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# Completion and subject loss within an intensive hepatitis vaccination intervention among homeless adults: The role of risk factors, demographics, and psychosocial variables

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## Abstract

**Objective—**Unprotected sexual behavior, needle sharing, and a prison history are major correlates of Hepatitis B Virus (HBV). These risk factors are common among homeless people who also have elevated rates of HBV. We examine whether these behaviors were associated with completion and/or loss to follow-up of the most intensive and successful condition of a 3-arm HBV vaccination intervention. Significant results would imply that those most in need are the least compliant. Contributions of baseline demographics, physical health, psychosocial variables and health beliefs were also assessed.

**Design—**331 adults from Los Angeles' Skid Row were assigned to nurse-case-managed sessions with hepatitis education, incentives, and tracking. Successive predictive structural equation models assessed the amount of variance accounted for by the risk variables, demographics, and the health-related variables.

**Main Outcome Measures—**1) completion of 3 injections by 6-months; 2) loss to a 6-month follow-up questionnaire.

**Results—**The 3 risk factors explained 2% of the variance in completion and 1% of the variance in loss. Adding the other variables increased the variance explained to 14% for completion and 13% for loss. African-American ethnicity, positive coping, social support, poorer health, no prison history, and greater efficacy significantly predicted completion. White ethnicity, less social support, better health, and less intention to complete predicted participant loss.

**Conclusion—**The program was not strongly rejected differentially as a function of pre-existing Hepatitis B risk behaviors. Programs designed for homeless people should include malleable psychosocial and health belief model variables. These aspects of the lives of homeless people provide leverage points for future interventions.

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**Keywords**

Hepatitis B Virus; homeless adults; HBV vaccine completion; nurse case managed program; subject loss

Rates of Hepatitis B Virus (HBV) infection are high among homeless people. There were 1.5 cases of HBV per 100,000 reported in the general population in 2009 (Centers for Disease Control and Prevention (CDC), 2009). There were some variations based on age with the highest rates among persons aged 25–44 years (2.9 per 100,000) and the lowest rates among persons less than 15 years of age (0.02 cases per 100,000). However, reports of estimates of HBV infection rates among homeless people range from 17% to 31% (Gelberg at al., 2001; Lum et al. 2003). Klinkenberg et al. (2003) found in a sample of homeless persons with concurrent mental illness and substance use disorders that 32.5% had a reactive test for HBV.

Similar to the common transmission routes for human immunodeficiency virus (HIV), HBV is also transmitted through exchange of blood or body fluids (CDC, 2009; Klinkenberg et al., 2003). Homeless people are at a high risk of HBV infection due in great part to their unprotected sexual behavior, sharing of needles and other injection drug use (IDU) paraphernalia, and likelihood of a prison or jail history. A history of incarceration is associated with common risk factors for both HIV and HBV because of IDU, needle sharing, frequent unsafe tattooing, and unprotected sexual activity (Gupta & Altice, 2009; Weinbaum, Sabin, & Santibanez, 2005; Werb et al., 2008). Estimates indicate that 12 to 15% of all Americans with HBV infection have incarceration histories (Weinbaum et al., 2005). In addition to the risk among men who have sex with men (MSM), IDU, incarceration, and unprotected sexual behavior account for 75% of all new cases of HBV (Altice, Bruce, Walton, & Buitrago, 2005).

Vaccination is the most effective way to prevent HBV; due to vaccination, incidence rates have declined more than 80% since 1990 (CDC, 2009). Vaccination programs that target high risk adults such as injection drug users and individuals with multiple sex partners will also help eliminate domestic HBV transmission (CDC, 2009) but such immunization programs have been less successful than those that target infants and adolescents (Altice et al., 2005). The standard vaccination protocol requires 3 doses to be administered with a 6-month time period. This protocol can be especially difficult or unfeasible for homeless persons who often are hard to reach and are transient. However, Nyamathi et al. (2009) have reported successful results from an intervention designed to promote the series of three vaccinations for Hepatitis B within a homeless population. Participants were placed in one of three groups: 1) nurse-case-managed sessions plus targeted hepatitis education, incentives, and tracking; 2) standard targeted hepatitis education plus incentives and tracking, and 3) standard targeted hepatitis education and incentives only.

The most intensive arm of the intervention that included case management with nurses was the most successful. Sixty-eight percent of the participants completed the 3-series vaccine by 6 months compared with 61% of group 2 and 54% of group 3 (Nyamathi et al., 2009). However, despite the significant results from the most intensive program, 32% of the participants within this arm of the intervention did not complete the series and 8% were lost to follow-up. The current study examines predictors of non-completion and subject loss among only the subjects who were given the most intensive arm of the intervention. It would be helpful for program planners to know what barriers or characteristics within this high-risk population make even the most ideal and intensive programs less than optimal or successful for them.

We first examined whether the very behaviors that make homeless people exceptionally prone to HBV were also associated with non-completion and loss to follow-up even within the most successful program: needle sharing, risky sexual behavior, and a prison history. We then examined other domains as further possible predictors of loss to follow-up and/or non-completion of the vaccination series including basic demographics (gender, age, ethnicity, and education), health-related variables (perceived health status, functional limitations), psychosocial factors such as coping skills and social support, and typical health belief model components such as knowledge about HBV, intentions to adhere to the vaccination schedule, and self-efficacy perceptions such as forecasting difficulties in scheduling appointments. These variables have been found to be relevant in previous research among normative as well as vulnerable populations (e.g., Armstrong, Berlin, Schwartz, Propert, & Ubel, 2001; Aylward, Hatcher, Stripp, Gustafson, & Leavitt, 1985; Fazekas, Brewer, & Smith, 2008; Giger & Davidhizar, 2007; Kim, 2004; Neumark, Stommel, Given, & Given, 2001; Wu et al., 2005).

## Method

### Participants and Instruments

Recruitment was conducted in the Skid Row area of Los Angeles at homeless shelters, residential substance abuse recovery sites, and outdoor locations. After stratification, sites were randomly assigned to one of the three programs as described above; the homeless participants were then recruited into the program associated with their site (for more details on the selection procedure see Nyamathi et al., 2009). Eligibility requirements included: 1) adult age 18–65 and designated as homeless for at least the past 30 days; 2) willing to undergo hepatitis A virus (HAV), HBV, hepatitis C virus (HCV) and HIV antibody testing at baseline and at six-month follow-up; 3) willing to participate in the intervention; and 4) no history of HBV vaccination. Because completing the HAV/HBV vaccine series was the key study outcome, persons testing positive for HBV antibodies were excluded from the study.

Of the 2,086 persons who were screened, 46 were ineligible to undergo HBV/HCV/HIV testing and 4 refused testing. Reasons for ineligibility included a history of Guillain-Barré Syndrome or an allergy to eggs on which the vaccine is based. Of the remaining 2,036 persons, 820 (40%) persons were serum positive for HBV exposure or prior HBV vaccination (positive for HBV surface antigen, surface antibody, or core antibody) and were excluded. Of the remaining 1,216 who tested HBV negative, 351 (29%) failed to return two weeks later for the test results or were excluded for medical reasons. The final sample consisted of 865 HBV-negative homeless people. Twenty percent were HCV positive.

The current study focuses only on those who received the most intensive intervention, Nurse Case Managed with Incentives and Tracking (NCMIT; $N = 331$). Within this sample, 89% of the participants were male; 72% were African-American, 16% were White, and 10% were Hispanic. The remaining participants were other ethnicities (e.g., Asian, Native American). Their average amount of education was 12 years; education ranged from 1 to 16 years. Mean age was 42.7 years (*S.D.* = 8.48; range = 22 to 64 years). Thirty-four percent were recruited in shelters, 33% were from rehabilitation facilities, and 33% were found on the street. Demographic proportions are similar to those of the other 2 groups. Eight percent of the NCMIT group were lost at the 6-month follow-up and, as reported above, 68% completed the vaccine series. Loss for the other groups within the parent study was higher: Group 2, 14%, Group 3, 20%.

Instruments had been previously tested and validated in impoverished and/or homeless African-American, Latino, and White adults (e.g., Nyamathi, Berg, Jones & Leake, 2005;

Nyamathi, Christiani, Nahid, Gregerson & Leake, 2006). All instruments were adapted to a sixth-grade level of comprehension and were administered as face-to-face interviews by the research staff to all participants in a private location. The UCLA Human Subjects Protection Committee provided oversight and approval of all study activities and consent procedures.

## Intervention program

Participants in the NCMIT program received the following: a) a targeted hepatitis educational session, conducted by a trained research nurse during the first session, incorporating information about HAV, HBV, HCV and HIV infection, diagnosis, prevention and transmission; and about HAV/HBV vaccination, its administration schedule, possible side effects, and the importance of adherence to the vaccine series; b) Nurse Case Management, also conducted by a trained nurse, which included seven sessions that presented enhancement of personal (self esteem), social and behavioral coping skills; training in self-management and communications skill competencies necessary for overcoming barriers to completion of the HBV vaccination series, and skill competencies to reducing risky substance use and sexual practices. All sessions were preceded by a needs assessment and included referrals and appointments as needed; c) client tracking by outreach workers; d) Incentives for receiving each dose of the vaccine ($5); and e) a local community resource guide.

## Measures

Both latent variables and single items were used as predictors of both completion and loss to follow-up. Latent variables were constructed from multi-item scales or from individual items from scales as described below.

**HBV-associated risky behaviors and history—**1) Needle and other paraphernalia sharing. Participants were asked “Have you ever shared needles, works or rinse water?” Responses were coded yes = 1, no = 0. 2) A sum score was based on the number of times per week within the past 6 months that the participants reported having sexual activities without a condom. These activities included vaginal, anal, and oral sex. 3) Prison history. Participants were asked if they had ever spent time in prison (yes = 1, no = 0).

**Demographics—**Single-item demographics collected at baseline included age (in years), ethnicity (2 dummy variables of African-American and White coded yes = 1, no = 0; all others were the reference group), gender (1 = male, 2 = female), and education in years.

**Health-Related Variables—**Three items were used as indicators of a latent variable representing health status. These included 1) an assessment of their health rated on a 5-point scale ranging from excellent = 1 to poor = 5. 2) Whether they have any major health problems (yes = 1, no = 0). 3) A sum score on the 10-item RAND Medical Outcome Study (MOS) physical functioning scale (Stewart, Hays, & Ware, 1988). Coefficient alpha = .95 for the 10 items. Responses were scored from 0–1 to items such as “do you have a lot of trouble (1), a little trouble (.5) or no trouble (0) with lifting or carrying groceries.”

**Psychosocial Factors—**Positive Coping was a latent variable indicated by 4 items from the Brief COPE Inventory (Coefficient alpha = .67; Carver, 1997). A typical item is “I concentrate my efforts on doing something about the situation I'm in.” Items are scaled from 1 (I do not do this at all) to 4 (I do this a lot). Social Support was indicated by the mean score on the 18-item RAND MOS Social Support Survey (Sherbourne & Stewart, 1991). A mean score was used because coefficient alpha was very high (.96).

**Health Belief Model components—***Knowledge* about HBV was assessed with a 17-item knowledge test about HBV. A total score was calculated based on correct answers to the items. *Intentions* was constructed as a latent variable and was indicated by 2 items scaled 1 (definitely would not) to 5 (definitely would). Items were: 1) "How much would you say you really want to complete the 3 dose series?" and 2) "How likely are you to get all 3 vaccination doses?" Self-efficacy to complete the series was indicated by an item: "Will you have to take time off from doing other things when you come to your clinic appointments?" This item ranged from 1 = "yes, always or almost always" to 3 = "No, I can schedule clinic appointments around my activities."

**Compliance outcomes—**1) *Completion:* Vaccine completion was measured by receipt of the three doses of the HBV vaccine, recorded at baseline, one month and six months (with a two month grace period) by the research nurse. 2) *Loss to follow-up:* At six months post baseline, all participants who could be found completed a post-treatment survey. The post-treatment survey was similar in composition and length to the original baseline survey. A team of outreach workers not involved in the vaccination program provided tracking and follow-up on all participants for their six-month questionnaire. A participant who could not be found to complete the 6-month questionnaire was coded as "lost". Completion of the vaccination series was not required for participation in the six-month follow-up questionnaire and a participant could be "lost" and yet have finished the 3 vaccinations. The intensive NCMIT group which is the focus of the current study had a loss of 8% as reported above. The correlation between being "lost" and completion of the 3-dose series was −.39.

## Analysis

The latent variable analyses were performed using the EQS structural equations program (Bentler, in press). Goodness-of-fit was assessed with the maximum-likelihood $\chi^2$ statistic (ML $\chi^2$), the Comparative Fit Index (CFI), the Satorra-Bentler $\chi^2$ (S-B $\chi^{2)}$, the Robust Comparative Fit Index (RCFI), and the root mean squared error of approximation (RMSEA) (Bentler, in press). The S-B $\chi^2$ was used in addition to the maximum likelihood $\chi^2$ because it is more appropriate and robust when the data depart from multivariate normality. The Mardia normalized estimate in this sample was 42.07, which indicates significant multivariate kurtosis. The CFI and RCFI range from 0 to 1 and reflect the improvement in fit of a hypothesized model over a model of complete independence among the measured variables. Values at .95 or greater are desirable, indicating that the hypothesized model reproduces 95% or more of the covariation in the data. The RMSEA is a measure of fit per degrees of freedom, controlling for sample size, and values less than .06 indicate a relatively good fit between the hypothesized model and the observed data. An initial confirmatory factor analysis (CFA) assessed the adequacy of the hypothesized measurement model and provided the associations among all of the latent variables and the single-item indicators. We then tested a series of predictive models. First we tested only the risk factors as predictors of completion and loss and assessed whether they significantly predicted either outcome and the amount of variance that they could account for. We then added the demographics. After this model was examined, we added the health-related variables, the psychosocial variables, and the health belief model variables. Relationships that were significant among the predictor variables were also retained in this model as correlations and a significant correlation between the error residuals of the outcome variables was included. Nonsignificant paths and correlations in this model were trimmed gradually following the recommended model-evaluation procedure of MacCallum (1986). Suggestions from the LaGrange Multiplier test, which reports supplementary modifications to the original model that will improve the fit, were considered and were only allowed if they made sense theoretically and logically(LM test; Chou & Bentler, 1990).

# Results

## Confirmatory Factor Analysis

Table 1 reports summary statistics of the measured variables and the factor loadings of the hypothesized factor structure. All factor loadings were significant ($p \leq .001$). Fit indexes for the CFA model were all acceptable: ML $\chi 2 = 148.02$, 101 *df*; CFI = .96, RMSEA = .038, 90% confidence interval for RMSEA (CI) = .023 to .050; S-B $\chi 2 = 150.18$, 101 *df*; RCFI = .94; RMSEA = .038, CI = .025 to .051. Only one supplementary correlation was added to this model between the error residuals of two of the coping items and no further non-hypothesized modifications were made to the subsequent path model.

Table 2 reports the correlations between the model predictors and completion and loss in the bivariate analysis in the CFA. Among the putative HBV risk factors, only a prison history was significantly associated with less completion and none of these factors were significantly associated with subject loss. In this bivariate analysis, all of the demographics were significantly associated with completion. Greater age, female gender, more education and African-American ethnicity were associated with more completion and white ethnicity was associated with less completion. African-Americans were less likely to be lost to follow-up and white participants were more likely to be lost. Among the psychosocial/health-related variables, Poor Health was significantly and positively correlated with completion and less social support was associated with loss. Among the health belief model components, greater intentions to obtain the vaccine were negatively associated with subject loss and greater efficacy was associated with more completion.

## Predictive Model

The first predictive model included only the 3 risk factors as predictors of completion and loss. No predictors were dropped in this model so that we could ascertain the amount of variance accounted for by the 3 predictors whether they were significant or not. As was foreseen in the bivariate correlations, only a prison history significantly predicted less compliance with the 3-dose regimen. Very little variance was explained in this model: 2% for completion and 1% for loss.

The second predictive model included the demographics in addition to the 3 risk factors. Although all demographics were significantly associated with completion in the bivariate analysis and ethnicity was related to subject loss, in the path analysis the impact of demographics was modest; this model encompassing the risk factors and demographics explained 6% of the variance in completion and 6% of loss.

The full model that had all variables included as predictors of completion and loss explained 14% of the variance in completion and 13% of loss. The final predictive structural equation model is presented in Figure 1 after model trimming. Fit indexes for the final path model were very good: ML $\chi 2 = 262.16$, 190 *df*; CFI = .99, RMSEA = .034, CI = .023 to .043; SB $\chi 2 = 267.39$, 190 *df*; RCFI = .98; RMSEA = .035, CI = .025 to .044. Although some variables were significant in the bivariate analysis, they were not significant predictors in the path model due in large part to their relations with other predictor variables. Regression coefficients in some cases differ from the bivariate correlations due to similar considerations. Significant predictors of completion included not having a prison history, African-American ethnicity, greater positive coping, more social support, poorer health, and greater efficacy. Although greater age was associated bivariately with completion, it did not emerge as significant in the path model. This is probably due in large part to its association with poor health which was the stronger predictor of completion (correlation between age and poor health = .29, $p \leq .001$). Loss was predicted by white ethnicity, less social support, better health, and lower intentions to complete the regimen when assessed at baseline.

## Discussion

Our goal for this study was to assess predictors of completion and loss within an intensive and successful “gold standard” HBV vaccination program among individuals who are at an elevated risk for HBV. On the positive side, in examining the most salient risk factors for HBV, only a prior prison record had a modest impact on non-completion and no major risk factors impacted whether the individuals could not be found at follow-up. Very little variance in completion and loss was explained by these variables. Thus, it is encouraging that the program was not rejected differentially by the very people who need vaccination the most, even within this homeless population. They were as accepting of the intensive program as those individuals who were not at such a high risk.

Demographics are immutable and not subject to intervention; thus, it is not particularly disappointing that very little additional variance was predicted by all of the demographics. Although the demographics were significantly associated with completion in varied ways in the bivariate analysis, in the path model only ethnicity predicted completion and loss. Ethnic differences were notable, particularly the facilitative impact of African-American ethnicity on completion and the greater loss of white homeless people to the study. The positive result about African-Americans is interesting as it has been noted that some African-Americans report suspicions about the medical establishment and vaccination programs (e.g., Armstrong et al., 2001; Fazekas et al., 2008) and often have higher dropout rates (e.g., Armstrong et al., 2001; Aylward et al., 1985). Also, rates of HBV have historically been higher among African-Americans in the general population (CDC, 2009). The finding regarding white participants may reflect relatively greater transiency and dysfunction among white homeless people (e.g., Reback, Kamien, & Amass, 2007; Reback, Larkins, & Shoptaw, 2003) who also tend to be greater drug users. Other associations in the data (not reported due to space limitations) indicated that the white homeless people in the study tended to be younger, to have less social support, and to have more severe substance abuse problems as evidenced by a correlation between needle sharing and white ethnicity of .25 ($p \leq .001$). These relations may have contributed to the loss of these participants at follow-up.

As has been found in other studies, greater coping skills and more social support have a positive impact on the lives of homeless people (e.g., Nyamathi, Stein, Schuman, & Tyler, 2007; Stein, Dixon, & Nyamathi, 2008; Stein, Nyamathi, & Zane, 2009). In the case of this study, positive coping predicted completion and social support predicted both more completion and less subject loss. These are aspects of the lives of homeless people that are open to community involvement and improvement, and thus provide leverage points for future interventions.

Poorer health was associated with more completion. Indeed, it was the most powerful predictor of completion. It is probable that the individuals who perceived themselves as in poor health and were aware of their health problems were also most open to completing the vaccination series to avoid further health problems. The intervention nurses may have spent somewhat more time and effort on these needier individuals even though they were trained to provide similar treatment to all who were in the program. It could also be the case that people that are satisfied with their health status and rate themselves as very healthy may see no need for prevention behaviors and were less willing to follow through with the entire vaccination schedule. Asymptomatic homeless people may need more convincing to participate in a program such as this one, as intensive and personalized as it is. This relationship between poorer health and greater compliance was also found in the parent study which examined the entire sample of study participants (Nyamathi et al., 2009).

Some of the health belief items also had an impact. Those who reported lower intentions to comply with the program tended to be the ones who were lost at follow-up. Those who reported more efficacy in being able to come in for their vaccinations were able to do so as they had forecast. Intentions, however, were nonsignificant in assessing whether they would complete the 3 doses and prior knowledge about HBV was not predictive at all of either outcome at 6 months. These findings about knowledge alone not predicting healthier behaviors mirror results from many other studies that have found much the same thing. Aspects of the HBM other than knowledge appear to be more salient in vulnerable populations.

As with all research, there are limitations in this study including reliance on self-reports of proscribed behaviors such as needle-sharing. However, strong correlations between objective measures of various forms of substance use and self-report data have been demonstrated in other studies among homeless people (e.g., Nyamathi, Leake, Longshore, & Gelberg, 2001). In addition, the participants in this study which is based in Los Angeles may not be representative of all homeless individuals throughout the country. Furthermore, some homeless people that were approached may have been unwilling to be tested for HAV, HBV, HCV and HIV which may also have impacted the generalizability of our findings. However, this sample closely mirrors the general demographic characteristics of the homeless population found in the Los Angeles area which increases confidence in the generalizability of this sample (Los Angeles Homeless Services Authority, 2007).

In conclusion, a prison history, which is directly associated with HBV risk behaviors and is also a marker of psychosocial difficulties, poverty, antisocial behaviors, and mental illness, was associated with less compliance with the vaccination regimen. Parolees participating in this study reported significantly greater daily use of drugs and alcohol as compared to persons never in prison (Nyamathi et al., 2009). These behaviors may also have contributed to less compliance within this subset of individuals. Outreach workers need to be alerted to this possible association when managing a vaccination program. White participants were much more likely to be lost to follow-up. There were also significant bivariate associations between white ethnicity, younger age and less compliance. The current research program is attempting to target these individuals, who often are methamphetamine-addicted, where they congregate to increase their vaccination rates. Greater social support and poorer health were both associated with more completion and less loss to follow-up. Homeless individuals with poor health may be relatively more connected to community services, have somewhat more stable housing situations within shelters, and be more open to needed health interventions. These connections may also highlight the facilitative impact of greater social support and linkages to community services even within the difficult lives led by homeless people.

Although these results are interesting and point the way for even more effective interventions in the future, it is surprising how little variance was explained by these models overall. Each major component of predictors did contribute to our understanding of completion behaviors. Nonetheless, there is much that is still unexplained in the behaviors of the study participants. Future research should examine other possible reasons for non-completion of vital health-related programs such as exigent competing needs and other significant barriers and characteristics of homeless people that were not assessed in this research such as mental illness. Homeless people live difficult, transient, and chaotic lives and there is a great deal that is unpredictable in their behaviors.

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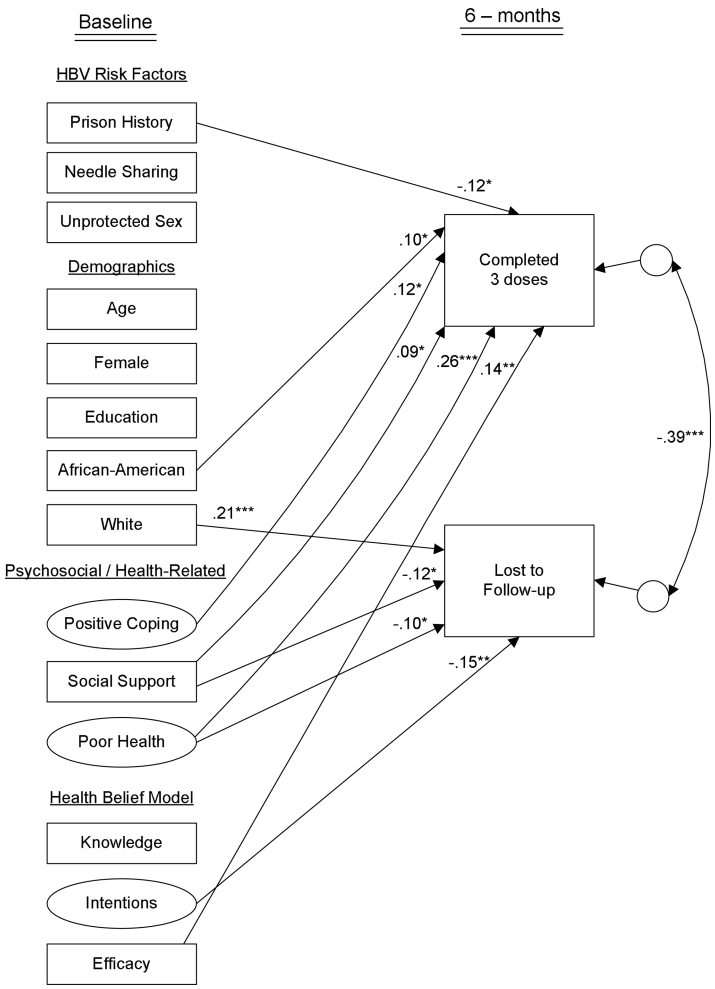


**Figure 1.**

Final path model depicting significant predictors of vaccination completion and loss to follow-up of 331 homeless people. All estimated parameters are standardized. The ovals designate latent variables; the rectangles represent measured variables. One-headed arrows represent regression paths. * $p < .05$; ** $p < .01$; *** $p < .001$.

## Table 1

Means, standard deviations (*SD*), percentages, ranges, and factor loadings in the Confirmatory Factor Analysis model ($N$ = 331 homeless people). All factor loadings significant ($p \leq .001$).

| Variables | Mean (*SD*) or % | Factor Loading |
|---|---|---|
| **HBV Risk Factors** | | |
| Prison history (lifetime; yes/no) | 42.6% | --- |
| Needle sharing (lifetime; yes/no) | 8.8% | --- |
| Unprotected sexual behavior (times per week/past 6 months; 0–25) | 2.68 (4.59) | --- |
| **Demographics** | | |
| Age (22–64 years) | 42.67 (8.48) | --- |
| Female | 10.6% | --- |
| Education (1–16 years) | 12.1 (1.63) | --- |
| African-American | 72.2% | --- |
| White | 15.7% | --- |
| **Psychosocial/Health-related** | | |
| Positive Coping | | |
| Concentrate efforts (1–4) | 3.34 (0.84) | .60 |
| Take action to make better (1–4) | 3.20 (0.90) | .61 |
| Come up with a plan (1–4) | 3.37 (0.83) | .49 |
| Think hard about steps (1–4) | 3.40 (0.84) | .48 |
| Social Support (1–5) | 3.20 (1.21) | --- |
| Poor Health | | |
| Health rating (1–5) | 2.72 (1.11) | .63 |
| Health problem (yes/no) | 36% | .61 |
| Function (0–10) | 1.30 (2.37) | .67 |
| **Health Belief Model components** | | |
| HBV Knowledge (0–14) | 7.06 (3.73) | --- |
| Intentions | | |
| How much want to complete (1–5) | 4.91 (0.55) | .97 |
| How likely to get all 3 doses (1–5) | 4.90 (0.52) | .68 |
| Efficacy (1–3) | 2.48 (0.76) | --- |
| **Outcome variables** | | |
| Completed 3 doses (yes/no) | 67.7% | --- |
| Lost to follow-up (yes/no) | 7.9% | --- |

## Table 2

Correlations in the Confirmatory Factor Analysis between model components and completion and loss at follow-up (N = 331 homeless people).

| HBV Risk Factors | Completed 3 doses | Loss at follow-up |
|---|---|---|
| Prison history | −.12* | −.07 |
| Needle sharing | −.08 | .07 |
| Unprotected sexual behavior | −.07 | −.01 |
| Demographics | | |
| Age | .17*** | −.07 |
| Female | .11* | −.03 |
| Education | .11* | −.04 |
| African-American | .13* | −.17** |
| White | −.09* | .21*** |
| Psychosocial/Health-related | | |
| Positive Coping | .11 | .02 |
| Social Support | .07 | −.14** |
| Poor Health | .25*** | −.08 |
| Health Belief Model components | | |
| HBV Knowledge | −.03 | −.01 |
| Intentions | .04 | −.14* |
| Efficacy | .16** | −.08 |

* p < .05;

** p < .01;

*** p < .001.