



Predictors of readiness for oral rapid HIV testing by Chilean health care providers

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ABSTRACT

Objective. This study identified the personal characteristics that affect Chilean health care providers' readiness to adopt HIV Oral Rapid Testing (ORT) in Chile as a new clinical evidence-based practice (EBP).

Methods. Using a cross-sectional research design, the study sampled 150 nurses, midwives, and physicians employed at four clinics within the Pontificia Universidad Católica de Chile Health Network in Santiago. Participants completed a self-administered survey asking about their demographic background, EBP attitudes and experience, personal beliefs related to HIV, the importance of HIV testing, and perceived self-comfort in performing a rapid HIV test.

Results. Of the participants, 90% believed that incorporating ORT would make a positive difference in their practice and said that they would be willing to adopt the technology for that reason. Nonetheless, the providers reported a mean "readiness to implement ORT" score of 15.1 out of a possible value of 20, suggesting only moderate self-perceived readiness to adopt the EBP. Education, beliefs about evidence-based practice, perceived comfort in performing ORT, and perceived importance of HIV testing explained 43.6% of the variance in readiness to adopt ORT.

Conclusion. The findings of this first ORT pre-implementation study in Chile can help guide policy makers and HIV stakeholders to prepare for and increase primary health care providers' readiness to successfully adopt this evidence-based technology. Successful adoption of ORT could increase Chile's capacity to reach HIV-vulnerable Chileans for testing and referral to care if infected, thus helping the country to reduce further transmission of the virus and its medical complications.

Keywords

HIV; health care; readiness; disease prevention; Chile.

In 2013, an estimated 35 million people worldwide were living with HIV, including 38 000 in Chile (1). In response to the country's growing AIDS epidemic, the Chilean government instituted free HIV screening as well as highly subsidized treatment for people

who test HIV-positive (2). Currently, only the enzyme-linked immunosorbent assay (ELISA) test for HIV is available in Chile, and that technology requires a serum sample and laboratory facilities to conduct the assay, while producing a lengthy delay before receiving

results. Due to these drawbacks, an unknown number of at-risk individuals forego testing or do not return to receive their results.

In contrast to the ELISA, the oral rapid test (ORT) for HIV uses a mucosal swab that avoids the invasiveness of a blood draw, offers test results in 20–40 minutes as opposed to several days, and displays results without specialized laboratory analysis, while being of equal sensitivity and specificity to the ELISA in detecting HIV (3). Because of these many advantages, ORT has increased the number of

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people throughout the world who get tested and learn their HIV status (3–6). Nonetheless, ORT has never been used in Chile, where the ELISA remains the sole HIV screening method. Despite ORT having been shown to be comparable to the ELISA when used experimentally in Chile (7), it is unclear whether Chilean health care providers would readily adopt ORT if it were introduced into primary health care clinical practice.

Using the Advancing Research and Clinical Practice through Close Collaboration (ARCC) model as a conceptual framework (8), this study examines Chilean health care providers' readiness to adopt ORT and the personal characteristics that influence this readiness. Prior research has identified a number of factors that hinder readiness to adopt other innovative evidence-based practices (EBPs). These deterrents include inadequate EBP knowledge and skills, perceived inadequate administrative support, and lack of a belief that the EBP improves patient care and health outcomes (9, 10). Identifying which factors are likely to influence Chilean health care providers' readiness to adopt ORT as an EBP may help in developing strategies to inform its successful implementation (11, 12).

The ARCC model draws upon the principles of cognitive-behavioral theory in recognizing that individual, social, and environmental factors influence cognition, learning, emotions, and behavior (9, 13, 14). Under the model, health care providers' readiness to adopt any EBP is swayed by their beliefs about, attitudes toward, and intentions to adopt the new technology (15).

Consistent with the model, our study examines two sets of factors presumed to be associated with providers' readiness for ORT. The first set consists of personal demographic characteristics: age, gender, profession, and education. These factors have been shown to be associated with EBP implementation in previous research (16–18). The second set focuses on providers' perceptions and beliefs about ORT as an EBP as influenced by four main constructs. The first construct consists of providers' beliefs about the overall value of EBPs and their self-perceived ability to implement them in clinical practice. Such beliefs have been shown to be critical to the successful implementation of a new EBP in real-world settings (9). Positive beliefs about EBPs, however, do not guarantee a provider's

willingness to adopt a specific technology (19). Providers' perception of the importance of HIV testing also may influence their readiness to perform ORT, with those who ascribe a higher value to HIV testing more likely to favor a proven new diagnostic method. A third construct in our study, HIV-related stigmatization of people at risk for or living with the virus, also has been found to influence attitudes toward delivering HIV testing (20, 21). Fourth, providers' self-perceived comfort in performing each of the five steps included in ORT likely affects their readiness. A low level of perceived comfort in performing ORT may interfere with personal willingness to adopt ORT even when a provider believes in it as an EBP.

METHODS

Study design

The study employed a cross-sectional research design in which information on readiness to adopt ORT was collected between February 2014 and April 2014 using a self-administered, paper-based questionnaire in Spanish that took about 15–20 minutes to complete. The data were collected from a convenience sample of 150 health care workers employed at four clinics belonging to the Universidad Católica de Chile Health Network in Santiago, Chile, which is one of the largest private providers of outpatient care and ELISA testing in Santiago. Three of the primary health care clinics are public facilities located in middle- to low-income neighborhoods (22). The fourth clinic offers private health care and serves a population with a somewhat higher socioeconomic level.

Three institutional review boards approved the study with regard to the protection of human subjects: the Faculty of Medicine of the Pontificia Universidad Católica de Chile (Santiago, Chile); the Office of the Protection of Research Subjects at the University of Illinois at Chicago (Chicago, Illinois, USA) and the Southeast Metropolitan Health Service, Dr. Sótero del Río Hospital (Santiago, Chile). All participants gave informed consent before completing the survey.

Recruitment and sampling

Nurses, midwives, and physicians were selected for inclusion in the sample,

as all three professions play a major role in Chile in providing HIV counseling and/or referring patients for testing. Although any of these providers could perform an ORT, we did not know the extent to which their perceptions of ORT were similar. Thus, comparing the three groups seemed appropriate. All three occupations require a five- to seven-year university degree, and this training typically includes course work in evidence-based practice and also the diagnosis and treatment of HIV (23, 24). Inclusion criteria involved working as a primary care nurse, midwife, or physician at one of the four clinics. Exclusion criteria included working in medical specialties such as radiology that do not typically refer patients for HIV testing. Of the 200 providers initially invited to participate, 33 declined or were unable to participate and 17 failed to return a completed questionnaire by the agreed deadline. The final sample consisted of 150 informants.

Measures

Participants were asked to report their age, which was coded subsequently as a five-category ordinal variable, and their gender, profession, and educational background, subsequently coded as dichotomous variables.

Two of this study's instruments, Nurses' Attitudes about AIDS Scale (NAAS) and Brief Individual Readiness for Change, were available only in English and were translated into Spanish by the principal investigator, who is bilingual and a Chilean. Cognitive interviews (25) were performed with five Chilean primary health care providers (two nurses, one midwife, and two physicians) from a clinic other than a study site to validate the translation and to assess the appropriateness of the items. Based on the results, two changes were made to the questionnaire: one item was better defined to clarify its meaning and a word was replaced with a synonym for the same reason. The scales' developers gave permission for their use.

The Readiness to Adopt ORT Scale is based on the Brief Individual Readiness for Change instrument that was designed to be adapted for any EBP (26). For this study it was modified by replacing the words "addiction services" in the original version with the term "ORT." The brief version of the scale includes five items,

each representing a main area affecting readiness: (a) provider characteristics, (b) motivation, (c) perceived organizational support, (d) institutional resources, and (e) belief that the change will make a difference (26, 27). Using a 5-point Likert format, respondents were asked to indicate on a scale of 0 to 4 the extent to which they “strongly agree” or “strongly disagree” with five statements related to their self-perceived readiness to implement ORT. Responses were summed from 0 through 20, with a higher score indicating greater readiness to adopt ORT; Cronbach’s alpha was in the acceptable range ($\alpha = 0.72$).

The Evidence-based Practice Beliefs instrument (8) consists of a 5-point Likert scale asking informants if they strongly agree or strongly disagree with a series of 16 statements. The scale measures two subcomponents of participants’ beliefs about adopting an EBP: their self-perceived difficulty in using and understanding the EBP, and their personal confidence in being able to use it. The scale was previously validated and translated into Spanish for use with nurses (17) and was reported to have a high Cronbach’s alpha of 0.86 (28). It demonstrated equally high internal consistency in this study ($\alpha = 0.86$).

The HIV-related Stigmatization Scale is an adaptation of the NAAS (21). For this study, the term “nurses” in the original version was changed wherever relevant to “nurses, midwives, and physicians.” Of the overall instrument, the only two subscales used were those directly related to providers’ caregiving and HIV concerns. Each subscale item was scored using a Likert format, with 0 indicating “strongly agree” and 4 indicating “strongly disagree.” Higher summated scores indicate higher levels of stigma against HIV caregiving and/or people living with HIV. The overall internal consistency of the NAAS was high ($\alpha = 0.83$) when used by its developers. The combined Cronbach’s alpha for the two subscales used in this study was acceptable ($\alpha = 0.71$).

A three-item Perceived Importance of HIV Testing Index using dichotomized responses (agree or disagree) was developed based on country-level recommendations of the Joint United Nations Program on HIV/AIDS (UNAIDS) (29) calling for increased HIV testing to prevent the spread of the virus and to get people into treatment earlier. The World Health Organization (WHO) also

advocated offering ORT in primary health clinics to increase utilization of testing and raise the number of people who know their status. Respondents received one point for each item with which they agreed, for a summated score of between 0 and 3 points. The higher the score, the more important they felt HIV testing to be. Assessing internal consistency and reliability is not appropriate for this type of index because the items do not represent a single dimension.

The Perceived Comfort Performing Rapid HIV Testing Scale consists of five items measured using a 5-point Likert format, with responses ranging from “strongly disagree” (0) to “strongly agree” (4). The instrument was specifically created for this study, reviewed by an expert in HIV, and pilot tested before use. The scale’s five items were based on prior research that identified individual barriers to the programmatic adoption of HIV testing (20). Participants were asked how comfortable they would be conducting pre-counseling, performing oral testing, performing finger-prick testing, giving a positive test result with post-test counseling, and giving a negative test result with post-test counseling. A question on the finger-prick test was included because that test is contained in ORT testing kits. The higher the score, the more comfortable a provider felt at the prospect of performing a rapid HIV test. Examination of the scale showed that the inter-item correlations were moderately high and the Cronbach’s alpha for the scale was acceptable ($\alpha = 0.714$).

Statistical analysis

The data were analyzed using SPSS version 22.0. Calculations indicated that a sample of 150 participants provided 80% statistical power to detect a medium to large size effect (partial correlation of 0.25–0.50) between the independent and dependent variables within a multiple linear regression model using five to eight explanatory variables. Significance tests were used to determine statistical associations between study variables and ORT readiness. Because this was an exploratory study, we did not make assumptions about the directionality of associations, and thus all tests were two-sided. The null hypothesis for all tests was that there was no association between the variables. As a first step in the analysis, descriptive statistics was used to examine

all variables and scale reliabilities. Second, the relationship between each demographic or perception variable and readiness to adopt ORT was examined using a *t*-test for comparison across levels for dichotomous variables (gender, profession, education) and correlations for continuous scales. Variables that were not significantly related to readiness to adopt ORT ($P > 0.05$) were excluded in the subsequent analysis. Third, multiple linear regression modeling was performed because the ORT readiness outcome was continuous and could accommodate continuous, ordinal, and nominal independent variables. Examination of the test assumptions indicated a satisfactory level of homoscedasticity, linearity, and normality in all the variables. The variance inflation factor (VIF) was examined to determine if collinearity between the profession and education variables was a problem in the regression model. It showed no significant multicollinearity (VIF score 1.004), and thus we proceeded to include both variables in the analysis. The regression analysis was done in two stages, first introducing the demographic characteristics and then adding the perception variables. Selection of predictors for the model proceeded in an interactive fashion in which all variables were initially entered in the model and nonsignificant variables were removed one by one so that the final model included only predictors that were significantly related to readiness to adopt ORT ($P < 0.05$), thus maintaining model parsimony and power.

RESULTS

Of the 150 study participants, 73.3% were women. Most (74%) of the participants were 39 years of age or younger. Only 21 (14%) of the participants had earned an advanced degree (see Table 1). Of the total participants, 135 (90%) believed that incorporating ORT would make a positive difference in their practice.

The mean EBP Beliefs Scale score was 59.5 within a possible range of 16 to 80. According to the scale developer Fineout-Overholt (communicated via email in October 2014; ellen.fineout.overholt@gmail.com), this score indicates some but not complete commitment to the EBP (see Table 2). Examination of the overall scores for individual items reveals that self-perceived knowledge of

TABLE 1. Demographic characteristics of health care providers (*n* = 150) surveyed on readiness to adopt HIV Oral Rapid Testing (ORT), Santiago, Chile, 2014

	No. (%)
Gender	
Women	110 (73)
Men	40 (27)
Age	
20–29	48 (32)
30–39	63 (42)
40–49	18 (12)
50–59	15 (10)
60–70	6 (4)
Profession	
Physician	96 (64)
Nurse/Midwife	54 (36)
Education	
Bachelor's degree	129 (86)
Master/PhD/Post doc	21 (14)

how to effectively implement a new EBP scored the lowest, while feeling sure that implementing the EBP will improve delivered care scored the highest. Many providers (80%) reported that they lacked self-confidence in their ability to implement an EBP at their work place.

Overall, attitudes of stigmatization toward HIV as a disease and/or people who contracted the virus were uncommon. Nonetheless, a small number of respondents expressed negativity in their answers to two items: 8% of participants disagreed with the statement “it is comforting to know that there’s not much difference in caring for AIDS patients and caring for other terminally ill persons,” and 12% disagreed that “people living with AIDS are not dangerous to others in casual contact.”

The score for mean perceived importance of HIV testing was 2.88 in a possible range of 0 to 3. Almost 95% of the participants indicated that they agreed/strongly agreed with the importance of HIV testing. Perceived comfort in performing a rapid HIV test had a mean score of 16.21 out of a possible 20, with higher scores indicating greater comfort. However, health care providers had different levels of personal comfort related to each of the five components of testing. Only 46% of the participants indicated that they agreed or strongly agreed that they would feel comfortable giving a positive HIV test result and conducting post-test counseling.

TABLE 2. Mean scores of study participants (*n* = 150) on five survey instruments used to examine readiness to adopt ORT, Santiago, Chile, 2014

	Mean (SD) ^a	Score range
EBP beliefs	59.53 (7.78)	16–80
HIV-related stigmatization	12.80 (6.67)	0–80
Perceived importance of HIV testing	2.88 (0.34)	1–3
Perceived comfort performing ORT	16.21 (4.47)	0–20
Perceived readiness to adopt ORT	14.51 (3.67)	0–20

^a Standard deviation.

Overall, 60% of informants perceived having sufficient organizational support to successfully implement ORT. Of the remainder, nearly 14% perceived a lack of sufficient organizational support and 24.7% selected the “neutral” category.

Examination of demographic and perception factors associated with readiness to adopt ORT found that seven out of eight possible explanatory variables were statistically significant. Using comparisons of means and *t*-tests, three demographic characteristics—gender, profession, and education—were significantly correlated with readiness to adopt ORT, while age was not (Table 3). All four provider perception variables were significantly correlated (Table 4). Perceived comfort performing the rapid HIV test had a moderately high correlation with readiness to adopt ORT ($r = -0.50$). Correlation of the remaining variables (EBP beliefs, HIV-related stigmatization, and perceived importance of HIV testing) was lower ($r \leq 0.19$). Since all the perception variables were statistically significant, they were entered into an initial multivariate analysis. Of the demographic characteristics, only age was excluded.

Multiple linear regression: readiness to adopt ORT

A stepwise multivariate regression analysis was performed based on the conceptual model. In step 1, examination of the influence of demographic characteristics explained 17.3% of the variance. Only gender was not significant. In step 2, providers’ perceptions were added to the model and together with the significant demographic variables (all except gender) explained 43.7% of the variance. Only HIV-related stigmatization was not significantly associated with readiness to adopt ORT. A final model was created, dropping both gender and HIV-related stigmatization. The final model was statistically significant ($F_{5, 149} = 22.275$,

$P < 0.0001$) and explained 43.6% of the variance in readiness to adopt ORT (Table 5).

Perceived comfort performing the rapid HIV test ($\beta = 0.40$, $P < 0.001$) contributed the most to explaining variation in the final multiple linear regression model. Participants who reported higher perceived comfort performing rapid HIV testing had higher readiness to adopt ORT. In addition, higher readiness to adopt ORT was associated with both a higher level of EBP beliefs ($B = 0.07$, $\beta = 0.19$, $P < 0.05$) and a higher perceived importance of HIV testing ($B = 1.29$, $\beta = 0.15$, $P < 0.05$). Contrary to expectation, when compared to those with only a bachelor’s degree, participants with more advanced education had significantly lower readiness scores ($B = -1.8$, $\beta = -0.21$, $P < 0.001$).

DISCUSSION

Comparison of the mean score derived in this study to mean scores found in other research using the same Readiness for ORT Scale is not possible because only initial validation of the scale has been reported in the literature (26). Nonetheless, participants in this study appear ready to implement ORT based on high overall scoring. However, separate examination of each item in the scale revealed some hurdles, since 40% of the participants perceived that they lacked adequate organizational support to successfully implement ORT. This finding suggests that it is important for organizations to assess what providers perceive is needed for success before attempting to introduce ORT as an EBP.

Self-perceived comfort in performing ORT was the strongest predictor of readiness for its adoption. Major concerns among those who reported lesser readiness were low self-perceived comfort in conveying a positive test result and also in providing post-test counseling. These findings are similar to results from other studies (20, 30).

TABLE 3. Significance test between demographic factors and readiness to adopt ORT (n = 150), Santiago Chile, 2014

	Mean score	SD ^a	P-value ^b
Gender			0.041 ^c
Men	15.4	2.8	
Women	14.3	3.4	
Age (years)			0.86
20–39	15.8	4.4	
40–70	17.3	4.4	
Profession			0.001 ^d
Nurses/Midwives	16.6	2.9	
Physicians	14.3	2.7	
Education			0.001 ^d
University degree	15.5	2.9	
Advanced degree (master, PhD, Postdoc)	13.0	3.0	

^a Standard deviation.^b *t*-test.^c *P* < 0.05.^d *P* < 0.01.**TABLE 4. Correlation between health care providers' perception factors and readiness to adopt ORT (n = 150), Santiago Chile, 2014**

Variables	Pearson correlation (r)
EBP beliefs	0.17 ^a
HIV-related stigmatization	-0.18 ^a
Perceived importance of HIV testing	0.19 ^a
Perceived comfort with performing ORT	-0.50 ^b

^a *P* < 0.05.^b *P* < 0.01.

Offering training to staff on delivery of new EBPs and ORT, and especially on provision of HIV test results and post-test counseling, might help to enhance the comfort level of those for whom these responsibilities are potentially worrisome or challenging. Further investigation of factors that influence Chilean health care providers' perceived comfort with performing ORT is also needed, especially considering that the concerns of primary health care providers of this study population may differ from those of health care providers not affiliated with a university.

In this study, demographic characteristics were the second strongest predictors of readiness for ORT. Neither gender of the provider nor the perceived degree of HIV stigma influenced ORT readiness, which indicates that the focus should be put on more salient variables that are amenable to change.

Professional occupation proved a strong influence on readiness to adopt ORT, with nurses/midwives expressing greater readiness than physicians to adopt this new technology. This finding may reflect differences in the

clinical roles of nurses/midwives and physicians. Nurses and midwives have direct clinical involvement in delivering ELISA testing, while physicians' involvement is more likely limited to referring individuals for the test. Meanwhile, contrary to findings from other research that show a positive association between increased education and adoption of EBPs (28), higher education was negatively associated with ORT readiness in this study. This might be because physicians accounted for the highest proportion of the study sample with advanced degrees, yet they tended to have less experience than nurses and midwives in administering HIV tests.

Participants reported only moderate readiness to adopt new EBPs based on the scale's criteria (31). Training staff on the merits of an EBP might improve this outlook; experience in actually implementing an EBP also might help. Meanwhile, study results suggest that participants agreed with WHO's recommendations (32) for increased HIV testing and use of ORT to allow more people to learn their HIV serologic

status and be referred to appropriate care if needed (3, 33).

Limitations

A factor that limits this study's generalizability is that the sample was recruited from four clinics belonging to a university hospital network. The health care workers sampled may have especially favorable attitudes towards EBP and ORT as the result of working in a university health care system. Results from providers employed at community-based facilities and clinics not affiliated with a university may differ. Further studies should consider measuring readiness for rapid testing among non-university-affiliated providers.

It is also possible that a social desirability bias influenced the results. Having been trained to value advances in medical science, health care providers may feel normative pressure to express positive attitudes toward a new evidence-based practice like ORT even though they do not personally agree with its use. Another possible limitation was the failure to ask participants about their country of origin, the country in which they earned their health care degree, and the length of time they had lived in Chile. The sample's overall readiness to adopt ORT as Chileans may have been influenced in part by variations due to respondents' country of origin, length of Chilean residency, and/or differences in medical training received in other countries.

Conclusions

The ARCC model proved useful in identifying factors that contribute to readiness for ORT, thus adding evidence that this model is a robust approach to guide evaluation of readiness to introduce new EBPs in general. In this study, perceived comfort performing rapid HIV testing was added to the model, and it proved the greatest predictor of readiness to adopt ORT. Self-perceived comfort performing any new EBP may be an important factor that should be added to the ARCC model. Before rapid HIV testing technology is introduced in the Chilean health care system, further studies are needed to assess attitudes toward this EBP among non-university-affiliated health care providers to strengthen the generalizability of these results. The

TABLE 5. Multiple linear regression models predicting the dependent variable “readiness to adopt ORT” among Chilean health care providers

Variables	Model 1 ^a					Model 2 ^b					Final Model				
	B	SE ^d	β	95% CI ^c		B	SE	β	95% CI		B	SE	β	95% CI	
				Lower	Upper				Lower	Upper				Lower	Upper
(Constant)	-14.78 ^e					14.8 ^e					14.7 ^e				
Demographics															
Gender: if male	-0.27	0.54	0.04	-1.3	0.8	-0.2	0.46	0.03	-0.77	1.00					
Profession: if nurse/ midwife versus physician	1.87 ^e	0.51	0.29	0.9	2.9	1.9 ^e	0.44	0.31	1.01	2.69	2.0 ^e	0.42	0.32	1.18	2.84
Education: if has advanced degrees	-1.75 ^f	0.68	-0.20	-3.1	-0.4	-1.8 ^e	0.57	-0.21	-2.93	-0.76	-1.8 ^e	0.57	-0.21	-2.94	-0.71
Individual perception															
HIV-related stigmatization						0.01	0.03	0.03	0.06	0.04					
EBP beliefs						0.072 ^f	0.03	0.19	0.02	0.13	0.07 ^f	0.03	0.19	0.02	0.12
Perceived importance for HIV testing						1.12 ^f	0.58	0.14	-0.11	0.13	1.29 ^f	0.57	0.15	0.17	2.40
Perceived comfort performing ORT						0.33 ^e	0.06	0.40	0.22	0.44	0.31 ^e	0.05	0.40	0.23	0.44
R ²	0.173					0.437					0.436				
R ² change						0.265									
Sig F. Change	0.00					0.00					0.00				

^a Model 1: Demographic variables.^b Model 2: Individual perception and demographics.^c CI: Confidence interval.^d SE: Standard error.^e $P < 0.01$.^f $P < 0.05$.

results are exploratory and need to be verified with a larger sample. Nonetheless, the results of this study highlight the importance of taking into consideration the health care provider's perceptions about delivering HIV test results to a patient. This variable was found to be the strongest predictor of readiness to adopt the rapid HIV test. When the readiness is low, it can hinder the adoption of a new HIV rapid test among health care providers.

This study is probably the first one conducted in Chile in anticipation of the possible introduction of ORT. Its findings offer guidance to stakeholders and policy makers regarding ways to increase health care providers' readiness for the successful adoption of this evidence-based technology. Special attention should be given to addressing the three factors shown in this study to influence health care providers' readiness to adopt ORT: self-perceived

comfort performing ORT, agreement as to the importance of HIV testing in curbing the AIDS epidemic, and belief in using and personally being able to adopt an EPB. Increases in all three factors can be achieved through education and/or training. Successful adoption of ORT nationwide in Chile would help curb the country's AIDS epidemic by increasing capacity to reach its at-risk populations. These groups include residents of the country's geographically isolated areas with little access to the laboratory facilities needed for ELISA testing and people who favor the less invasive test and quicker results offered by ORT.

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REFERENCES

1. World Health Organization. Number of people (all ages) living with HIV; estimate by country [Internet]. Accessed 14 Oct 2015. Available from: <http://apps.who.int/gho/data/view.main.22100>
2. Ministerio de Salud de Chile (MINSAL). Programa nacional de prevención y control del VIH/SIDA/ITS. Santiago: MINSAL; 2014.
3. Delaney KP, Branson BM, Uniyal A, Kerndt PR, Keenan PA, Jafa K, et al. Performance of an oral fluid rapid HIV-1/2 test: experience from four CDC studies. *AIDS*. 2006;20(12):1655–60.
4. Dolce de Lemos LM, Gurgel RQ, Dal Fabbro AL. Prevalência da infecção por HIV em parturientes de maternidades vinculadas ao SUS. *Rev Bras Ginecol Obstet*. 2005;27(1):32–6.
5. Quian J, Visconti A, Gutiérrez S, Galli A, Maturo M, Galeano V, et al. Detección de infección por VIH a través de test rápido en mujeres embarazadas: una estrategia exitosa para disminuir su transmisión vertical. *Rev Chil Infectol*. 2005;22(4):321–6.
6. Wesolowski LG, MacKellar DA, Facente SN, Dowling T, Ethridge SF, Zhu JH, Sullivan PL. Post-marketing surveillance of OraQuick whole blood and oral fluid rapid HIV testing. *AIDS*. 2006;20(12):1661–6.
7. Irrazábal LP, Ferrer L, Cianelli R, Lara L, Reed R, Levy J, Pérez C. Oral rapid test: an alternative to traditional HIV screening in Chile. *Rev Panam Salud Publica*. 2013; 33(6):427–32.
8. Melnyk BM, Fineout-Overholt E, Mays MZ. The Evidence-Based Practice Beliefs and Implementation Scales: psychometric properties of two new instruments [corrected]. *Worldviews Evid Based Nurs*. 2008;5(4):208–16; erratum published in *Worldviews Evid Based Nurs*. 2009; 6(1):49.
9. Ciliska D, DiCenso A, Melnyk BM, Fineout-Overholt E, Stetler CB, Cullen L, et al. Models to Guide Implementation of Evidence-Based Practice. Pp. 241–75 in: Melnyk BM, Fineout-Overholt E, eds. *Evidence-based Practice in Nursing & Healthcare: A Guide to Best Practice*. 2nd ed. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2011.
10. Schaffer MA, Sandau K, Diedrick L. Evidence-based practice models for organizational change: overview and practical applications. *J Adv Nurs*. 2013; 69(5):1197–1209.
11. Lehman WEK, Greener JM, Simpson DD. Assessing organizational readiness for change. *J Subst Abuse Treat*. 2002;22:197–209.
12. Rycroft-Malone J, Bucknall T. Using theory and frameworks to facilitate the implementation of evidence into practice. *Worldviews Evid Based Nurs*. 2010;7(2): 57–8.
13. Beck AT, Rush AJ, Shaw BF, Emery G. *Cognitive therapy of depression*. New York: The Guilford Press; 1979. 425 pp.
14. Lam D. A brief overview of CBT techniques. Pp. 29–47 in: Freeman SM, Freeman A, eds. *Cognitive behavior therapy in nursing practice*. New York: Springer Publishing Company; 2005.
15. Armenakis AA, Harris SG, Mossholder KW. Creating readiness for organizational change. *Human Relations* 1993;46(6): 681–703.
16. Aarons GA, Sawitzky AC. Organizational culture and climate and mental health provider attitudes toward evidence-based practice. *Psychol Serv*. 2006;3(1):61–72.
17. Aarons GA, Sommerfeld DH, Walrath-Greene CM. Evidence-based practice implementation: the impact of public versus private sector organization type on organizational support, provider attitudes, and adoption of evidence-based practice. *Implementation Sci*. 2009;4:83.
18. Plath D. Support for evidence-based practice in a human service organization. *Adm Soc Work*. 2013;37(1):25–38.
19. Titler MG. Nursing science and evidence-based practice. *West J Nurs Res*. 2011;33:291–5.
20. Myers T, Worthington C, Aguinaldo JP, Haubrich DJ, Ryder K, Rawson B. Impact on HIV test providers of giving a positive test result. *AIDS Care*. 2007;19(8):1013–9.
21. Preston DB, Young EW, Koch PB, Forti EM. The Nurses' Attitudes about AIDS Scale (NAAS): development and psychometric analysis. *AIDS Educ Prev*. 1995; 7(5):443–54.
22. Ministerio de Desarrollo Social. Incidencia de la pobreza a nivel comunal, según metodología de estimación para áreas pequeñas, Chile 2009 y 2011. Serie Informes Comunales No. 1, 6 Feb 2013 [Internet]. Accessed 12 Nov 2014. Available from: <http://www.ministeriodesarrollosocial.gob.cl/btca/txtcompleto/midesocial/pobreza-comunal-2009y2011.pdf>
23. Pontificia Universidad Católica de Chile. Escuela de enfermería: plan de estudios [Internet]. Accessed 3 Oct 2014. Available from: <http://enfermeria.uc.cl/pregrado/plan-de-estudios>
24. Pontificia Universidad Católica de Chile. Escuela de medicina: plan de estudios [Internet]. Accessed 3 Oct 2014. Available from: <http://medicina.uc.cl/doctorado/ciencias-medicas/plan-estudios>
25. Drennan J. Cognitive interviewing: verbal data in the design and pretesting of questionnaires. *J Adv Nurs*. 2003;42(1): 57–63.
26. Goldman G. Initial validation of a Brief Individual Readiness for Change Scale (BIRCS) for use with addiction program staff practitioners. *J Soc Work Pract Addict*. 2009;9:184–203.
27. Backer TE. Assessing and enhancing readiness for change: implications for technology transfer. In: Backer TE, David SL, Saucy G, eds. *Reviewing the behavioral science knowledge base on technology transfer*. NIDA Research Monograph 155. Rockville, MD: National Institute on Drug Abuse (NIDA); 1995.
28. Thorsteinsson HS. Translation and validation of two evidence-based nursing practice instruments. *Int Nurs Rev*. 2012; 59(2):259–65.
29. Joint United Nations Program on HIV/AIDS (UNAIDS). Getting to Zero: 2011–2015 Strategy [Internet]. UNAIDS; 2010. Accessed 7 Oct 2014. Available from: http://www.unaids.org/sites/default/files/sub_landing/files/JC2034_UNAIDS_Strategy_en.pdf
30. Chesney MA, Smith AW. Critical delays in HIV testing and care. *Am Behav Sci*. 1999;42(7):1162–74.
31. Melnyk BM, Fineout-Overholt E, Giggelman M, Cruz R. Correlates among cognitive beliefs, EBP implementation, organizational culture, cohesion and job satisfaction in evidence-based practice mentors from a community hospital system. *Nurs Outlook*. 2010;58(6):301–8.
32. World Health Organization, HIV/AIDS Program. Service delivery approaches to HIV testing and counselling (HTC): a strategic HTC programme framework. Geneva: WHO; 2012. Accessed 13 Sep 2014. Available from: http://apps.who.int/iris/bitstream/10665/75206/1/9789241593877_eng.pdf
33. Spielberg F, Branson BM, Goldbaum GM, Lockhart D, Kurth A, Rossini A, et al. Choosing HIV counseling and testing strategies for outreach settings: a randomized trial. *J Acquir Immune Defic Syndr*. 2005;38:348–55.

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RESUMEN

Factores predictivos de la disposición de los prestadores de atención de salud de Chile a realizar la prueba oral rápida de detección del VIH

Objetivo. En este estudio se determinaron las características personales que influyen sobre la disposición de los prestadores de atención de salud a adoptar la prueba oral rápida de detección del VIH en Chile como una nueva práctica clínica basada en la evidencia.

Métodos. Con un diseño de investigación transversal, en el estudio se realizó un muestreo de 150 enfermeros, parteras y médicos que trabajaban en cuatro centros de la Red de Salud de la Pontificia Universidad Católica de Chile, en Santiago. Los participantes llenaron una encuesta autoadministrada en la que se preguntaba sus características demográficas, actitudes y experiencia en relación con la práctica clínica basada en la evidencia, creencias personales respecto del VIH, importancia de las pruebas de detección del VIH y sensación de comodidad respecto de realizar una prueba oral rápida de detección del VIH.

Resultados. El 90% de los participantes afirmó que creía que la incorporación de la prueba oral rápida significaría un cambio positivo en su práctica y que estaría dispuesto a adoptar la nueva tecnología por ese motivo. No obstante, de acuerdo con las respuestas, la "disposición a utilizar la prueba oral rápida" obtuvo una media de puntuación de 15,1 de un posible valor de 20, lo que sugiere solo una disposición autopercibida moderada a adoptar esta práctica basada en la evidencia. La educación, las creencias acerca de la práctica basada en la evidencia, la sensación de comodidad al realizar la prueba oral rápida y la percepción de la importancia de las pruebas de detección del VIH explican el 43,6% de la varianza de la disposición a adoptar la prueba oral rápida.

Conclusiones. Los resultados de este estudio previo a la introducción de la prueba oral rápida de detección del VIH en Chile pueden ser útiles para orientar a los responsables de las políticas y a las partes interesadas en cuanto a la preparación de los prestadores de atención primaria de la salud para que aumente su disposición a adoptar con éxito esta tecnología basada en la evidencia. La adopción satisfactoria de la prueba oral rápida podría aumentar la capacidad de Chile para llegar a los chilenos vulnerables a la infección por el VIH para que se realicen la prueba y sean derivados para recibir atención si tienen un resultado positivo y, de este modo, podría contribuir a detener la transmisión del virus y reducir las complicaciones médicas.

Palabras clave

VIH; prestación de atención de salud; variación contingente negativa; prevención de enfermedades; Chile.

CORRIGENDUM

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1) pg. 363 lists as author Lisette Irrázabal's affiliation: School of Public Health, University of Illinois at Chicago, Chicago, Illinois, United States of America.

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