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Human papillomavirus vaccine motivators and barriers among community college students: Considerations for development of a successful vaccination program

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Abstract

Background—Previous interventions in colleges to improve human papillomavirus (HPV) vaccination have not been highly successful. Although barriers have been assessed in traditional colleges, less is known about vaccination barriers in community colleges.

Methods—We approached students aged 18–26 years old enrolled at a community college for an in-person semi-structured qualitative interview on HPV vaccination and health, with questions guided by the Theory of Planned Behavior. Data collection took place between April 2015 and December 2015. Thematic analysis techniques were used to analyze the data.

Results—During interviews with 19 students, 4 themes emerged, including: general vaccine attitudes, barriers to HPV vaccination, motivators to HPV vaccination, and social influences. Participants felt that vaccines were beneficial, but were concerned about side effects. They felt that getting the HPV vaccine would be inconvenient, and they did not know enough about it to decide. Most would not trust their friends' opinions, but would want to know about side effects that their vaccinated friends experienced.

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Conclusions—Successful interventions at community colleges should include several components to increase convenience as well as utilize interactive methods to promote HPV vaccine awareness.

Keywords

Community college; HPV vaccination barrier; HPV vaccine promotion; HPV vaccine education; access to HPV vaccination

Introduction

HPV vaccination is expected to significantly reduce incidence and mortality associated with HPV-related cancers in countries with high uptake of the vaccine [1]. There is evidence that administration of the HPV vaccine, even among young women who received the vaccine after 12 years of age, is effective at preventing vaccine-type HPV infections in the general population [2, 3]. Despite its proven effectiveness, only 12% of females and 3% of males reported initiating the HPV vaccine after 19 years of age [4]. One possible reason for the low rate among young adults is their decreased health care utilization, which presents providers with fewer opportunities to vaccinate those in this age group [5].

Colleges are one place where young adults can be reached. Several studies have examined the impact of education interventions on improving knowledge and initiating HPV vaccination among college students with varied results, depending on the population assessed and how the information was presented [6]. For example, one intervention significantly raised the proportion of students vaccinated, but vaccination rates remained low at 22% [7]. Another intervention, which consisted of a detailed discussion about HPV, distribution of a HPV fact sheet, and a mailed reminder did not significantly influence HPV uptake [8]. Only 6% of college students received 1 dose of the vaccine after this intervention and close to a third of those who intended to get the vaccine did not view themselves at risk of HPV infection or cervical cancer [8]. Another intervention among female university students who participated in an online tailored educational session found an increase in knowledge, but no change in intent to be vaccinated [9]. Finally, one study found an increase in knowledge among college students recruited at a health fair following an educational intervention. However, the baseline knowledge was low, with participants answering questions correctly as little as 14% of the time prior to the intervention [10]. Results using electronic messaging reminders among college students found no increase in the 3-dose HPV vaccine series completion rates [11]. The low success rates of these programs indicate that barriers and motivations around HPV vaccination are not well understood in this age group, and standardized questionnaires may not be capturing the information that must be addressed to develop a more successful intervention.

Very little information is available on students attending community college as most studies on young adults focus on those attending four-year universities or enrolled in managed care plans. Community college students make up approximately half of all undergraduate students in the US, and include highly diverse populations. About 36% are the first generation to attend college [12]. They are considerably more diverse than 4 year university

students, with a higher proportion from lower socioeconomic status and from underrepresented ethnicities, such as Hispanics. Many of these students are also considered non-traditional students, such as those working while enrolled, [13] and may face more barriers to healthcare than students attending a 4-year university. Thus, an in-depth qualitative study that examines the barriers and motivations of community college students related to HPV vaccination is needed. The purpose of this study was to evaluate motivations and barriers among community college students 18 to 26 years of age.

Method

Students attending a community college located in Southeast Texas participated in individual semi-structured qualitative interviews with questions based on the Theory of Planned Behavior between April and December 2015. They were recruited through flyers and a televised advertisement system on campus as well as through on-campus recruitment. Students 18–26 years old that were currently enrolled in the community college were purposively sampled because they are eligible to get the HPV vaccine series if they had not already received it, or may complete the series if they had not previously received all 3 doses. We are reporting the methods for this study using the Consolidated criteria for Reporting Qualitative research (COREQ) [14].

The guiding framework for the data collection was based on the Theory of Planned Behavior (TPB), a psychological model that explains performance of a behavior through the joint functions of intention and perceived behavioral control [15]. The TPB suggests that individual behavioral intentions and behaviors are shaped by attitudes toward those behaviors, subjective norms, and perceived behavioral control. Semi-structured interview questions were tailored to the vaccination status of participants (non-initiator, non-completer, completer) to maximize relevance of the interview for each participant.

Interviews were completed during a single meeting that lasted no longer than 1 hour with students previously unknown to the researchers. Data were collected by 4 female interviewers, including 2 researchers with PhDs, a medical student, and an undergraduate student from a 4-year university (JMH, DNB, TTG, and Elizabeth Stone). Before each interview, the purpose of the study was explained and informed consent obtained. On average, the actual interviews lasted 30 minutes. All interviews were audio recorded and transcribed verbatim, then checked for accuracy. Participants were recruited and interviewed until data saturation was reached. Participants chose a gift valued between \$21 and \$23 to compensate them for their time. The University of Texas Institutional Review Board approved this study.

Data Analysis

Thematic analysis techniques were used to analyze data in order to pinpoint and examine common themes. Three reviewers developed preliminary inductive codes based on the emerging themes and independently applied the codes to four of the transcripts. They then met to discuss their coding process and modifications, and to develop a code book they applied to all transcripts. The 2 reviewers ensured coding accuracy and consistency by reviewing each other's coding process and addressing disagreements in coding. All coding

was conducted using the NVivo qualitative data analysis software (QSR International Pty Ltd. version 10, 2012). Coders met regularly to discuss comparisons of coding using NVivo generated node reports and reached consensus about the categories.

Results

Participants in this study included both males and females in similar proportions (Table 1). The diversity of the student body is reflected in the racial/ethnic characteristics reported by the respondents. A total of 19 community college students participated in this study, of which 9 (47.4%) were non-initiators (had not received any doses of the HPV vaccine), 3 (15.8%) were non-completers (had received at least 1 dose of the vaccine but had not completed all 3 doses), and 7 (36.8%) were completers (had received all 3 doses). Eighteen students did not participate after showing interest in the recruitment efforts, of which 10 did not have time and 8 did not reschedule missed interview appointments. More than half were enrolled in the community college full-time. Over half had health coverage either through Medicaid or private health insurance. Several had either experienced a gap in their insurance coverage, or were unaware whether they had been covered continuously by insurance during the past 12 months. We found that 37% of respondents had a full- or part-time job when they were interviewed.

In general, participants had positive perceptions about vaccination (Table 2). Participants with neutral attitudes toward vaccination indicated they did not “mind getting shots,” “did not have a problem with getting them,” or that their parents made the decision for them. Students with negative feelings about vaccination expressed reluctance to get vaccinated. They felt that vaccines could be harmful, and some indicated that there were certain vaccines they would avoid due to side effects.

Lack of awareness prevented students from getting the HPV vaccine. In particular, they recognized that the vaccine prevented a sexually transmitted infection, but were not always aware it prevented cancer (Table 3). Some were not aware of the age recommendations, or that they needed 3 doses. Others felt they did not need the vaccine because they were not sexually active. Students also noted that cost, lack of transportation, and finding time were barriers. They also felt that they might forget to schedule or attend vaccine appointments. Students did not know where to get the vaccine, and felt their access to it was limited. Respondents described the HPV vaccine as being too new, or having too many side effects. Some also doubted its effectiveness. There was negative stigma surrounding the vaccine, including from family members and friends, perceived by some students. In addition, some felt that fear of needles presented a barrier to getting the HPV vaccine. When asked how their questions about the HPV vaccine could best be addressed, students mentioned that they would like an interactive seminar with health providers to discuss the HPV vaccine with them (results not shown).

Some motivators for HPV vaccination included: anticipation of regret, needing help making appointments and reminders, and having the vaccine available on campus (Table 4). Students felt that after getting a cancer diagnosis, some people might remember they were offered the vaccine and would feel like they should have gotten vaccinated. Students indicated that they

needed help making appointments and wanted appointment reminders. Students also felt that having the vaccine on campus or a nearby clinic would improve student vaccination rates.

Participants mainly relied on close family to help them with vaccination, and often stated that their mothers still made their health care decisions (Table 5). Health care providers were also an important influence for deciding to get vaccinated. Participants with current relationships believed their partners' opinions would influence their decision-making about the vaccine, but felt their friends' opinions would not matter, or that they would not have an opinion. Participants felt little trust for information about HPV vaccination gained through social media. However, they felt that they would use it to learn whether their friends had been vaccinated or experienced side effects after vaccination.

Discussion

This study demonstrated that there are barriers community college students face that traditional university students may not. Many 4-year universities have clinics available on-site, improving the convenience of health care. Students utilize clinics located on their campuses frequently. Among 23 universities, more than 800,000 students used on-campus health centers for more than 4 million encounters [16]. Unfortunately, community colleges rarely have the resources to provide clinics on campus, and often students are not required to carry insurance. Thus, vaccination programs to serve these non-traditional students who are often from medically underserved groups are needed [17].

Non-mandated vaccines, such as the flu shot, appear to have barriers beyond issues of access. College student uptake of the flu shot has been found to be determined not only by ease of obtaining it, but also required motivation, as a majority of unvaccinated students reported that they were "too lazy to get the vaccine" or that they didn't need it because they felt that they were healthy [18]. Understanding barriers and motivations for a non-mandated vaccine is crucial to being able to develop an effective intervention.

Several barriers that we observed have already been identified, such as lack of awareness or knowledge, fear of needles, and fear of side effects. However, some particularly difficult barriers to overcome for these students included: they felt it was difficult to make time, find transportation, or figure out where to get the HPV vaccine. Among full-time community college students, it is estimated that more than 60% work full-time or part-time, and 29% have dependent children [12]. In contrast, at 4-year public institutions, less than 20% of students worked full time [13] and they may have clinics that offer basic services, including vaccination [16]. However, the vaccines are expensive, and lack of health insurance has been cited as a barrier to intent to be vaccinated among students who need it to pay for their care at college-sponsored clinics [8]. The community college students in this study felt they would have to find a place that offered the vaccine, which takes time and effort. Although this does not seem time-consuming, students who are juggling work, school, and family may not prioritize preventive health services. This issue is also reflected in research on barriers to HPV vaccination among 4-year college students. About 40% of male students at one 4-year university in the Midwest reported that they thought it was difficult to get to a provider's

office [19], and another study of 4-year university students found that both female and male students reported similar barriers [20].

Although lack of knowledge among college students is well known, little is known about how they would like to have health information communicated to them. Education is important to the uptake of the vaccine and targeted educational interventions increase parental intentions to vaccinate their children [6]. However, effective methods of educating a group of young adults who use many forms of communication and who have different priorities in what information they want to know are not as clear. In this study, there was a consistent interest in having a knowledgeable person speak on campus and answer vaccine-related questions. Thus, interventions to improve HPV vaccination may be more effective if they include a local healthcare provider in discussion-format seminars. Although an intervention such as this could present with logistical issues, future research could focus on the feasibility of offering such seminars and concurrently offering the opportunity to receive the HPV vaccine for free.

Other possibilities include offering vaccinations at a health fair held on campus, or by a provider visiting the campus periodically in a mobile vaccination unit with reduced cost or free vaccines available. Non-medical settings, such as retail and mobile, are increasingly used for flu vaccination [21]. Similar models could also be used for HPV vaccination in the community college setting, although other efforts would be needed to improve students' understanding of their risk and need for the vaccine. Sexually active college students often do not perceive themselves to be at risk, despite their significant risk of HPV infection [19, 22–26]. Further, students are often unaware of the seriousness of persistent HPV infection and the different cancers it is associated with, such as HPV-related oropharyngeal cancer, which is increasing in incidence in the US population, particularly among males [27]. Nonetheless, mobile clinics, if paired with other educational approaches, may be able to address barriers related to awareness, convenience, cost, and transportation. These methods may also be able to reduce the impact of decreased health care provider visits in this age group on receipt of non-mandatory vaccines, including the HPV vaccine, among young adults [5].

Most college students relied on family or their health care providers for their vaccine decisions, and would not trust their friends' information regarding vaccination, particularly if received through social media, which limits these avenues of providing information in this group. Families and health providers strongly contribute to the decision to be vaccinated for mothers and their daughters, but it is less clear what the contribution of friends might be [28]. Friends have often been combined with family in other studies, without an exploration on the separate contributions of those relationships. This study showed that young adults clearly view opinions about health care from family and friends differently, and that these two concepts should not be measured together.

This study had several strengths. Using qualitative methods allowed us to collect in-depth information about HPV vaccination not typically captured in a survey study. The questions were tailored to be inclusive of all students, regardless of their vaccination status, and we were able to gain useful information from vaccinated and unvaccinated students, which

allowed us to capture a greater diversity of opinion. We also recruited from a community college, a population that has not been adequately addressed in the health and vaccination literature, and who have unique challenges that may not be faced by students attending a 4-year college.

There were some limitations to this study. The participants are not representative of their campus. Students were self-selected, and likely had more positive attitudes about the HPV vaccine, or may have felt more partial to the gifts that were offered as reimbursement for time. This study may also be limited by reporting bias, including recall and social desirability biases. Although we collected data until saturation was reached, we had a small sample size and a modest participation rate which may have contributed to non-response bias. Although our sample included some part-time and full-time workers, several interested students said they did not have time to participate due to their busy work and study schedule. We also collected data at only 1 community college, so the results may not be reflective of students attending other community colleges. Since interviews were anonymous, we were unable to return transcripts to the participants for feedback.

In conclusion, many of the barriers, such as vaccine cost, transportation, and access have not commonly been addressed by previous interventions aimed at vaccinating young adults in a college setting. Very few interventions have been implemented in a community college setting, and it would require a multi-pronged effort to improve HPV vaccination rates. Interventions should include interactive components with knowledgeable health care providers with the inclusion of family, as they are still very important in the decision about vaccination. It is likely that a successful intervention that is implemented to improve HPV vaccination in a community college setting would be different from one that is successful in a traditional 4-year university setting.

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Table 1

Characteristics of community college interview participants (N=19)

Gender	n (%)
Male	10 (52.6)
Female	9 (47.4)
Race/ethnicity	
Hispanic	5 (26.3)
White	6 (31.6)
Black	5 (26.3)
Biracial/other	3 (15.8)
Vaccine status	
Unvaccinated	9 (47.4)
non-completer	3 (15.8)
Completer	7 (36.8)
Current enrollment status	
Full-time	11 (57.9)
Part-time	8 (42.1)
Current insurance type	
Medicaid	5 (26.3)
Private health insurance	6 (31.6)
No coverage	4 (21.0)
Don't know	4 (21.0)
Insurance gap in past 12 months	
Yes	6 (31.6)
No	10 (52.6)
Don't know	3 (15.8)
Employment status	
Full-time	3 (15.8)
Part-time	4 (21.0)
Not employed	12 (63.2)

Table 2

General attitudes about HPV vaccination among community college students

Theme	Sub-themes	
General vaccine attitudes	Positive attitude	"I really think that people need to get vaccinated with the exception of if they have some kind of medical disability that would make it do more harm to them than good." (Male 19, completer)
		"I feel like if they are available, why not get them? Because I mean it prevents a lot of diseases that killed a lot of people back when they weren't there." (Female 23, completer)
	Vaccine prevents disease	"...herd immunity is very important because there are some people that might not be able to get vaccines. And if everybody around them is vaccinated, that person could be safe." (Female 19, non-completer)
	Neutral attitude	"I didn't have a problem with it, but then again my mom was always in charge so if she felt I should have gotten it, I got it. But I don't really have an opinion, I guess." (Female 18, completer)
	Negative attitude	"I think there are some inherent risks to vaccines. As let's face it, it might still be a dead form of the disease in many cases, but I don't know. Sometimes a batch could go wrong and you couldn't fix someone. There's always a margin for error." (Male 21, non-initiator)

Table 3

Community college students' perceived barriers to HPV vaccination

Theme	Sub-themes	
Barriers to HPV vaccination	Awareness	"Yeah, cause all I always hear about it is the sexually transmitted part, and I didn't know that there was a cancer part of it." (Female 19, non-initiator)
		"I'm not sure if I really need it... I just thought that [HPV] was sexually transmitted disease part and so I was like well I have no need for that so I don't need to get that." (Female 19, non-initiator)
	Cost	"I have to pay a \$25 co-pay every time I see my doctor and you know I'm a college student. Sometimes, I don't have \$25 and that's very... Like I'm sick, now I have to go find \$25 to go to the doctor." (Female 21, non-completer)
	Convenience	"I would find out for sure if my physician carries the vaccine. If not, I'd, I would find a clinic that does or I would see if the local emergency room does." (Male 22, non-initiator)
		"Making the time to go out there and do it." (Female 19, non-initiator)
		"Probably the transportation itself. I mean if you don't have transportation it's kind a hard to schedule a time for it." (Male 19, non-initiator)
		"I would probably just continue on with my life and just sort of forget about it unless I was like actively reminded about it or something like that." (Female 19, non-completer)
	Fear of needles	"I don't like needles. But I always get my shots." (Female 18, completer)
	Fear of side effects	"So to me it's like how long has this been out and if it's been just off the boat, do I really want to be a Guinea pig. So to me it's like as soon as I know the drug is for real and it does have effects that are beneficial, sure. But until that point, I will let some other people be the test subjects. See if they grow another arm or something. Then then I will consider it."
		"Every medicine is like that double-edged sword. It can stop this, but it might cause this." (Male 22, non-initiator)
	Lack of effectiveness	"...in my public opinion, you can't prevent cancer, it's hereditary. It's going to happen eventually. Just because you take a vaccine to reduce the risk, it doesn't eliminate the risk." (Male 22, non-initiator)
	Negative social influences, attitudes, and opinions	"I guess all that hype that's going around about vaccines being bad for you. There's a lot of people jumping on that wagon." (Female 23, completer)
		"I told my mom about this and she wanted me to actually say to not get [the HPV vaccine] actually." (Male 18, non-initiator)

Table 4

Community college students' motivators to getting the HPV vaccine

Theme	Sub-themes	
Motivators to HPV vaccination	Anticipation of regret	"I think it would be a good thing to do. Instead of sitting there and be like "ok, I'm not gonna do it," then then all of a sudden you go to the doctor and they say you have cancer, you gonna think back like, "Oh I should've continued the shots instead of doing all that.""" (Female 19, non-completer)
	Help with appointment making reminders	"Just going to the clinic and making the appointment." (Male 22, non-initiator)
		"...so perhaps more active reminders." (Female 21, non-completer)
	Vaccination available at campus or close location	"I don't know how prevalent the vaccine is at most medical areas... But I'd say the only way to really make it easier is just letting people know where they can get vaccinations." (Male 21, non-initiator)
		"Maybe actually have them, I don't know, like doctors can come up here and offer the vaccination." (Male 18, non-initiator)

Table 5

Social influences on community college students' decision to get the HPV vaccine

Theme	Sub-themes	
Social influences	Decision made by parent	"Anything else again any new vaccines or any diseases going around I actually leave that with my mom. Cause she will better understand what people are saying than what I would." (Male 18, non-initiator)
	Health provider influence	"Well I thought it was a requirement for the class and [the doctor] said "Well that's a good thing to do" and she kind of went over the same thing you went over, like the genital warts and everything and I was like "Okay let's do it." (Female 21, non-completer)
		"I would ask my doctor about it." (Female 18, non-initiator)
	Other professional	"Maybe maybe the library here at [my college]. I would ask one of my professors. Maybe they know, one of my science professors." (Male 22, non-initiator)
	Partner influence	"If I had to guess I would probably say that they would [recommend the vaccine] just to be safe. Cause again with life, anything could happen." (Male 18, non-initiator)
	Peer influence	"I guess they would probably be like "oh okay," or just you know... They might ask what it is because they might not know and then I'll tell them... and then they'll "Okay that's nice," and then we would move on to a different conversation." (Male 18, non-initiator)
		"Well, I think if I was to tell them what it's for and how it would help them, I think it be okay. They would probably wanna take the shot too. Instead of them prolonging them not taking the shot and then... I think they'll probably take it." (Female 19, non-completer)
	Family or friend recommendation	"Most influence would be my mom and then my opinion as well and then information that I received about [the HPV vaccine]," (Male 18, non-initiator)
		"Well, I think if I was to tell them (my friends) what it's for and how it would help them, I think it be ok. They would probably wanna take the shot too." (Female 19, non-completer)
	Social media	"I would probably just type it onto to Facebook and just say "Hey guys, what are you up to? Have you heard about the HPV virus and vaccination?" Just kind of a real general question." (Male 19, completer)
		"Yes, I am very cautious with Facebook cause I have heard so much from my mom saying that yes it's good to find information out at times if its correct but then again there's also people will post inappropriate things." (Male, 18, non-initiator)