



Feasibility and Acceptability of an English-as-a-Second Language Curriculum on Hepatitis B for Older Chinese American Immigrants

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Abstract

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Keywords

Chinese Americans; English language – Study and teaching – Foreign speakers; ESL Curricula; Health education; Health Literacy; Hepatitis A; Hepatitis B

Cover Page Footnote

This study was supported by a special supplement to cooperative agreement CA 86322 from the National Cancer Institute. Our project works closely with the Chinese Information and Service Center in Seattle. The authors would like to acknowledge staff at the organization for recruiting instructors and students to participate in the focus groups and for delivering the curriculum.

Authors

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Abstract

Asian immigrants to the U.S. have an increased prevalence of hepatitis B virus (HBV) infection compared to native born individuals; an estimated 10 percent of Chinese immigrants are infected with HBV. Using qualitative data from focus groups, we developed an English-as-a-Second Language (ESL) curriculum that aimed to improve knowledge about key hepatitis B facts. The curriculum was pilot-tested among 56 students aged 50 and older from intermediate-level ESL classes at a community-based organization that serves Chinese immigrants. Post-curriculum data showed increases in knowledge that hepatitis B can cause liver cancer (73% at pre-test vs. 91% at post-test; p value = 0.01) and that individuals can be infected with hepatitis B for life (34% vs. 81%; p value <0.0001). These findings suggest that an ESL curriculum can successfully improve knowledge about the severity of hepatitis B and its routes of transmission among older Chinese American adults.

Key Words: Hepatitis B, ESL Curricula, Health Literacy, Chinese Americans, Hepatitis A

INTRODUCTION

Asian immigrants to the U.S. have an increased prevalence of hepatitis B virus (HBV) infection compared to native born individuals; an estimated 10 percent of Chinese immigrants are infected with HBV compared to less than 1 percent of the general U.S. population (Hong, Zou et al. 2001; Liu 2001). This increased prevalence represents one of the major reasons for the relatively high hepatocellular carcinoma (HCC) incidence and mortality among this group (Johnson 1996; London and McGlynn 1996). A substantial portion of those exposed to hepatitis B become chronically infected. These individuals are over 100 times more likely than others to develop HCC and they continue to be potentially infectious to others (Burke, Jackson et al. 2004; Ganem and Prince 2004). Vertical transmission of HBV from mother-to-child is a primary route of transmission. Horizontal transmission through sexual and household contact leads to a high risk for infection among family members and household contacts of chronic HBV carriers (Ono-Nita, Carrilho et al. 2004).

Chinese American adults have low levels of knowledge about the severity of HBV infection and the routes by which HBV is transmitted. Thompson et al. collected questionnaire data on HBV knowledge among Chinese Americans and Canadians. They reported that less than one half (46%) of Chinese American women and 61% of Chinese Canadian women knew that HBV can cause liver cancer (Thompson, Taylor et al. 2002; Thompson, Taylor et al. 2003). The routes of transmission were poorly understood; only 41% of Chinese Canadian women knew that HBV cannot be spread by eating food prepared by an infected person (Thompson, Taylor et al. 2003). In data collected from Chinese immigrants in Seattle, Taylor et al. also reported low knowledge about HBV routes of transmission: slightly more than one-half (54%) of the study sample knew that HBV can be spread during sexual intercourse and less than one-quarter knew that HBV cannot be spread by eating food prepared by an infected person (23%) or sharing eating utensils (16%) (Taylor, Tu et al. 2006 (in press)).

Interventions to improve knowledge about the routes of transmission for HBV are scarce and few have focused on Chinese immigrants. One potential approach to improving knowledge among immigrants is through English-as-a-Second language (ESL) education. ESL classes are thought to offer ready access to immigrant populations who are motivated to learn. Few previous studies have developed and tested ESL curricula (Elder, Candelaria et al. 2000). No previous investigations known to these authors have evaluated a curriculum on HBV.

The overall purpose of this project was to develop and pilot-test a culturally-appropriate hepatitis B ESL curriculum at a Seattle community agency serving low income, limited English speaking Chinese immigrants. Specifically, this pilot study examined the feasibility and acceptability of the curriculum as a component of ESL education. In this brief report, we tested the hypothesis that an ESL curriculum can improve knowledge about key HBV facts.

METHODS

Setting

The study was conducted at a community organization in Seattle that has served older, low-income, limited English speaking Chinese immigrants for over 30 years. The organization offers cultural orientation, job training, and English instruction, among other programs and serves over 4,000 individuals annually. On a regular basis, the community organization offers three types of ESL classes: beginning, intermediate, and citizenship. For this project, we enrolled students who were either intermediate-level or in the citizenship class. Students in intermediate-level classes have some command of English but often use inappropriate words and/or must rephrase sentences because of limited vocabulary. Students in citizenship classes have at least an intermediate level of proficiency in English.

Study procedures

The study procedures have been reported previously (Coronado, Taylor et al. 2005). Briefly, the protocol and all consent forms and data collection instruments were reviewed and approved by the Institutional Review Board at the Fred Hutchinson Cancer Research Center. Two sets of focus groups were conducted among ESL instructors and students. In the first set (among one group of instructors and two groups of students), we solicited information about general classroom activities and important content for a curriculum focused on HBV. Using this information, we developed a draft curriculum. A second set of focus groups (among one group of instructors and two groups of students) was conducted to obtain feedback on the curriculum activities and images. Recommendations from these groups were incorporated into the final curriculum. All student focus groups were conducted in Chinese dialects by bilingual project staff. To examine whether the curriculum increased levels of knowledge about HBV, the curriculum was delivered in three classrooms of students. A self-administered questionnaire was completed by students immediately before and after the curriculum was delivered. All students signed consent forms prior to participating in focus groups and class sessions.

The curriculum

Development of the curriculum was guided by the focus groups and input from a consultant who had taught ESL classes for several years and had developed other curricula. A local illustrator was hired to design culturally-appropriate images for the curriculum. The curriculum was designed for a single class session and contained five sections: warm up activities, hepatitis A, hepatitis B, summary of hepatitis A and B, and an English – Chinese glossary. The curriculum focused on differences in the causes of hepatitis A and hepatitis B, since previous qualitative and quantitative studies showed that Chinese immigrants often confuse the causes of one with those of the other (Thompson, Taylor et al. 2002; Thompson, Taylor et al. 2003; Taylor, Tu et al. 2006 (in press); Chen, Tu et al. In press). The warm up activities aimed to activate students' knowledge of HBV. The sections on hepatitis A and hepatitis B contained cards with vocabulary words and separate cards with corresponding illustrations so that students could match a given word with its image. Stories highlighted routes of transmission for both hepatitis A and hepatitis B. Matching exercises, and True-False review exercises reinforced key vocabulary words and concepts. The summary section contained a chart and content cards, so that students could match a given word, such as "blood" or "body fluids" to the given heading, such as "causes of hepatitis B". Examples of activities of the curriculum are presented in Table 1.

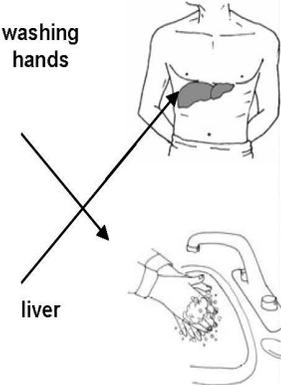
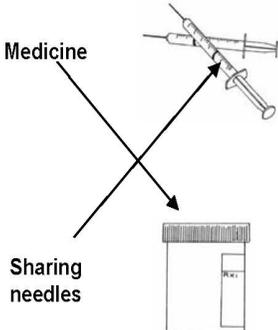
Participant recruitment

The ESL coordinator at the partner organization recruited 60 students for three special class sessions where the curriculum was delivered. A total of 22 students attended the first session and 19 students attended each of the second and third sessions. Eligible students were aged 50 and older, Chinese, and enrolled in either an intermediate-level or citizenship class at the partner organization. Each session lasted 2.0 to 2.5 hours. We chose to focus on older individuals because the collaborating organization serves a preponderance of older individuals in its ESL program.

The questionnaire

Questionnaire items addressed the curriculum content and were adapted from an instrument developed by Taylor et al. (Taylor, Jackson et al. 2000). The pre-test questionnaire contained two sections: knowledge of hepatitis A and B. Response categories were true, unsure/don't know, and false. The post-test questionnaire contained four sections: knowledge of hepatitis A and B, the curriculum, and demographic information. Questions about knowledge of hepatitis A and B were identical to those in the pre-test questionnaire.

Table 1: Examples of exercises in the curriculum

Curriculum	Hepatitis A	Hepatitis B
Short story	Hepatitis A is a liver virus. It makes you feel sick. You get it by eating food or drinking water that is contaminated with the virus. Washing hands with soap and water can keep you from getting hepatitis A.	Hepatitis B is a liver virus. It makes you very sick. You get it by having contact with the blood or body fluids of someone who has the virus. The virus can stay in your body for life. It can cause liver failure and liver cancer.
Information gap story*	John has the hepatitis <u>A</u> virus. He doesn't know it. He works in a restaurant cooking <u>food</u> . He uses the bathroom and forgets to <u>wash</u> his hands. He goes back to cooking. He touches the food. The food is now <u>contaminated</u> . Eating contaminated food spreads the hepatitis <u>A</u> virus.	The <u>blood test</u> shows that Anna has <u>hepatitis B</u> . The <u>hepatitis B virus</u> may stay in her body for life. Anna is worried she may pass it to her friends and family. Sharing <u>toothbrushes</u> and <u>needles</u> can spread <u>hepatitis B</u> . <u>Unprotected</u> sex is also risky. A mother can spread <u>hepatitis B</u> to her baby during <u>childbirth</u> . Anna is careful not to spread <u>hepatitis B</u> . There are <u>medicines</u> to treat hepatitis B.
Word – picture match	 <p>washing hands</p> <p>liver</p>	 <p>Medicine</p> <p>Sharing needles</p>
True – false questions	Washing hands can keep you from getting hepatitis A? (true)	Washing hands can keep you from getting hepatitis B? (false)
Content cards	<p>Headings: Causes, Prevention Symptom, Treatment, Future</p> <p>Cards: Virus, contaminated food, contaminated drinking water, blood, body fluids, childbirth, unprotected sex, sharing toothbrushes, sharing razors (causes); washing hands, hepatitis A vaccine, not sharing toothbrushes, not sharing needles, hepatitis B vaccine (prevention); yellow eyes, yellow skin, tiredness, fever, dark urine, nausea (symptoms); blood test, medicine (treatment); goes away on its own, virus remains in the body, liver failure, liver cancer (future).</p>	

*Underline denotes words that are missing in exercise; students are instructed to fill-in the missing words.

Questions about the curriculum asked whether the information was easy to understand, whether the student learned from the curriculum, and whether the activities and handouts were easy to understand. Demographic questions captured students' gender, age, year of immigration, marital status, years of formal education, employment status, and annual household income. The questionnaires were developed in English, translated into traditional Chinese using standard methods, and reviewed by representatives from the collaborating organization.

Statistical analyses

One student was unable to read written Chinese and was excluded from analyses. Three students were younger than 50 years of age; thus data are available for 56 students at pre-test and post-test. For the purposes of statistical analyses, we report the frequency of students' correct responses to questions about hepatitis B and hepatitis A knowledge. McNemar tests were used to compare the proportion of students who provided a correct answer to a given knowledge question at pre-test to the proportion who provided a correct answer at post-test. The associated two-sided *p* values were considered significant if they were 0.05 or lower.

RESULTS

Study group characteristics

The majority of survey respondents was female (68%), aged 65 and older (80%), and had lived in the U.S. for 10 or more years (63%). Eighty five percent were currently married. Over one-half of respondents had completed 12 or fewer years of education (61%) and less than one quarter were currently employed (22%). Slightly less than two-thirds reported annual household incomes of less than \$10,000 per year (60%).

Students' knowledge

When we examined differences in pre-test and post-test levels of knowledge, we found several significant differences (Table 2). Compared to pre-test scores, post-test scores reflected gains in knowledge for the incorrect belief that HBV can spread by eating food prepared by an infected person ($p < 0.01$). No changes were noted in whether or not sharing toothbrushes can spread HBV ($p = 0.41$). Sexual intercourse and vertical transmission from mother-to-child were more commonly noted as routes of transmission for HBV at post-test (compared to pre-test; $p < 0.0001$ and $p < 0.01$, respectively). Gains in knowledge were found for the two factors relating to the severity

of HBV: that HBV can cause liver cancer ($p = 0.01$) and that individuals with hepatitis B can be infected for life ($p < 0.0001$). Washing hands does not prevent the spread of hepatitis B, and this was more often reported among students after the curriculum than before ($p < 0.001$). The awareness that there are medicines to treat hepatitis B was greater for students after the curriculum ($p = 0.02$). No difference in pre-test and post-test scores was observed for the question about whether a blood test can tell if you have HBV ($p = 0.56$). Two knowledge factors addressing hepatitis A showed significant gains following the delivery of the curriculum: that eating food prepared by an infected person can spread hepatitis A ($p < 0.001$) and that hand washing can prevent it ($p < 0.001$).

Table 2: Changes in knowledge before and after ESL curriculum

Knowledge factor	Before Curriculum	After Curriculum	p-value
% who responded correctly			
Hepatitis B can spread from person to person by eating food prepared by an infected person (false).	34.0	59.6	<.01
Hepatitis B can be spread from person to person by sharing toothbrushes (true).	89.8	93.9	.41
Hepatitis B can spread from person to person during sexual intercourse (true).	34.8	91.3	<.0001
Hepatitis B can spread from mother to baby during childbirth (true).	67.4	93.5	<.01
Hepatitis B disease can cause liver cancer (true).	73.3	91.1	.01
People who get hepatitis B can be infected for life (true).	34.1	80.5	<.0001
Washing hands can prevent the spread of hepatitis B (false).	22.2	55.6	<.001
There are medicines to treat hepatitis B disease (true).	73.9	89.1	.02
A blood test can show whether a person has hepatitis B (true).	95.7	97.9	.56
Hepatitis A can be spread from person to person by eating food prepared by an infected person (true).	70.7	100	<.001
Hepatitis A can spread from person to person during sexual intercourse (false).	22.7	22.5	1.00
Washing hands can prevent the spread of hepatitis A (true).	75.6	100	<.001

Students' Assessment of the Curriculum

Over three-quarters of students reported that the information about HBV was easy to understand (77%). Nearly all reported that they learned from the curriculum (94%) and that the activities and handouts were easy to understand (94%).

DISCUSSION

Our findings suggest that an ESL curriculum on HBV can improve levels of knowledge about the severity of hepatitis B and the routes of transmission. Moreover, reports from students suggest that the curriculum was easy to understand and that it taught them about hepatitis. There have been few previous studies that have examined changes in knowledge following the delivery of a health-related ESL curriculum. Our findings add support to the notion that ESL classes can be useful channels for delivering health information to underserved immigrant populations.

Our findings show that students achieved significant gains in knowledge about HBV. One explanation is that we gathered input from both instructors and students and developed the curriculum to incorporate recommendations from each group. Previous research has highlighted the importance of focus groups in developing culturally relevant health promotion material (Morgan 1998). Our classes were taught by an experienced teacher who has worked for the partner organization for many years; this may have improved knowledge gains, since the students were familiar with her accent and teaching style.

There have been only a limited number of previous studies that have evaluated health curricula. Elder et al. evaluated a curriculum focused on the prevention of cardiovascular disease in the Latino community in San Diego. The curriculum promoted consumption of fruits and vegetables and avoidance of fat. ESL classes were then randomized to either receive the cardiovascular disease curriculum or a curriculum that addressed stress management. Results indicated long term intervention effects on nutrition knowledge and fat avoidance, but only short term effects on total cholesterol: HDL ratio and systolic blood pressure (Elder, Candelaria et al. 2000). Other evaluations have been attempted. A Canadian-based study developed a comprehensive ESL curriculum for new immigrants in Ontario. The curriculum focused on immunization, nutrition, sexuality, stress, winter-time health, the Ontario health system, tobacco use, and home safety. An evaluation was planned, however, given changes in class composition and the loss of two classes (due to low attendance), no findings were reported (Edwards, Ciliska et al. 1992).

The similarity between our pre-test knowledge scores and those reported in previous studies suggests that ESL students in this organization are generally representative of the community at large. Our findings prior to the delivery of the curriculum, for example, show that 66% of students incorrectly believed that HBV can be spread from person to person by eating food prepared by an infected person. This was similar to that reported by Thompson et al (59%) and Taylor et al. (77%) in studies conducted in Seattle (Thompson, Taylor et al. 2002; Taylor, Tu et al. 2006). However, following the curriculum, this percentage decreased to 40%. Only 35% of students initially believed that HBV can be spread through sexual intercourse, a finding that was lower than the 56% reported by Thompson et al. and the 54% reported by Taylor et al. (Thompson, Taylor et al. 2002; Taylor, Tu et al. 2006), however 91% correctly believed this to be true at post-test.

Our pre-curriculum findings about disease severity were similar to those reported in previous investigations. For example, 34% of our sample and 39% and 37% of respondents reported by Thompson et al. and Taylor et al., respectively, believed that individuals with HBV can be infected for life (Thompson, Taylor et al. 2002; Taylor, Tu et al. 2006). Following the administration of the curriculum, the proportion rose to 81%. Knowing that HBV can cause liver cancer was known by 73% of our sample and 61% and 73% of the samples surveyed by Thompson et al. and Taylor et al. (Thompson, Taylor et al. 2002; Taylor, Tu et al. 2006), respectively, with the proportion rising to 91% after the curriculum. Notably, our sample was limited to older Chinese adults who were taking ESL classes, nevertheless, our findings demonstrate a similar level of baseline knowledge about HBV across studies conducted in Seattle.

Limitations

Unlike the evaluation conducted by Elder et al, where the curriculum was tested for changes in nutrition knowledge, attitudes, behaviors, and anthropometric measurements, we only evaluated our curriculum for changes in knowledge. Given the age of respondents, we encountered some challenges in conducting a self-administered survey; one student was pre-literate and unable to successfully complete the questionnaires, others may have had difficulty fully understanding the questions. Our findings, moreover, have limited generalizability since we worked with a single community organization, limited our enrollment to Chinese immigrants, and limited our analyses to older individuals.

Conclusions

Our findings suggest that it is feasible to develop and deliver an ESL curriculum on HBV and that such a curriculum may improve levels of knowledge about the routes of HBV transmission and the severity of HBV. Further research might use a randomized design to test the curriculum, assess the long-term impact of the curriculum on knowledge of HBV, include multiple racial and ethnic groups or students with multiple first languages, or address other cancer prevention modalities.

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