demonstrated that Vietnamese Americans prefer to rely on family and friends to learn about colorectal cancer and related experiences [11]. In the current study, asking shoppers to share what they had learned with others was

done to stimulate those kinds of conversations with family and friends. Giving shoppers copies of these comics would enhance the transmission of the “sticky messages” conveyed in the comics and thereby help APIs engage family and friends in discussions about colorectal cancer screening. Further research is warranted to determine the degree to which the comics were effective in stimulating subsequent conversations with family and friends.

The diversity of the participants in this pilot study gives promise that these comics would likely have appeal across diverse API groups. While the original set of comics was evaluated in English, the comics and the accompanying notes have subsequently been translated into Korean, Vietnamese, and Chinese. Accurate translations from English to Asian languages can be difficult. For example, in Chinese, there are no letters for FIT and the translations are further complicated by the need for the brevity expected of a comic. The three translated versions of the comics are now being evaluated with monolingual members of the API community. Evaluations in other languages and on other cancer topics would be appropriate.

Conclusion

Vetting the comics at Asian grocery stores helped student educators to create culturally aligned cancer education comics, suitable for the API community. However, the educators began to realize that vetting the comics also enabled them to effectively convey the salient colorectal cancer information points repeatedly to APIs. Copies of the comics are inexpensive educational resources that can be given to shoppers to help initiate colorectal cancer discussions with friends and loved ones.

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