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Research Article

Active Navigation in a Hepatitis B Program: Screening, Vaccination and Patient Assistance for Asian Americans in Michigan

Abstract

Background: Hepatitis B (HBV) is one of the greatest health disparities among Asian Americans. A team of volunteers in Southeast Michigan has studied HBV among Asian Americans in Michigan for 10 years. The study looked at prevalence of HBV among Asian Americans in Michigan, and the effectiveness of programs that included screening, vaccination and patient navigation.

Method: The team offered free screening, and then offered free vaccination to those never infected by the virus among the screened population. The project also offered confirmed patients disease navigation, helping them to obtain a minimum of one comprehensive liver test, and follow-up care.

Results: The screening results: 6.4% had chronic hepatitis B, 50.1% had the antibody, and 43.5% were never infected, nor vaccinated. Free vaccination was offered to eligible participants and only 46.0% accepted it. For the free patient navigation, the rate of acceptance (take-rate) was only 43.8%.

Conclusion: For every program in this project, education was a component. But at the end, lack of education still seems to be a major concern. Many participants would not take our offer of free vaccine for prevention or help with further steps to take care of his/her disease.

This study points to a need for an innovative public health education program for Hepatitis B.

Introduction

It is estimated that 1.2 million, or 1 in 10, Asian Americans are chronically infected with hepatitis B virus (HBV) [1-4]. The disproportionate prevalence of chronic hepatitis B among Asian Americans (10% in comparison to <0.5% for average Americans) is one of the greatest health disparities for Asian Americans (Center for Disease Control and Prevention, 2005) [1,4,5].

Since 2006, free HBV screening has been offered to Asian Americans in Michigan by the study team. To date, more than 2000 have been screened. A paper was published in 2010 with the data collected from 2006 to 2008, and it showed that 6% of Asian Americans in Michigan are chronic hepatitis B patients [6]. After more data was collected in the subsequent 6 years (2010-2016), the prevalence rate was found about the same. However, during this time, more HBV services had been added, that included vaccination and patient navigation/

treatment follow-up programs. This paper will summarize the complete findings after a 10-year study (2006-2016) of hepatitis B among Asian Americans in Michigan. It includes: 1) the prevalence rate updates, 2) percentage of eligible people who took the free vaccines offered, and reasons for those who did not; and 3) percentage of patients who accepted the patient navigation assistance and why many did not. We will share how we offered these programs, and what we learned about lack of participation.

Each of these three programs (screening, vaccination and patient navigation) to be discussed here has its own goal(s), unique process, different obstacles, and results. It will be easier and clearer to report and follow each program by itself. We will discuss each program separately, and then summarize at the end how these programs impact the Asian community and what we can do to improve in the next step should we continue the project.

HBV Screening Program

Method: The goal of screening was to find out the prevalence of chronic HBV patients among Asian Americans in Michigan. In our previous paper [6], we discussed in detail how we offered the free HBV screening. It was usually in a health fair where we provided free screening for many common health markers (e.g., blood pressure, cholesterol, fasting glucose etc.). All health fairs had to be open to all; however, our marketing focused mainly on Asian Americans. The flyer for most of the health fairs included in English, Chinese, Korean and Vietnamese. For recruiting, the inclusive criteria were all community people, but focusing on Asian Americans; the exclusive criteria were no children under 18 years old.

The health fair organizers would collect all participants' general demographic information at the fair registration station. HBV usually had its own designated service station and drew its own blood, so the program team could ask the participants HBV related questions and get their family HBV history. Then, while participants were waiting for blood drawn, someone (usually a medical student) would explain to them the possible test results they might get from the screening, and what each test result implies for their HBV status. This is our active navigation of the program by one-on-one education to explain to participants what to expect. We drew 4 ml blood to test HBV surface antigen and surface antibody. Usually we would receive the lab report in a few days, and then send letters to the participants explaining the test results and our recommendation for the next step, if any.

There are 3 types of test results one can get: 1) antigen positive (HBV carriers); 2) antibody positive (either vaccinated or contracted the disease earlier and got over it); or 3) both antigen and antibody are negative (never infected, could be protected by vaccines; would be eligible for our vaccination program). For the 1st group, we always added a list of local hepatologists to the letter and strongly recommended them to see a specialist; for the 2nd group, we recommended that they have their family members screened too. For the 3rd group, we detailed the vaccination opportunities available to them.

In our previous paper [6], (in 2010), the data sample size was 567; in this paper we have a total of 1509 participant data (including the previous 567 samples). This number is smaller than the total data we collected (more than 2000) as mentioned in the introduction. There were more than 500 data collected for a special project study, and was excluded here due to different participants' consent.

Results: Our 10-year screening data are shown in three tables. Table 1 is the first breakdown of the 3 possible test results of our screening and their percentage. Table 2 shows our HBV antigen positive patients among the top three Asian ethnic groups in Michigan, which echoes the national ranking, but with Michigan prevalence rates. Table 3 is the demographic breakdown of the test results. There is less demographic breakdown in this table than the one in the previous paper [7], because some data came in slightly different forms and could not be combined into the same format, so only data in the exact

Table 1: Total Screening Results Breakdown.

Characteristics	HBs Ag(+)		Anti-HBs(+)		HBsAg(-)/Anti-HBs(-)		Total
	N	%	N	%	N	%	
	96	6.4	756	50.1	657	43.5	1059

Table 2: High Prevalence Ethnic Groups

	Total N screened	HBs Ag(+)	%
Vietnamese	238	18	8
Chinese	491	28	6
Korean	106	4	4

Table 3: Comparison of persons infected (HBsAg+), immune (anti-HBs+) or seronegative (HBsAg-/anti-HBs-).

Characteristics	HBs Ag(+) chronically Infected		Anti-HBs(+) Immune		HBsAg(-)/Anti-HBs(-) Unprotected		p	Total
	N	%	N	%	N	%		
Overall	96	6.36%	756	50.10%	657	43.54%		1509
Gender							0.05	
Female	47	5.14%	463	50.60%	405	44.26%		915
Male	49	8.25%	293	49.33%	252	42.42%		594
Total	96		756		657			1509
Age (years)							<0.0001	
<30	9	6.67%	97	71.85%	29	21.48%		135
30-39	20	10.42%	90	46.87%	82	42.71%		192
40-49	32	11.03%	143	49.31%	115	39.66%		290
50-59	22	6.45%	174	51.03%	145	42.52%		341
60-69	11	3.20%	177	51.61%	155	45.19%		343
>69	2	1.01%	80	40.20%	117	58.79%		199
Total	96		761		643			1500
Ethnicity							0.02	
Asian Indian	0	0%	20	47.62%	22	52.38%		42
Chinese	28	5.70%	262	53.36%	201	40.94%		491
Hmong	3	11.11%	14	51.85%	10	37.04%		27
Korean	4	3.77%	64	60.38%	38	35.85%		106
Vietnamese	18	7.56%	147	61.77%	73	30.67%		238
Others	2	3.92%	21	41.18%	28	54.90%		51
Total	55		528		372			955

same format were analyzed here. The critical parameters of gender, age group and ethnicity were kept.

The majority of our HBV patients are immigrants (95%). The final results from the larger sample size confirmed that our preliminary data in the first paper accurately reflected HBV prevalence in Michigan. The demographics of our screened population remain about the same with the larger sample size [7].

HBV Vaccination Program

The goal of the vaccination program is to protect our uninfected population, following the latest CDC and World Health Organization recommendation [8,9]. From our screened population, about 44% of the participants didn't have HBV surface antigen, or antibody; and we would offer HBV vaccines

to them. The first batch of free HBV vaccines we received was Twinrix from May, 2010 to December, 2011 through Michigan Department of Community Health; the second batch was Engirix from August, 2013 to July, 2015. There were 7 health fairs covered by these two batches of HBV vaccines. We had to seek community funding to purchase some vaccines when the free vaccine program was disrupted after December 2011, so patients could complete their vaccination process. To get proper protection, a person has to get 3 HBV vaccines at month 0, 1 and 6 [9].

Method: The vaccination program was managed by a program manager who could follow up with all participants. We prepared a list of all eligible participants after a health fair, and let the program manager set up a date for their first shot. The location of this mobile clinic was usually at or near the health fair site, since our participants were usually residents near the site areas.

The vaccination program manager is usually bilingual in the language of the people he/she needs to contact. If we have more than one ethnic group in a given health fair, we have to recruit several bilingual community health workers (CHWs) [10], to help the program manager handle this task. Our active navigation in this task was to call the eligible people and gave them one-on-one discussion of the importance of the vaccine to prevent the disease. They may or may not be interested, it took a lot of persuasion. After they had their first shot, we would give them a paper with all their information and the date for the next shot. We would call each person back for their second and third shots, which were usually at the same location as the first one. The subsequent calls were easier, but reaching the right person was always a problem.

Our community program offered about 3-5 health fairs, collaborating with different community organizations. More Chinese attended these fairs, so we staffed more Chinese medical students to offer HBV education during the fairs. This one-on-one education is a more effective way to educate the general population and may account for the high take-rate [11-12]. The Korean population had the highest take-rate. We believe the reason is that we worked with Korean churches. Working with faith-based organizations seems to be an effective method for this kind of community service among certain ethnic groups [13-14]. The Vietnamese group had the lowest take-rate (27%) among the four groups reported here. Many of the Vietnamese immigrants own small businesses. It was hard for them to take time off to do other things, even if it's for good health. We went to 5 Vietnamese salons to screen them, but they were worried that customers would think the presence of healthcare workers meant there was a disease in their shops. We need to tailor a different process for this group [15-16]. Asian Indians do not have a high HBV prevalence. Their own community offers 4-5 health events per year, but it's hard to plan follow-up vaccination, so we just inform them about options. The 37% take-rate is not bad considering they have to find these resources on their own.

Results: Since the vaccines were supplied by the State health system, we were required to enter all immunization

information into the Michigan Care Improvement Registry [17], and submit monthly reports to the Michigan Department of Health and Human Services. This information is available online from MDHHS. Table 4 summarizes our vaccination record. The overall take-rate is 46% (116/252) based on the data collected among the 252 eligible people. There were actually a few more eligible participants not included in the 252 count, because of insufficient data collection or inability to make contact.

Reasons for not taking vaccines [18]: When we started calling eligible people for vaccination after the initial screening, our volunteers did not keep good records on how many calls they had to make for each person before reaching him/her; nor did they record conversation details as to why participants could not take the offer. Later when we discussed the records, they could only offer brief explanations from memory, so this part was not well documented in our book. Data collected for this part was very limited; but was consistent with their memories. They are listed in this order: 1) lack of transportation; 2) out of town; 3) working; 4) allergy; and 5) sick.

HBV Patient Navigation Program

Method: The goal of the Patient Navigation Program is to help our HBV patients understand the critical nature of their HBV infection, and to get a specialist for follow-up care. We began the patient navigation program in 2010. Being a non-profit community organization, we could only offer limited navigation: 1) educate patients about the seriousness of the HBV infection, and 2) advise them to seek a liver specialist to follow up their case. Clinically we also offered a comprehensive liver test to understand the status of their HBV infection. If the patient had a hepatologist, the test report would be shared with the hepatologist for the next step. If the patient did not have his/her own hepatologist, our program hepatologist would review the report and advise them of the next step. Among all the options we offered, the most important one is to recommend a hepatologist so the patient could have a specialist to talk to and provide follow-up.

There were lots of barriers to get patients to accept the fact that they were sick and needed help, since they did not "feel" the disease [18]. Being immigrants, they were struggling

Table 4: Vaccination Rate (%) and Demographic Comparison.

Variable	Vaccination				Total	Chi-square; p-value
	Yes		No			
	N	%	N	%		
Race						
Chinese	53	50.48	52	49.52	105	27.54; <0.0001
Indian	8	32.00	17	68.00	25	
Korean	35	72.92	13	27.08	48	
Vietnamese	20	27.03	54	72.97	74	
Total	116	46.03	136	53.97	252	
Gender						
Female	54	43.20	71	56.80	125	0.02; 0.88
Male	35	44.30	44	55.70	79	
Total	89		115		204	

to survive in this new world, so they would not take care of a disease that didn't bother them, or at least it would not be something to take care of immediately. This gave us the first warning that not understanding the seriousness of HBV infection really hurts our patients, hence that education is extremely important. After realizing this fact, we matched Asian American medical student and a CHW to each patient using the patient's language, really provided in-depth one-on-one discussion. Then scheduled appointments at no-cost or low-cost community clinical centers. A student and/or a CHW would accompany the patient and help the interpretation during their appointments, be a support to the patient. We also enlisted undergraduate research students to this program to help out when too many patients needed help at the same time. Usually this peaked about a month after a health fair. A problem with this process was lack of continuity of supports and difficulty of care-giver training.

When we didn't have enough student helpers, the process was modified. The major change was to eliminate the initial phone calls to educate the patients. But once we got them to see a hepatologist, and had an opportunity to accompany them, the active navigation will be performed, that really offered good education. From 2014 until we ended the program in early 2016, we decided just to send confirmed patients the comprehensive liver test requisition, along with his/her initial screening result letter. We called this the passive patient navigation process, as opposed to the original process when we called patients first before sending them the test requisition paper to get the liver comprehensive test (2010-2013).

Results: For the six years when we had the patient navigation program, we did not manage to enroll even half of all patients from our screened population. Following is the high level summary of our patient navigation program. We separated the first 4 years of the "active" program versus the last 2 years of the "passive" program to show that education does make a difference (Table 5).

During the 1st phase (more active program) 47% of patients participated and received better care; but only 30.7% in the 2nd phase did. That is another data point showing intervention (more phone calls) does make a difference. Notice also that the table shows the number of patients from the screened

Table 5: HBV Patients Navigation Program Summary.

2010-2013 active patient navigation program		
51 patients	27 didn't take the comp liver test	
	24 took the test (47.0%)	<ul style="list-style-type: none"> • 9 patients had their own PCP follow up • 8 patients got treatment arranged with our hepatologist(s) • 7 patients did not need immediate treatment, would follow up with periodic tests
2014-2016 passive patient navigation program		
13 patients	9 didn't take the comp liver test	
	4 took the test (30.7%)	All patients did not need immediate treatment, would follow up with their physician and take periodic tests

population reduced quite a bit in the 2nd phase (passive program). The reason is that we had fewer participants in the health fairs, that was due to the decrease of uninsured people (a benefit of Obamacare). The weighted average of take-rate is 43.7%.

The top reasons that patients did not participate in our navigation program are: 1) too busy, 2) don't feel sick, 3) have no time to worry about it now, 4) I will deal with it when I feel sick, and 5) no health insurance. We had a few Chinese patients who said they would go back to China and get medical attention since they had health coverage in China. We helped a few uninsured patients apply for Medicaid since our alliance non-profit community organization, Asian Center – Southeast Michigan, has Affordable Care Act service. This is the reason we have to be connected to a community organization that offers many health services to the community. That is also where our team maintains a large number of CHWs who can speak Chinese, Korean, Vietnamese and other common Asian languages.

Conclusion

Our HBV program started in 2006. It began with screening to learn the HBV prevalence among Asian Americans in Michigan. It was meant to be a service to the Asian American community as a health fair screening item; at the same time we began collecting data for our study. There were always more people attending the other activities than the HBV seminar in a health fair or expo when parallel events took place, so we tried to advertise in Asian language newspapers and provide educational booklets to boost participation. But from the attendance at seminars we offered during health fairs, it was not very effective.

In 2010, we added the HBV vaccination program after we learned that the Michigan Department of Community Health provided free HBV vaccines to the community, and we could get from the State health department directly. Our connection made perfect timing to benefit from their free HBV vaccines. By the end of 2015, we had vaccinated 116 people, which is about 46% of all the eligible people from our screened population. But the take-rate was very disappointing, which we believe could be improved with more education and case workers.

When the patient navigation program failed to recruit even half of our patients, it shocked us and taught us education is extremely critical. The difference in take-rates between active and passive navigation showed that education can make a difference. When we had been able to combine this patient navigation program with more one-on-one education intervention, patients did take up our offers more than without additional education intervention. It seems that HBV knowledge makes a difference [19].

While talking to many of our screened population, we learned that many physicians don't usually recommend their Asian American patients tested for HBV [20]. We were told some asked their family doctors if they needed to be tested for HBV, and got a response "why?" This highlights the fact that our education target is no longer just to the Asian American

population. It has to expand to the State health personnel and physicians [21], who have Asian American patients, or any healthcare service personnel. It is a different task to educate health professionals than the general population.

After more than 10 years study of the program, the conclusion is still that we need to focus more on education [22]. We have offered so many ways to educate the Asian American community about the disease, but it seems that we are still not reaching deep enough. Whenever we offer a free seminar, the attendance is always low. Brochures passed out to people in any gathering were found in the wastebasket at the end of the event. Our next chapter of this program will be searching for unconventional and innovative ways to manage public health education. Development of this program could utilize input from faith-based organizations, understanding of barriers to vaccination for each ethnic group, and partners in behavioral psychology to design better educational processes.

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