

QUANTITATIVE EVALUATION OF COUNSELING ASSOCIATED WITH HIV TESTING

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Abstract. The purpose of the study was to demonstrate a quantitative evaluation of the educational impact of HIV pretest counseling. Two cohorts of clients exposed to different counseling methodologies were evaluated. The clients completed questionnaires before and after counseling. Responses were scored and compared, and a quantitative measure of educational impact reached. Quantitative educational change following counseling was demonstrated. The change was significantly greater in the more interactive and culturally sensitive counseling format. Quantitative measurement of educational change on focused HIV/AIDS counseling can be easily undertaken. Given that an ill informed population is unlikely to appropriately modify behavior, such educational evaluation should be considered as integral to national HIV/AIDS programs.

INTRODUCTION

The International Organization for Migration (IOM) has been assisting international migration for over 50 years. This assistance includes migrant health assessments. The United States introduced mandatory HIV testing for migrants in 1989, subsequently followed by other nations. Since then, IOM has undertaken over 500,000 HIV tests in many global settings as part of the migrant health assessment.

It is generally accepted that HIV testing need be voluntary and preceded and followed by appropriate counseling for ethical and legal reasons (Murphy, 1993). Recommended procedures and protocols for counseling are well established by national health authorities (Centers for Disease Control and Prevention, 2001). Approximately 60 countries require HIV testing for migrants (including refugees) as part of the health

assessment for migration (Anonymous, 2003). Pre-test counseling of intending migrants is used as an opportunity to enhance knowledge about HIV/AIDS as a tool of behavior modification. In such situations, where HIV testing is a requirement for migration, surgery, employment, insurance, etc, the non-voluntary nature of the intervention adds another dimension to the counseling process; informed consent. In those circumstances, it is important that individuals being tested are cognizant of their rights in relation to the test. Therefore, in HIV testing of such groups, the responsibility of providing comprehensive pre- and post-test counseling includes increasing knowledge as a precursor to behavioral modification *as well as* the issue of informed-consent in relation to testing in the migrant setting.

In the absence of a curative treatment regime, only behavioral change can result in a decrease in the incidence of HIV. Many studies have been undertaken to evaluate behavioral change following intervention (Discenza *et al*, 1996; Clark *et al*, 1998). However, it is apparent that behavioral change is based on an understanding and an awareness of preventive strategies, namely education. Impact studies on HIV interventions should address the efficacy of measures aimed at increasing knowledge. An uninformed or mis-

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The work was carried out at the premises of the International Organization for Migration in Phnom Penh, Cambodia; statistical analysis of data was done at University of Western Australia, Perth, Australia.

informed individual cannot be expected to appropriately modify behavior.

The purpose of this study was to pilot an HIV pre-test counseling evaluation tool with two variants of a pre-test counseling format during migrant health assessments at the IOM office in Phnom Penh, Cambodia.

MATERIALS AND METHODS

To evaluate the efficacy of pre-test HIV counseling, a questionnaire was developed to measure client knowledge in relation to HIV/AIDS and HIV testing from two perspectives: a public health component and an informed consent component.

The public health component is a general understanding of HIV/AIDS: what it is, how it is transmitted, how to avoid risk behavior and how to prevent exposure. This was the component with the potential to influence behavior change.

The informed consent component is related to the rights of the migrant specific to being tested for HIV. These included whether the applicant will be forced to have the test, the regimen of confidentiality, access to post-test counseling, and the implications of a positive test result on migration.

The questionnaire was piloted to ensure that the level of complexity of the questions allowed for a measurable response to intervention (counseling). There were a total of 18 questions, 10 related to public health and 8 to informed consent. Most of the questions were statements to which the interviewee could respond with a "yes", "no" or "don't know". There were two questions requiring specific information. Responses were scored: 1 (for correct response) or zero (for incorrect or "don't know" response). A perfect score for public health was 10 and for informed consent was 8 (total 18).

Inclusion in the study was voluntary. The questionnaire was completed by a health worker who interviewed each client in his/her native tongue in private. Client anonymity was protected. Information was obtained on sex, age, and educational level. Clients were asked to answer the pre-counseling questionnaire prior to entering the migrant health assessment stream. Thereafter, blood tests, chest x-rays, and

a full physical examination by a migration health physician were performed. On completion of the health assessment, clients were asked to answer the same questions again (the post-counseling questionnaire). The time interval between a client completing the pre- and post- counseling questionnaires ranged from one to two hours.

The assumption was that clients would score higher on their second exposure to the questionnaire; that their performance would improve because of the influence of the pre-test counseling.

Two groups were compared. The first group, series 1 (n = 422), underwent a passive form of counseling in groups of 6-12, consisting largely of the presentation of the information in the form of a video dubbed in the Cambodian language.

The second group, series 2 (n = 563), underwent a more intensive counseling, in groups of 6-12, and participated in an more focused audio-visual production, presented by a trained nurse. The nurse/counselor encouraged an interactive exchange before, during, and after viewing the educational material that was culturally specific. The nurse/counselor answered questions and provided prompts throughout the process. This counseling session was followed by a brief intensive repeat of all relevant public health and informed consent issues provided by the migration health physician during the actual medical examination. The physician followed a checklist to ensure that all relevant points were made and that all migrants received a similar message. This latter exchange between the physician and migrant were conducted on a one-to-one basis.

RESULTS

The results of the questionnaires are reported as total items correct (all questions) and separately for the public health (10) and informed consent (8) questions. The two groups, Passive Counseling and Interactive Counseling, are compared (Passive N = 422, Interactive N = 563).

A change score was calculated for each respondent by subtracting the number of items answered correctly in the pre-test questionnaire

Table 1

Mean number of items answered correctly in the pre-counseling questionnaire for each type of intervention. The standard deviations are in parentheses.

	Public health score	Informed consent score	Total score
Passive counseling			
Male (N=160)	7.2 (1.4)	4.1 (1.0)	11.2 (1.9)
Female (N=262)	6.5 (1.9)	4.0 (1.1)	10.4 (2.5)
All cases (N=422)	6.7 (1.8)	4.0 (1.1)	10.7 (2.3)
Interactive counseling			
Male (N=195)	6.6 (1.8)	4.7(1.4)	11.3 (2.5)
Female (N=368)	5.8 (1.9)	4.4 (1.2)	10.2 (2.5)
All cases (N=563)	6.0 (1.9)	4.5 (1.2)	10.6 (2.5)

from the number answered correctly in the post-test questionnaire. A positive score demonstrates a better performance *after* intervention (as was expected).

Although the subjects who underwent the two forms of counseling were not matched, the mean performances on the pre-counseling questionnaires were not significantly different, indicating that the two groups had very similar levels of knowledge prior to the intervention. Similarly, there were no significant differences in performances between male and female subjects.

The mean increase in total items answered correctly was statistically greater than zero after both the Passive intervention [(t (421)=17.90, p<0.001)] and the Interactive intervention [(t (562)=32.86, p<0.001)]. More importantly, comparison of the change scores from the two interventions showed that there was a greater increase in the number of items answered correctly after the Interactive than the Passive intervention [(t (946) = 16.56, p<0.001)].

Evaluation of effect of age and educational level on change scores

Age. The effect of age on change scores was evaluated in three age groups: 16-25 years, 26-50 years, and over 50 years. There was a small effect of age on change in public health score following the Interactive counseling [F(2,553)=3.08, p<0.05]. Post-hoc tests showed that the older group showed a greater increase in items answered correctly following the intervention than the younger group. There was

Table 2

Mean difference (change) scores between pre- and post-counseling questionnaires for each type of intervention for males and females. The standard deviations are in parentheses.

	Public health score	Informed consent score	Total score
Passive counseling			
Male (N=160)	1.2 (1.2)	0.4 (1.2)	1.7 (1.9)
Female (N=262)	1.3 (1.3)	0.5 (1.2)	1.8 (2.1)
All cases	1.3 (1.4)	0.5 (1.2)	1.8 (2.0)
Interactive counseling			
Male (N=195)	2.4 (1.9)	1.9 (1.8)	4.3 (3.2)
Female (N=368)	2.8 (2.0)	1.9 (1.8)	4.7 (3.4)
All cases	2.6 (2.0)	1.9 (1.8)	4.6 (3.4)

no change in informed consent score for either intervention.

Education. The effect of educational level on change scores was evaluated in four groups: Level 1, literate; Level 2, completed primary school; Level 3, completed secondary school; Level 4, university. The data show a non-linear effect of education level on score change after counseling. The education level was related to the gain in public health knowledge by an inverted-U shaped function in both cohorts, with the greatest gain seen in those who had completed primary school. The Interactive counseling had its greatest effect on the two lowest educational levels (comparing education levels 1 and 2 from both cohorts).

Table 3
Mean difference (change) scores for the three age groups following each type of intervention. The standard deviations are in parentheses.

	16 to 25 years	26 to 50 years	>51 years
Passive counseling			
Public health	1.25 (0.08)	1.27 (0.11)	1.48 (0.27)
Informed consent	0.47 (0.07)	0.38 (0.11)	0.83 (0.24)
Interactive counseling			
Public health	2.53 (0.11)	2.70 (0.14)	3.54 (0.37)
Informed consent	1.88 (0.10)	1.95 (0.13)	1.96 (0.37)

Table 4
Mean difference (change) scores for the four educational levels following each type of intervention. The standard deviations are in parentheses.

	1-Literate	2-Primary school	3-Secondary school	4-University
Passive counseling				
Public health	1.0 (0.25)	1.6 (0.15)	1.3 (0.08)	1.0 (0.12)
Informed consent	0.5 (0.23)	0.7 (0.13)	0.4 (0.08)	0.4 (0.12)
Interactive counseling				
Public health	3.0 (0.52)	3.5 (0.19)	2.5 (0.10)	1.7 (0.18)
Informed consent	2.4 (0.48)	2.4 (0.17)	1.8 (0.09)	1.6 (0.20)

There was little difference in public health knowledge gained by the higher educational level groups between the Passive and Interactive interventions. The gain in Informed consent knowledge was not related to educational level in the Passive cohort but there was a weak relationship in the Interactive cohort, such that Levels 3 and 4 showed less gain than Levels 1 and 2.

Not surprisingly, both interventions increased the knowledge of the higher educated subjects less than those with lower educational achievements.

Negative and zero change scores

A small percentage of the samples (2.8% in the Passive cohort and 1.4% in the Interactive cohort) showed lower (negative change) scores *after counseling* compared with before counseling. A substantial percentage (26.5%) of those who received Passive counseling showed no increase (zero change) in performance after the intervention. The number of zero change scores after intervention decreased to 12% in those who underwent Interactive counseling.

DISCUSSION

Although pre- and post-HIV-test counseling is accepted as a mandatory part of the testing process, and there are many models for counseling, there has been little attempt to quantify the efficacy of pre-test counseling. The exercise described in this paper is an attempt at filling this void.

It is apparent that there was a significant improvement in the knowledge after both Passive and Interactive counseling interventions. Subjects who underwent Passive counseling improved their post-intervention scores on average, by less than 2 items; that is, on average, they answered 2 more questions correctly than the number answered correctly before counseling. The Interactive counseling intervention produced a significantly greater improvement, with an average improvement of about 4.5 correct answers. The fact that the improvement was significantly greater following the Interactive counseling methodology was expected and sup-

ports the more culturally adaptive and interactive approach applied.

That there was no significant difference in knowledge between the sexes indicates that the methodology was not outcome biased for, or against, either sex, as should be the case. The relationship between age and performance was also not significant and likewise an encouraging finding. The neutral change scores indicated a significant improvement (reduction of no-change status) between Passive and Interactive counseling, supporting the efficacy and client involvement in the interactive process.

This study demonstrates that a quantitative evaluation of the educational effect of HIV pre-test counseling can be undertaken with results that provide statistically valid measures as to the efficacy of the process. Such an exercise allows those involved in counseling to more confidently satisfy themselves that there is indeed an increase in knowledge following intervention, and allows the measurement of such an effect to be raised from an anecdotal to a scientific plane.

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