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Psychometric Assessment of Parent Trust in School-Located Immunization Programs: Language Variables Matter

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**Purpose:** School-located immunization programs (SLIP) remove barriers to care and have the potential of increasing vaccination rates among populations. Patient trust in SLIPs (the belief that a health care provider will provide the utmost care in addressing one’s interests and needs during a time of vulnerability) could potentially influence the use of these programs. While there are a few published scales to assess patient trust in providers and health settings, no scales exist to specifically assess patient trust in SLIPs. We assessed the reliability of a modified patient trust measure for use with a SLIP among parents of middle school students in a predominantly urban Hispanic population.

**Methods:** Prior to initiating a service project to provide vaccines via a mobile SLIP to 8 urban middle schools, questionnaires were distributed to students either in school enrollment packets or within a month of the start of school. Questionnaire distribution pre-dated notification that a SLIP would be available at the school. Surveys were provided in both English and Spanish; each parent could complete the forms in his/her preferred language. Demographic items assessed age, race, ethnicity, language spoken at home, insurance status, whether the child had a medical home, and annual household income. A 5-item patient trust in provider scale previously used among English speaking adults was modified in English and Spanish for use pertaining SLIPs. The Spanish translation was reviewed/reverse-translated to assure accuracy. Item 1 in the tool was a reverse-worded item designed to prevent rote responses. Internal consistency of the measure was assessed using Cronbach’s alpha; data were then stratified by demographic variables.

**Results:** 1913 questionnaires were included in the analysis. 68% of parents were primarily Spanish-speaking; 40% completed the Spanish version of the survey, and 84% identified as Hispanic. The Cronbach’s alpha for the 5-item scale was 0.71. Cronbach alpha was different when stratifying for demographic variables; most notably higher for those using the Spanish vs English version (0.76 vs 0.64), for those who spoke English vs Spanish at home (0.79 vs 0.68), and for those with annual household incomes above vs. below $50,000 (0.81 vs. 0.71).

**Conclusions:** The modified trust scale for SLIP(s) showed adequate internal consistency among a sample of predominately Hispanic parents of middle school students. However, internal consistency of this scale was lower among Spanish speakers than English speakers and those with higher incomes. In addition, among this primarily Hispanic population, the Spanish version of the survey demonstrated higher internal consistency. These data suggest a need to further evaluate and modify this scale for populations with significant variation in language variables and socioeconomic status.
Parental Attitudes and Beliefs About Human Papillomavirus (HPV) Vaccination and Vaccine Receipt Among Adolescents in Richmond County, Georgia
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Purpose: The Advisory Committee on Immunization Practices currently recommends human papillomavirus vaccination (HPV) for males and females ages 9-26 years. Parental attitudes can often influence health decisions, especially those involving vaccines for their adolescents. We investigated parental attitudes and beliefs about human papillomavirus vaccination as well as parental self-reported receipt and series completion for their adolescent. The HPV vaccine series requires three doses, an initial vaccination, a second vaccination 2 months after initial dose and a third vaccination six months after initial dose.

Methods: We conducted a three-arm cluster-randomized controlled trial in middle and high schools in Richmond County, Georgia over three years. 11 schools were randomly assigned to one of three treatment arms: Arm 1) No Intervention; Arm 2) an educational brochure about adolescent vaccines mailed home for parents; and Arm 3) a curriculum delivered by teachers in classrooms of adolescents and an educational brochure for parents. Students received the intervention to which the school was assigned. Parents in all arms were surveyed annually to assess attitudes and beliefs about the four recommended adolescent vaccinations (yearly seasonal influenza, meningococcal conjugate, tetanus, diphtheria and pertussis and HPV vaccines), as well as self-report of vaccine receipt by their adolescent. Survey topics included perceived susceptibility, perceived severity and perceived benefits about their child receiving the HPV vaccine. The surveys were administered before delivery of the interventions, Year 1 and in Years 2 and 3. Surveys were administered via telephone and online. Six attitude and belief questions about HPV vaccination were compiled into an attitude scale ranging from 0-6, where 0 means no positive attitudes about HPV vaccination and 6 means respondents indicated very positive attitudes about HPV vaccination. Chi-square tests were performed using SPSS to assess differences.

Results: We identified 686 parents in total from the three intervention arms (Arm 1 n=210, Arm 2 n=251, Arm 3 n=225). Results show a range of opinions about HPV vaccination with participants receiving a score of 0 (3.8%), 1 (5.4%), 2 (8.2%), 3 (21.1%), 4 (20.3%), 5 (28%) or 6 (13.3%). Approximately half (48%) of parents reported that their adolescent received at least one dose of HPV vaccine. Higher scores on the attitude and belief scale were associated with the receipt of HPV vaccine (p<.001). Among parents whose adolescent initiated the series, 61% (n=206) were reported to have completed the three dose series. However, there was no statistically significant association between parental attitudes and series completion.
**Conclusions:** Parents in our sample showed positive attitudes and beliefs about HPV vaccine. 62% of parents scored 4 or greater on the attitudinal scale. These favorable opinions about the HPV vaccine were associated with initial vaccine receipt as reported by parents. Future efforts should be made to promote the benefits of HPV vaccination through sources of information that parents trust. Novel and innovative methods could potentially aid in increasing the rate of series completion among this population.

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**Are Parents or Doctors the Cause of Low HPV Vaccination Rates: A Qualitative Study**

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**Purpose:** To understand why parents do not initiate the HPV vaccine series for their daughters, and to see how these reasons differ in parents of different races, ethnicities, countries of origin, socioeconomic status, and public safety net vs. private practice clinical settings.

**Methods:** We approached parents accompanying 11-17 year old daughters to medical visits in one public safety net hospital and three private practice settings. We performed semi-structured qualitative interviews with parents to determine the primary reasons why their daughters had not started the vaccine series. Interviews were performed in English, Spanish, and Haitian-Creole. Interviews were coded using qualitative methods to identify and evaluate recurring themes. Answers were compared across race/ethnicity, socioeconomic status, and practice settings (public or private), to determine differences in attitudes, perceptions, parent-provider communication, and primary reasons for not initiating vaccination. Electronic medical records were reviewed to confirm vaccination status.

**Results:** 47 parents believed that their daughters had not initiated HPV vaccination; 38 were unvaccinated on medical record review, and these transcripts were analyzed. Nine parents self-identified as Black (including African-Americans and African and Caribbean immigrants), 19 White, 8 Latino, and 2 other races. 14 parents were immigrants and 27 expressed a religious affiliation. Family income ranged from <$20,000 to >$100,000 annually. Parents' level of knowledge about HPV vaccination varied from almost none to very detailed knowledge about transmission, HPV related cancers and genital diseases, and vaccine efficacy. The most common reason parents reported for not vaccinating their daughters was the lack of a physician recommendation (44%), which represents missed opportunities, as all daughters were eligible for vaccination. The remaining parents declined vaccination because they lacked information (21%), felt that their daughters were too young (13%), had safety concerns (11%), believed that vaccination was unnecessary due to abstinence (5%), or worried that vaccination could promote unsafe sexual practices (3%). Girls who were not offered the vaccine were
younger on average than those who declined vaccination (12±1.3 vs. 13.5±1.8, p=0.01). Race, country of origin, religious affiliation, income, private vs. public clinic site, and knowledge did not differ between those who declined vaccination and those who were not offered vaccination.

**Conclusions:** Missed opportunities by clinicians were the most common reason for non-initiation of vaccination in this diverse cohort, and was especially common for girls ages 11-12, for whom routine vaccination is recommended. Most parents who declined vaccination expressed a desire for information on indications, efficacy, and safety. Education of both parents and physicians on the rationale for vaccination at ages 11-12 can improve uptake.

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**Staying Ahead of the Race: HPV Immunization in Boys and Girls Across an Urban and Suburban Healthcare System**

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**Purpose:** Human papillomavirus (HPV) is the most common sexually transmitted infection in adolescents, occurring in 1 million 15-19 year olds annually. Current guidelines recommend vaccination for girls (ages 9-26 years) and boys (11-26 years) beginning at age 11-12 years, with catch up immunizations if started later. In the USA, HPV vaccination rates are low: 53% for girls and 8% for boys, with only 35% of girls and 1% of boys completing the series (CDC 2011).

Hypothesis: A large health system with electronic medical records (EMR) and a wellness oriented patient population should have higher HPV vaccination rates than the national average. Prior attitudinal survey from within our health system found higher intention to vaccinate in urban, indigent settings than in suburban, affluent sites (Gillespie et al 2011); in our population, urban settings are expected to have higher immunization rates than suburban sites.

**Methods:** A sampling of 5,355 out of 15,322 patients seen for well visits across 15 suburban family health centers and 3 urban centers were evaluated by retrospective chart review. Data was de-identified and included birthdate, gender, primary care provider, location of provider, and vaccination initiation and completion. If vaccinated, the dates, prescribing physician and health center location were recorded for each dose. Data was entered into REDCap and analyzed using JMP Pro 10.0.

**Results:** Charts of 2893 girls (mean + SD current age: 20+3.3) and 2462 boys (mean + SD current age: 20+3.1) were reviewed. HPV vaccine series initiation/completion rates were significantly better than the
national averages: 1844 (64%) girls, 489 (20%) boys received at least one dose of HPV vaccine, and 51% girls, 8.6% boys completed the series (P<0.001 for all comparisons). 17% of girls (N=494) and 10% (N=244) of boys received primary care at an urban site. Initiation of series occurred at a mean age of 16.0 years (range 10.5-26.5) versus 16.5 years (10.3-25.1, p = 0.002) for suburban versus urban girls, and 17.4 years for suburban boys (range 13.1-23.7) and 17.6 years for urban boys (13.8-23.3, p =0.23). Compared to suburban sites, urban sites had significantly higher vaccine initiation rates among both girls (79% vs 61%, P<0.001) and boys (37% vs 18%, P<0.001). Completion of series was documented for 67% of urban vs 48% of suburban girls (p <0.001), and for 13% of urban vs 8% of suburban boys (p = 0.019). Among those who initiated vaccination, completion of series was documented for 86% of urban vs 79% of suburban girls (p = 0.005), and for 34% of urban vs 45% of suburban boys (p = 0.068).

**Conclusions:** HPV vaccination rates within a health system with an EMR are higher than the national average for boys and girls, with urban sites more successful at vaccination initiation and completion than suburban sites. Limitations of our sample include patients leaving the health system and completing vaccination elsewhere, as well as variabilities in sample size across sites.

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