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Impact of *Mano a Mano-Mujer*, an HIV prevention intervention, on depressive symptoms among Chilean women

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Accessible summary

- Depression is considered a factor that interferes with HIV prevention.
- Depression may reach 41% among low-income Chilean women.
- The current study analyzed the impact of *Mano a Mano-Mujer*, an HIV prevention intervention, on depressive symptoms among low-income Chilean women.
- *Mano a Mano-Mujer* provided significant benefits for women's depression symptoms.

Abstract

Worldwide, and in Chile, the number of women living with HIV is increasing. Depression is considered a factor that interferes with HIV prevention. Depression may reach 41% among low-income Chilean women. Depressed people are less willing to participate in behaviours that protect them against HIV. The aim of this study is to analyze the impact of *Mano a Mano-Mujer* (*MM-M*), and HIV prevention intervention, on depressive symptoms among Chilean women. A quasi-experimental design was used for this study. The research was conducted in Santiago, Chile; a total of 400 women participated in the study (intervention group, $n = 182$; control group, $n = 218$). The intervention was guided by the social-cognitive model and the primary health care model. The intervention consists of six 2-h sessions delivered in small groups. Sessions covered: HIV prevention, depression, partner's communication, and substance abuse. Face-to-face interviews were conducted at baseline and at 3-month follow-up. Chilean women who participated in *MM-M* significantly decreased, at 3 months follow up, their reported depressive symptoms. *MM-M* provided significant benefits for women's depression symptoms. In this study nurses participated as leaders for the screening of depressive symptoms and as facilitators of community interventions.

Introduction

As of the end of 2010, over 34 million people worldwide were living with HIV, with 2.7 million new infections, and 1.8 million HIV-related deaths (Joint United Nations Programme on HIV/AIDS 2011). Worldwide, nearly half of all persons living with HIV currently are women. Once considered a predominantly homosexual and male condition, epidemiological studies demonstrate that HIV has spread to the general population, and women are one of the most vulnerable groups in terms of its acquisition (Joint United Nations Programme on HIV/AIDS 2011).

The feminization of HIV, in Chile, is a serious public health problem. The slow governmental programmatic

responses to this phenomenon are reflected by inadequate HIV prevention messages targeting women, inefficient public healthcare system to address women's health disparities related to HIV (e.g. early diagnosis and treatment, lack of testing confidentiality, stigmatization of HIV-positive women as HIV is still associated with commercial sex work, and multiple sex partners), and the increase in the number of HIV newly reported cases among women indicates the severity of HIV feminization. This has been shown in epidemiological reports. Between 1986 and 1990, the ratio of men to women living with HIV in Chile was 7:1; the ratio dropped to 4:1 in 2009 (MINSAL 2009). Also, in many cases, these HIV-positive women are confronting issues that negatively impact their quality of life such as poverty, violence, low educational level, and most of them are housewives with no paid employment. All of these make them more vulnerable and potentially increasing the costs for the healthcare system. It is estimated that 15% of all persons living with HIV in Chile are female, most of whom are young women at the ages of 20–39 years old (MINSAL 2009).

Additionally, the majority of women acquired HIV through sexual contact with their husbands or stable partners, situation that reflects rooted cultural values and gender inequalities expressed through *machismo*, a cultural acceptance that men will engage in high-risk sexual behaviour. Machismo and self-esteem negatively affect personal relationship and family life. Women in machismo-type relationship are more often passive, dependent, and have difficulties discussing, negotiating and persuading their partners to engage in safer sex practices, making HIV prevention for them more complex (Carrier 1989, Rajevic 2000, Martinez-Schallmoser *et al.* 2003, Comision Nacional De Sida-Conasida 2005, Peragallo *et al.* 2005, Cianelli *et al.* 2008, Ferrer *et al.* 2009). The presence of *machismo* among this population may influence the continuity of HIV feminization. These numbers reflect the limited effectiveness of the Chilean public health prevention strategy.

Another serious health problem associated with HIV acquisition that deeply affects women is depression. This has been associated with developing and maintaining risky sexual behaviours (Pao *et al.* 2000, Shrier *et al.* 2001). Depression also has implications for families and society as a whole. It is considered to be a huge emotional and economic burden. The financial impact of depression affects both personal and family income, the capacity of people with depression to work, productivity in the workplace and contributions to the national economy, as well as the utilization of treatment and support services. The magnitude of the burden of depression on family members is hard to evaluate and measure, and for this reason is frequently ignored, although it does have an important effect on the family's quality of life and overall well-being of persons, societies and countries (World Health Organization 2005).

Depression is defined as a mental disorder with several symptoms such as depressed mood, loss of interest, low self-worth, disturbed sleep or appetite, low energy, and poor concentration that leads to difficulties in a person's ability to take care of themselves (World Health Organization 2010). The literature shows that women are twice as likely to suffer depression as compared to men and in several cases the diagnosis is often associated with somatic complaints. These types of complaints serve as barriers to establishing effective prevention strategies among these women. Also, depressed women are more accepting and have higher thresholds for suffering and not seeking treatment for their symptoms (Amin & Bentley 2002, Ferrer *et al.* 2004, Afifi 2007).

According to data from the Chilean Ministry of Health (2006), in Chile, as well as in other countries, the incidence of depression is increasing. The prevalence is around 8% in the general population and may reach 41% in low-income women (MINSAL 2006). Rojas *et al.* (1999) found that 27% of Chilean women had suffered a depressive episode in their life; almost all of them originated from their low educational level, work conditions, and difficulties in their partner relationship. In Chile, there are no data available regarding the prevalence of depression among women living with HIV.

Additionally, the literature in Chile reports that depression has been related to low self-esteem and machismo (Rosenbluth & Hidalgo 1978, Ferrer *et al.* 2004). Self-esteem can be defined as the pride a person feels for oneself; it is a psychological state that influences social processes and behaviours (Perez-Mitre 1981). Low self-esteem has been associated with higher emotional distress, drug abuse, high-risk sexual behaviour, somatic complaints and depression disturbances (Nyamathi *et al.* 1993, Visintini *et al.* 1995, Anderson 2000).

Machismo is related to the idea that men are superior to women and have social domination and privilege over women in economic, judicial, political, cultural and psychological spheres (Gissi 1978, Cianelli *et al.* 2008). Macho men expect an affectionate, submissive and faithful woman who plays a passive and dependent role in the sexual sphere and who can work inside and outside of the home if necessary (Rosenbluth & Hidalgo 1978). Depression is one of the factors that increase a woman's vulnerability to acquire HIV (DiClemente *et al.* 2001, Brown *et al.* 2006, Cheng & Chan 2007). Klein *et al.* (2008) stated that the presence of depressive symptoms is an aspect that adversely affects women's attitudes towards condom use and increases HIV risk behaviours. This relationship

can be associated with the fact that people with high levels of depressive symptoms give less value to their lives, grounded on the feeling of hopelessness that surrounds them, and they are less willing to participate in behaviours that protect against HIV acquisition (Myers *et al*. 2002, Van Der Does 2002, Cheng & Chan 2007).

Results of several studies show that depression is associated with risky practices for acquiring HIV, such as having more than one sexual partners over a period of 6 months, having more lifetime sexual partners, using drugs before having sex, sharing drugs or trading drugs for sex, participating in unprotected sex and having feelings of low self-efficacy in negotiating condom use (DiClemente *et al*. 2001, Hutton *et al*. 2004, Brown *et al*. 2006). Moreover, Kim *et al*. (2006) found that depressive symptoms predicted women's participation in HIV prevention programmes, reflected in the fact that women with more depressive symptoms do not engage in intervention programmes related to HIV prevention.

The literature reflects the high prevalence of depressive symptoms among women and the harmful consequences for HIV prevention.

The purpose of this paper is to analyse the impact of *Mano a Mano-Mujer (Hand to Hand – for Women)* on depressive symptoms, after controlling for self-esteem and machismo, among low-income Chilean women.

Methods

Study design

A quasi-experimental design was used to test the impact of *Mano a Mano-Mujer*, an HIV prevention intervention, on HIV-related knowledge, attitudes and behaviours for Chilean low-income women. The current study is a secondary analysis of data collected to test the impact of *Mano a Mano-Mujer* on depressive symptoms. Two participating communities were assigned to the intervention or the delayed-intervention control condition. Individual randomization was not used to avoid contamination between intervention and control groups. We matched the number of participants in the groups and we selected them according to the inclusion criteria of the study. The matching of the number of participants was based on the G power analysis, which showed that a sample size of 398 subjects at each point in time would give 80% statistical power to identify this study effect size with a one-tailed test of significance test ($\alpha = 0.05$). With an 80% retention at 3-month follow-up, 500 women were needed for recruitment (250 women in the control group and 250 women in the intervention group) in order to obtain a final sample of 200 per group. This was of special concern because the women lived and participated within their communities, where they also frequently participated in other organizations where they would meet informally to discuss other community issues.

Setting

The project was conducted in two low-income communities in the south-east area of the Metropolitan Region of Santiago, Chile. Santiago has the largest concentration of people living with HIV in the country. The southern sector of the city is one of the most affected areas (MINSAL 2009).

Participants

Eligibility criteria for participating in the study included being a Chilean woman, residing in one of the two selected communities, being 18 to 49 years old, and reporting sexual activity within the 6 months prior to participation in the project. Women were recruited at different community centres, including the primary health care clinics in small groups over time. A final sample size of 400 subjects at 3 months post-intervention was achieved. In total, 835 women were screened and 496 (59.4%) met eligibility criteria and provided written consent to participate in the study. Of the 496 participants, 244 were in the intervention community and 252 in the control community (see Fig. 1). The 3-month retention rate was 81% overall, 75% for the intervention group (182 women) and 87% for the control group (218 women).

This sample size ($n = 400$) at 3 months post-intervention provided adequate power (>0.80 power, effect size = 0.33, $\alpha < 0.05$, one-tailed test of significance).

The intervention

Mano a Mano-Mujer is an HIV prevention intervention for low-income Chilean women. The intervention was developed using a conceptual framework of the social-cognitive model of behavioural change, contextual tailoring and the World Health Organization's primary health care model. *Mano a Mano-Mujer* is based on a previous study conducted by Peragallo *et al*. (2005) in the USA with Latino women (SEPA) and on the work conducted in Malawi (Mzake ndi Mzake) with adults (Norr *et al*. 2006, Kaponda *et al*. 2009).

The intervention consists of six 2-h sessions delivered in small groups of eight and ten women, which were conducted in the community. The same facilitator and women participated from session one to session six. This method generated trust, confidence and support networks among

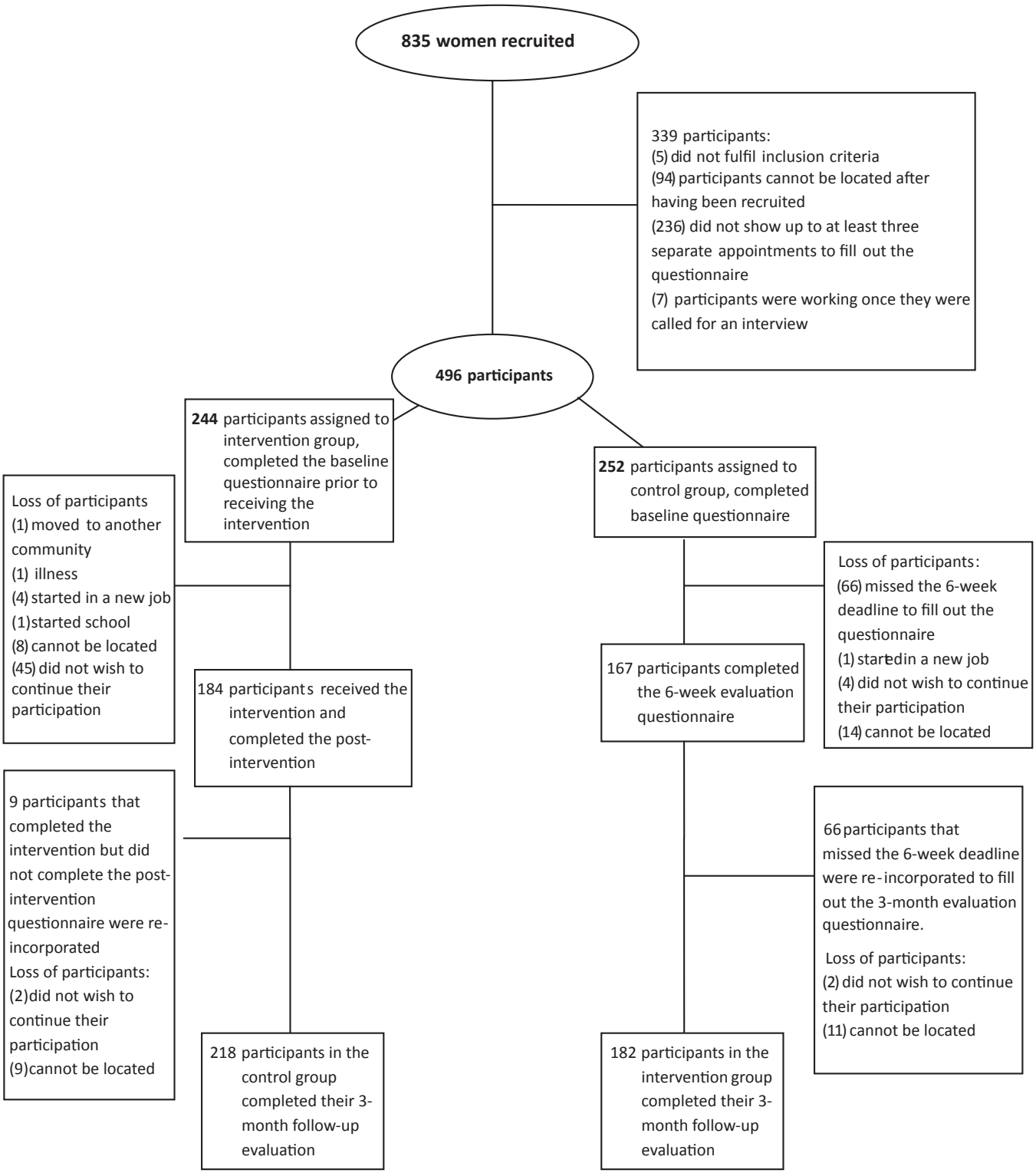

Figure 1
Flowchart of study design

the women participating in *Mano a Mano-Mujer*. The sessions covered topics related to HIV, depression, sexually transmitted infections, HIV prevention (abstinence, mutual fidelity and condom use), communication with the partner, domestic violence, substance abuse, relevance of the family and discussion of the cultural values of machismo and marianismo. The group discussions, during the sessions, allowed the women to talk about their issues, to share

experiences and possible solutions. The dynamic generated in the groups allowed for the development of a support network that enhanced self-esteem, supporting them to make positive changes in their lives. The group interventions developed new group support networks for safer sex behaviours in HIV prevention. Thus, participants increased their perceived group support for safer sex behaviours. The modelling and rehearsals of negotiations, condom use and other skills built participants' self-efficacy regarding HIV prevention behaviours. All these factors increased women's intention to practise HIV prevention behaviours and enabled them to initiate the first steps of such change, including increased partner communication, greater intimacy with partners and attempts to use condoms during sexual activity.

Data collection

Trained female data collectors interviewed participants using a standardized interview protocol and a structured interview (questionnaire). The average length of the interview was 1 h. Face-to-face interviews were conducted at baseline, the first assessment conducted after participants were enrolled in the study, and 3 months post-intervention. The interview contained closed-ended items for assessing (1) socio-demographic factors (age, marital status, education, income, religion, employment status and health insurance); (2) HIV-related knowledge; (3) attitudes (positive attitudes towards people living with HIV, perceived barriers to condom use, self-efficacy for HIV prevention behaviours, HIV reduction behavioural intentions); (4) HIV risk reduction behaviours (partner communication, condom use); and (5) mental health resources (self-esteem, presence of depressive symptoms). The questions and scales were used by Peragallo *et al*. (2005) and Cianelli (2003) in previous studies with Hispanic women. For this paper only the demographic and depression measures will be presented; other outcomes are presented in Cianelli *et al*. (2012).

Measurements

Demographics

Demographic information was collected at the beginning of the assessments. The demographic form was used to collect information about the participants' age, years of education, whether they lived with a partner, marital status, number of children, religiosity (importance given by participants to their religious beliefs), years of education, employment status, per capita income and health insurance status.

Depressive symptoms

Depressive symptoms were measured using the Center for Epidemiological Studies – Depression Scale (CES-D). This scale has been used as a screening tool and for research purposes to identify symptoms of clinical depression with several populations including the Hispanic population over the past 30 years (Radloff 1977, Crockett *et al*. 2005, Roth *et al*. 2008). The CES-D is a scale with 20 items; participants responded in a 4-point Likert scale, from 0 to 3 points, from 0 = presence of symptoms less than once a day to 3 = presence of symptoms 5 to 7 days per week. Scores range from 0 to 60; scores of 16 to 26 are considered indicative of mild depression symptoms and scores of 27 or more are indicative of major depression symptoms (Ensel 1986, Zich *et al*. 1990). Internal consistency as measured by Cronbach's alpha is high across a variety of populations generally around 0.85 in community samples. For this study Cronbach's alpha was 0.88.

Self-esteem

This variable was measured using the 10-item Rosenberg Self-Esteem Scale (Rosenberg 1965), assessing the level of individual's feelings of worth or importance over the past week. Participants respond using a 4-point Likert scale (strongly disagree to strongly agree; strongly agree). The total range of scores was 10–40, with a higher score indicating more self-esteem (Cronbach's alpha = 0.81).

Machismo

Based on the Bem Sex Role Inventory (Bem 1974), the Masculine–Feminine Personality Traits Scale (Lara-Cantu 1989) is a measure with 60 items and consists of four scales: Assertive Masculine, Affective Feminine, Aggressive Masculine and Submissive Feminine. Each scale has 15 adjectives that capture positive and negative dimensions of the two gender roles. Lara-Cantu (1989) hypothesized that the Aggressive Masculine scale represents machismo, and this was the scale used in the study. The 15 adjectives of the Aggressive Masculine scale are assessed on a 5-point scale (0 = not at all like me to 5 = extremely like me). The scale has been found to be internally consistent and to have good convergent and discriminant validity (Lara-Cantu & Navarro-Arias 1986). The internal consistency estimate for this study was Cronbach's alpha 0.74.

Statistical analysis

Completed questionnaires were entered into an SPSS database for analysis with 100% verification. Analyses were performed using SPSS, version 19. At baseline, descriptive statistics were calculated to summarize socio-demographic characteristics variables and the prevalence of depressive symptoms. The depression-related symptoms for both groups (intervention and control) were compared at base-

line and 3-month follow-up using ANCOVA. In the analysis, the researchers controlled for baseline scores, sociodemographic information (education, per capita income, age, religiosity and healthcare coverage), self-esteem and machismo. The researchers decided to use ANCOVA to neutralize the effect of self-esteem and machismo because both factors are identified in the literature as associated with women's depression (Iwata *et al*. 2002, Cianelli *et al*. 2008). Chi square was used to analyse the severity of the depression symptoms, mild and major, after the intervention.

Ethical approval

The study was approved by the Pontificia Universidad Católica de Chile, School of Nursing Human Research Ethics Committee. Participants were given detailed information about study procedures and written consent was obtained. All participation in this study was voluntary.

Results

Demographic variables

Most of the women were between 20 and 40 years, with an average age of 33 ± 8.6 and 32 ± 9.7 years in the intervention and control groups respectively. Most of the women had completed high school (57% in the intervention group and 66% in the control group), but women in the control group had significantly higher education levels than the intervention group (10.7 ± 3 vs. 9.6 ± 3.4 years of education respectively). The women had moderately low income, with an average income of 40 000 Chilean pesos (about $80) in the intervention group and 55 000 pesos ($110) in the control group. Three quarters lived with a partner, and over one half considered themselves Catholic in both groups. Significantly different characteristics in the intervention and control groups were healthcare insurance, years of education and religiosity. For both the intervention and control groups, the majority had public health insurance, but over one-fifth (22.5%) of the intervention group had no coverage compared to only 8.3% of the control group. Regarding religiosity, the majority of the women in the sample considered their religious to be very important (70.3% in the intervention group vs. 57.3% in the control group) (see Table 1).

The number of women who scored 27 or more in the CES-D scale, major depression symptoms, decreased significantly for the intervention group but not for the control group. However, the number of women who scored between 16 and 24 in the CES-D, mild depression symptoms, increased in the intervention group.

Table 1
Socio-demographic characteristics of the sample

	Intervention (n = 182)	Control (n = 218)
Age (in years), mean (SD)	33.0 (8.6)	32.0 (9.7)
Years of education (%)*		
Elementary	33.0	16.0
High school	57.0	66.0
Technical	8.2	14.2
University	2.2	3.7
Household monthly income		
Per capita in Chilean pesos	40 000	55 000
Mean (SD) ($)	80.0 (32.9)	110.0 (38.4)
If living with partner (%)	75.0	72.0
Religion		
Catholic	55.0	61.5
Evangelic	25.3	15.1
None	10.4	11.9
Other	9.3	11.5
Healthcare insurance (%)*		
Public	76.4	87.6
Private	1.1	4.1
No coverage	22.5	8.3

*$P > 0.05$.

The results for the outcome variables are presented in Table 2. The intervention and control group scores (means or percentages) for each outcome variable were examined to test whether they were significantly different at baseline and 3 months post-intervention. ANCOVA was used to examine changes associated with the intervention outcome variables after controlling for baseline levels of the interventions, the demographic factors, self-esteem and machismo.

To assess if there were significant differences in depression symptoms across the intervention and control groups, ANCOVA analysis was performed at baseline and at 3 months. The initial models at baseline and at 3 months included education, per capita income, age, religion, healthcare coverage, living with a partner, self-esteem and machismo as covariates.

At baseline, the Levene's test of equality of error variances showed that error variances appeared to be equal across the intervention and control groups. The results showed no statistically significant difference between the depression symptoms between women in the intervention and control groups ($F(1,392) = 0.05$, $P = 0.83$) after controlling for the effect of the covariates. In this model, the covariates self-esteem and presence of machismo were significantly related to depression symptoms ($F(1,392) = 154.32$, $P < 0.01$ and $F(1,392) = 26.12$, $P < 0.01$ respectively).

At 3-month follow-up, the Levene's test of equality of error variances showed that error variances appeared to be

Table 2
ANCOVA analysis for depression symptoms at baseline and at 3-month follow-up (n = 400)

	Comparison of means between intervention and control groups (n = 400)						
Measure	Intervention (n = 218)	Control (n = 182)	Sum of squares	d.f.	Mean square	F	P
Baseline							
Mean ± SD	23.3 ± 11.78	21.8 ± 11.06					
Estimated mean	22.5	22.4					
Model[1]			3.64	1	3.64	0.05	0.83
3-month follow-up							
Mean ± SD	21.9 ± 10.43	22.3 ± 11.76					
Estimated mean	21	23					
Model[2]			368.05	1	368.05	3.85	0.05

ANCOVA analysis for depression symptoms included the following variables as covariates: age, years of education, religiosity, per capita income, self-esteem and presence of machismo.
[1]At baseline, self-esteem and presence of machismo were significantly related to depression symptoms ($F(1,392) = 154.32$, $P < 0.01$ and $F(1,392) = 26.12$, $P < 0.01$ respectively).
[2]At 3-month follow-up, the covariates years of education ($F(1,392) = 12.8$, $P < 0.01$), self-esteem ($F(1,392) = 45.52$, $P < 0.01$) and machismo ($F(1,392) = 15.26$, $P < 0.01$) were significantly related to depression symptoms.

equal across the intervention and control groups. The results showed a statistically significant difference between depressive symptoms among women in the intervention and control groups ($F(1,392) = 3.85$, $P = 0.05$) after controlling for the effect of the covariates. In this model, the covariates years of education ($F(1,392) = 12.8$, $P < 0.01$), self-esteem ($F(1,392) = 45.52$, $P < 0.01$) and machismo ($F(1,392) = 15.26$, $P < 0.01$) were significantly related to depression symptoms (see Table 2).

Discussion

The women who participated in this study reported similar levels of depressive symptoms to those reported by the Chilean Ministry of Health (2006). At 3 months post-intervention, low-income Chilean women who participated in the *Mano a Mano-Mujer* intervention had a significant decrease in depressive symptoms. Also, women in the intervention group reported fewer symptoms of major depression and an increase in symptoms of mild depression. The assumption is that some of the women in the intervention group who reported major depression symptoms at baseline, after participating in the *Mano a Mano-Mujer* intervention, reported fewer depressive symptoms scoring lower than 27 in the CES-D.

There is a sense of self-reliance among Hispanic families coping with mental health problems as well as a sense of shame for the family when mental problems – such as depression – are disclosed (Vega & Alegría 2001, Alegría *et al*. 2007). *Mano a Mano-Mujer* intervention provided the women with an opportunity to discuss these topics and to develop skills that help them discuss openly these topics with their partner (Cianelli *et al*. 2012).

Women's psychological well-being is important for society because depressive symptoms interfere with a woman's and her family's daily life and normal functioning. The state of depression causes distress for the woman, the family and those who care about her. This is important considering that in the Chilean culture, women are the main support and care providers for the family. Furthermore, one in five homes in Chile is headed by a woman, placing these women at risk for work instability (Servicio Nacional de la Mujer 2004, Afifi 2007).

A decrease in depressive symptom may allow women to take more interest in their health including protective measures for HIV prevention and the increased communication regarding HIV prevention with their partner and condom use (Lara *et al*. 2008).

Mano a Mano-Mujer intervention was successful in decreasing depressive symptoms associated with mild and major depression. Reducing depression is important both for women's general health and as a factor in enabling them to engage in healthy sexual behaviours. Interventions for Chilean women and their partners have the potential to extend to the family and community societal structure, and assist in the containment of the incipient HIV epidemic in Chile.

Besides the direct impact of *Mano a Mano-Mujer* on women, this experience may serve as the initial step for triggering permanent work for nurses in primary health care settings. Nurses are able to incorporate screening for depressive symptoms for all women during regular check-ups, particularly those in search of sexual health-related appointments.

Mano a Mano-Mujer is an intervention primarily designed to prevent HIV transmission among low-income Chilean women. However, it has also proved to help in decreasing depressive symptoms among women that participate in this intervention. It can be hypothesized that this can be the result of the (1) group interaction generated

among the women and the facilitator. The women have the opportunity to talk openly about issues they confront in their daily life, when usually they do not have the opportunity to talk about them. In addition, support networks spontaneously emerging among these women went beyond the group sessions; (2) topics discussed (e.g. machismo, depression, self-esteem, communication) and skills developed as part of the intervention made the women feel empowered and better able to manage their relationships.

Study limitations

The limitations of this study include the short interval between interventions and follow-up (3 months), which must be considered when evaluating the results. The outcome measures were based on self-report. Previous research has shown that social desirability may reduce respondents' willingness to report socially disapproved sexual behaviours, although self-reported data are useful because under-reporting affects both intervention and control groups. The Chilean women who participated in this study were from a low-income setting, which limits the external validity of findings to other socio-economic groups of women in Chile.

Implications

The *Mano a Mano-Mujer* intervention provided significant benefit for women's depression symptoms. Based on the results of this study, the authors strongly recommend the development of policies to strengthen Chilean women's access to primary mental health services. More attention should be given to design interventions that can address depression symptoms in the primary health care setting, and to improve community services in order to reduce the stigma for mental health problems (Afifi 2007, Shattell *et al*. 2008).

Also, there is a need for better prevention, diagnosis and treatment of mental health needs of women, partially related to the culturally reinforced subordinate position in relation to their male partners. Reducing depression is important for women's general health and as a factor in enabling them to engage in healthy sexual behaviours. More research is needed to help ameliorate some of the harmful societal aspects of this disease by helping to develop a social system that contributes to equality and equity for women. Also, gaining a better conceptual understanding of the factors related to depression symptoms would aid in the development of conceptual models that could incorporate women's diversity as defined by economic and educational status (Le *et al*. 2003).

Nurses are often the first healthcare providers that many of these women interact with as they seek primary care. It is important that nurses convey interest, respect and a safe environment for women to share their concerns so that depressive symptoms are able to be detected (Shattell *et al*. 2008). Furthermore, it is essential for nurses to understand the experience of depression symptoms among low-income Chilean women and to contribute towards prevention and early referral. For example, active screening for depression within an already burdened and under-resourced public care systems raises additional concerns, including the potentially high prevalence of depression symptoms frequently found in low-income women, the needs and preferences of low-income women, and the lack of availability of low-cost depression care in the community (Fallowfield *et al*. 2001, Mauksch *et al*. 2001, Ashbury *et al*. 2003).

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