# Subjective Knowledge of AIDS and Use of HIV Testing

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ABSTRACT

Increasing knowledge is an important goal of human immunodeficiency virus (HIV) prevention strategies, although increased knowledge may not be associated with increased preventive behaviors. This study examines the association of (1) objective and subjective acquired immunodeficiency syndrome (AIDS) knowledge, and (2) both objective and subjective AIDS knowledge with HIV testing use. Data are from the 1988 National Health Interview Survey. Objective and subjective knowledge were only moderately correlated. In regression analyses, higher subjective knowledge was significantly associated with higher testing use, but objective knowledge was not. The results are relevant to other preventive behaviors for which knowledge is an important factor. (*Am J Public Health.* 1993;83:1460–1462)

## Introduction

Studies of the relationship between knowledge and preventive behaviors present mixed results.[1] Although much attention has been placed on efforts to increase individuals' knowledge about acquired immunodeficiency syndrome (AIDS) and thereby increase preventive behaviors (such as human immunodeficiency virus [HIV] counseling and testing),[2] studies are equivocal in their findings.[3,4] Since counseling and testing are among the largest components of the national HIV prevention program,[5] it is important to examine the association of knowledge with the use of voluntary HIV testing in order to target educational and testing programs.

Studies using National Health Interview Survey (NHIS) data have described knowledge levels of the general population[2,6]; however, these studies have not examined the relationship between knowledge and testing use. One study[7] found that objective knowledge was associated with the use of testing, but it did not examine subjective knowledge; conversely, another study[8] found that subjective knowledge was associated with the use of testing, but it did not examine objective knowledge.

This study, using NHIS data, focuses on two gaps in the literature: (1) the association of objective AIDS knowledge (scores on objective questions) and subjective AIDS knowledge (self-perceptions), and (2) the association of both objective and subjective knowledge with the use of HIV testing. The hypotheses tested were that objective and subjective knowledge would be highly correlated and that both would be significantly associated with testing use.

## Methods

### Data Source

Data are from the 1988 AIDS Knowledge and Attitudes Survey, an NHIS supplement. The strengths of this cross-sectional, household interview survey are that it was representative of the civilian, noninstitutionalized US population and therefore included individuals with a wide range of knowledge and testing behaviors, and that its sample size was large (n = 29 659) with a high response rate (approximately 90%).[6,9] Sample characteristics have been previously described.[6]

Data were weighted using SAS software to adjust for probabilities of selection and nonresponse and for the complex survey design. Standard errors were inflated by a design effect of 1.3 in regression analyses (as previously done).[2,6]

### Measurement of Variables and Data Analysis

The dependent variable was whether an individual reported having been voluntarily tested (i.e., by "a source such as your doctor, clinic, or HMO"). Knowledge was most likely to be associated with testing use for those who voluntarily sought testing rather than for those who were tested automatically.

Two objective knowledge indices were created using 13 questions about AIDS and 11 questions about HIV transmission (Appendix); a similar procedure was followed in another study.[2] Mean scores were used in regression analyses.

Subjective knowledge was measured by the question: "How much do you think you know about AIDS? A lot, some, a little, nothing?" An ordinal ranking was assigned for regression analyses (e.g., "a lot" = 3); analyses using dummy variable categories produced similar results.

Variables included in regression analyses were objective (general) knowledge, objective (transmission) knowledge, and subjective knowledge, along with other variables as listed in the notes for Table 2. Bivariate associations were assessed using chi-square tests and Spearman rank correlations. Logistic regressions were run using SAS software.

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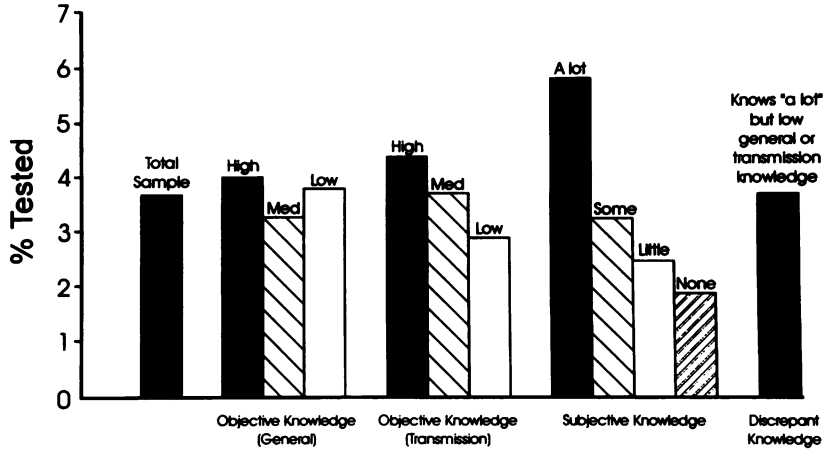
## Results

Figure 1 shows that individuals with higher knowledge were significantly more likely to have been tested ($P < .001$). Individuals who perceived that they knew a lot had the highest testing rates, although rates dropped for those who perceived that they knew a lot but actually had low objective knowledge.

Table 1 illustrates that objective and subjective knowledge are only moderately correlated. For example, more than one third of those with medium or low objective (transmission) knowledge perceived incorrectly that they knew a lot.

Logistic regression was used to adjust for factors such as education that may influence the relationship between knowledge and use of voluntary HIV testing (Table 2). Higher subjective knowledge was significantly associated with higher testing use (odds ratio = 1.5, $P < .0001$). However, objective knowledge was *not* significantly associated with testing use. Including subjective knowledge significantly increased the model's goodness-of-fit ($P < .001$) (details on request).




*Note.* $P < .001$ (chi-square) except discrepant knowledge ($P = .10$).

**FIGURE 1—Percentage tested, by knowledge categories.**

**TABLE 1—Association of Objective with Subjective Knowledge**

| | Subjective Knowledge Categories, % | | | |
|---|---|---|---|---|
| | A Lot | Some | A Little | Nothing |
| Objective (general) knowledge | | | | |
| High (> 4.5–< = 5.0) | 34 | 49 | 16 | 1 |
| Medium (> 3.5–< = 4.5) | 13 | 42 | 35 | 10 |
| Low (> = 1.0–< = 3.5) | 4 | 13 | 32 | 51 |
| Spearman rank correlation coefficient = .49 | | | | |
| Objective (transmission) knowledge | | | | |
| High (> 4.5–< = 5.0) | 40 | 45 | 13 | 2 |
| Medium (> 3.5–< = 4.5) | 24 | 47 | 25 | 4 |
| Low (> = 1.0–< = 3.5) | 11 | 37 | 34 | 18 |
| Spearman rank correlation coefficient = .35 | | | | |

*Note.* Spearman rank correlation coefficient for general and transmission knowledge = .42.

**TABLE 2—Association of Knowledge with Voluntary HIV Testing Use, by Logistic Regression (n = 21 624)[a]**

| | β | Odds Ratio | 95% Confidence Interval |
|---|---|---|---|
| Objective (general) knowledge | –.02 | 0.97 | 0.73, 1.29 |
| Objective (transmission) knowledge | .05 | 1.06 | 0.89, 1.24 |
| Subjective knowledge | .41 | 1.51* | 1.30, 1.74 |

*Note.* Model chi-square 637.31; $df = 23$; $P = .0001$; "c" statistic[b] = .72. Analysis has been adjusted for sex, age, race, ethnicity, marital status, education, health status, residence, income, membership in risk group, and self-assessed chances of having and/or getting AIDS. All variables are categorical as defined in the survey except knowledge (described previously) and income, which was converted to a continuous variable with missing values estimated for regression analyses (details upon request).

[a]Individuals who had never heard of the HIV test (n = 7828) and those with missing values (n = 207) were excluded.

[b]The "c" statistic measures the ability of the model to classify individuals correctly, based on the area under the receiver operating curve.[10] A version of the goodness-of-fit test developed by Hosmer and Lemeshow[10] was also used; the results indicated that the model provides a good fit (chi-square = 4.27, $df = 8$, $P$ = NS).

*$P < .0002$ (two-tailed test).

## Discussion

Contrary to expectations, objective and subjective knowledge were only moderately correlated, and subjective but not objective knowledge was significantly associated with the use of voluntary HIV testing. One implication of this finding is that surveys, studies, and models should include measures of both objective and subjective knowledge. Measuring only objective knowledge can produce misleading results, whereas asking even one question on subjective knowledge can provide information about who is likely to seek testing and can identify people who have self-perceptions that are at odds with their actual knowledge. The results are relevant to other preventive behaviors, such as cancer screening, for which subjective knowledge may be an important factor.

As noted above, previous studies have failed to observe a consistent link between knowledge and preventive behaviors. One reason for this may be that measuring knowledge by using objective, structured questionnaires may not capture underlying attitudes about that knowledge.[1,3] Subjective knowledge may represent attitudes and beliefs, such as people's sense of self-efficacy, that are more closely linked to behavior than objective knowledge.

Another reason for this failure is that knowledge may be a necessary but insufficient condition for behavioral change.[3,4] Subjective knowledge may be a proxy for attitudes that influence problem perception, the first stage of the change process.[4] However, subjective knowledge does not appear to be a proxy for perceived risk;

the correlation of subjective knowledge and perceived risk of HIV was low (Spearman rank correlation = .15), and subjective knowledge was independently associated with testing use, controlling for perceived risk.

Several limitations should be noted. The NHIS did not include all variables that may be predictors of testing use, and the subjective knowledge measure was based on one question. Knowledge may be a result of counseling and testing as well as a predictor (i.e., it may be "endogenous"); however, only 32% of those tested who received their results reported receiving counseling,[6] and both subjective and objective knowledge should change as a result of counseling and testing.

In conclusion, this study suggests that what people perceive they know may be more important than what they actually do know. Prevention efforts should focus not only on increasing objective knowledge but also on changing attitudes. Future research should examine both the determinants of subjective knowledge and the mechanisms by which subjective knowledge is related to behavior and can be modified to increase preventive behaviors. □

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**APPENDIX—Survey Questions Used in Objective Knowledge Indices**

**General knowledge**

Is there a difference between having the AIDS virus and having the disease AIDS?
Yes, no

(The following questions have the following possible responses: definitely true, probably true, probably false, definitely false)
AIDS can reduce the body's natural protection against disease.
AIDS is especially common in older people.
AIDS usually leads to heart disease.
AIDS is an infectious disease caused by a virus.
Teenagers cannot get AIDS.
AIDS leads to death.
A person can be infected with the AIDS virus and not have the disease AIDS.
Looking at a person is enough to tell if he or she has the AIDS virus.
A person who has the AIDS virus can look and feel well and healthy.
A pregnant woman who has the AIDS virus can give the AIDS virus to her baby.
There is a vaccine available to the public that protects a person from getting the AIDS virus.
There is no cure for AIDS at present.

**Transmission knowledge**

(The following question has the following possible responses: definitely true, probably true, probably false, definitely false)
Any person with the AIDS virus can pass it on to someone else through sexual intercourse.

(The following question has the following possible responses: very likely, somewhat likely, somewhat unlikely, very unlikely, definitely not possible)
How likely do you think it is that a person will get AIDS or the AIDS virus infection from:
Living near a home or hospital for AIDS patients.
Working near someone with the AIDS virus.
Eating in a restaurant where the cook has the AIDS virus.
Shaking hands, touching, or kissing on the cheek someone who has the AIDS virus.
Sharing plates, forks, or glasses with someone who has the AIDS virus.
Using public toilets.
Sharing needles for drug use with someone who has the AIDS virus.
Being coughed on or sneezed on by someone who has the AIDS virus.
Attending school with a child who has the AIDS virus.
Mosquitoes or other insects.