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## CHIEH MEI CHING YI: A RANDOMIZED CONTROLLED TRIAL OF A CULTURALLY TAILORED HIV PREVENTION INTERVENTION FOR CHINESE MASSAGE PARLOR WOMEN IN LOS ANGELES

Lois M. Takahashi, Karin E. Tobin, Stacy To, Samuel Ou, Chui Hing (Helen) Ma, Fiona Ka Wa Ao, and Jury Candelario

Asian heterosexual women in the U.S. have experienced relative rising HIV case rates, but there remain few studies and no evidence-based interventions that focus on this population. This study was a randomized controlled trial of a gender and ethnically tailored HIV prevention intervention for monolingual Chinese-speaking women who work as masseuses in Los Angeles. The intervention was two group-based sessions focused on HIV risk and prevention knowledge and condom skills. The control condition was a single-session HIV review. Participants were recruited using newspaper advertisements and referrals from agencies and massage schools. Two hundred women were randomly assigned to one of each condition. Retention in both conditions exceeded 90% at 3-month follow-up. Participants in both conditions demonstrated increases in knowledge on how to use male and female condoms. These effects were sustained at 3-month follow-up. The results highlight the possible efficacy of a one-workshop intervention in increasing HIV knowledge, but that more intensive participant interaction may be needed for improved condom use knowledge.

### INTRODUCTION

The prevalence of HIV/AIDS among Asian Americans in the US has grown substantially, especially for women. Between the years 2001 and 2004, the proportion of

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HIV/AIDS diagnoses among Asian American females aged 15–39 years increased more than other similar age racial/ethnic groups. Of particular concern, but little understood, is HIV risk among Asian women who work in massage parlors in the United States. Massage parlors and other types of indoor sex work venues have grown in number in large U.S. cities (Venkatesh, 2011). One study conducted in Los Angeles County conservatively estimated that in 2003–2004, there were 200 businesses, such as massage parlors, acupressure firms, and aromatherapy businesses; in that study, these indoor or off-street sex work venues appeared to employ primarily Asian female massage parlor workers (Lever, Kanouse, & Berry, 2005).

The few studies that have examined Asian female massage parlor work in the US indicate that a combination of factors limit these women from consistent condom use, including having multiple sex partners (9 customers on a good night and as many as 1,000 per year), verbal and physical abuse from customers, and economic vulnerability and sexual coercion (Auerbach & Coates, 2000; Nemoto, Iwamoto, Wong, Le, & Operario, 2004). Asian women working in massage parlors work long hours (average 10.5 hours per day) and see many clients (average 26.6 customers per week; Nemoto, Operario, Takenaka, Iwamoto, & Le, 2003). For all of these reasons, this population faces severe barriers to existing sexual health and HIV prevention services, as well as very high risk for HIV and sexually-transmitted infections (STIs; Wilkinson, 1997). Yet, there are no evidence-based interventions that address the HIV prevention needs of Asian female massage parlor workers in the United States.

APAIT Health Center (formerly known as Asian Pacific AIDS Intervention Team, or APAIT) is a community-based AIDS service organization and primary care clinic in Los Angeles, CA that has provided services to Asian American and other vulnerable communities for over 25 years. Over the past decade, APAIT Health Center has provided HIV education and testing to female Asian massage parlor workers who have become involved in the court system because of arrests for suspicion of prostitution because they are operating without a masseuse license. In recognition of the lack of programs for Asian masseuses in Los Angeles, APAIT Health Center was awarded a grant by the National AIDS Fund (now AIDS United) through its Generations II program to adapt the evidence-based intervention “Sisters Informing Sisters about Topics on AIDS” (SISTA) to address Asian massage parlor workers’ HIV prevention needs (National AIDS Fund, 2009). SISTA was originally developed for African American women, and is a five-session intervention that applies Social Cognitive Theory and theories of gender and power to enhance ethnic and gender pride to increase condom negotiation and use with male partners (DiClemente & Wingood, 1995). SISTA has been adapted for Latinas/Hispanics and transgender women of color, but has not as far as we know been adapted for Asian heterosexual women (Effective Interventions, n.d.).

The new program, Chieh Mei Ching Yi (translated in Mandarin as “Sister Love”), was piloted from September 2007 to December 2009 with 75 monolingual Chinese women. Monolingual Chinese women were targeted for this pilot project because of the large relative size of the immigrant population, their severe lack of access to health care, and the arrest patterns observed by APAIT Health Center with respect to Asian female masseuses (monolingual Asian, and especially Chinese, female masseuses were unable to navigate the court system, and there were few in-language HIV education programs that they could use to fulfill their court-mandated requirements; APAIT Health Center was at the time one of the few agencies in the region providing HIV education workshops in Mandarin and Cantonese).

Results of the initial phase of the pilot study indicated that three core elements from SISTA did not match the target population and setting, thus warranting further adaptation: (1) severe time constraints due to work and family responsibilities did not allow the women to attend five workshop meetings (women worked long hours, some had long commutes, and all were responsible for the home and childcare); (2) the Chinese women did not relate well to the SISTA role-play scenario topics (substance use, dating, violence), but frequently mentioned challenges with integrating into society especially given their employment as masseuses and isolation stemming from their immigrant experience; and (3) Chinese language and culture do not have a direct translation of “assertiveness,” and even women who are more Westernized may not feel comfortable challenging men or more senior members of the community (e.g., Chan, Levy, Chung, & Lee, 2002). To address these gaps, the intervention was further adapted to (1) reduce the number of sessions from five to two to accommodate the women’s work schedule and limited availability to attend workshops; (2) include activities and discussion focused on coping with isolation, stress, and rejection related to immigration, and massage parlor work stigma and shame; and (3) build skills for dealing with pressure (e.g., negotiation skills) to not use condoms. The resulting intervention was a two-session, group-based program that was delivered by a Chinese speaking (Mandarin/Cantonese) female facilitator (see Table 1 for a comparison of this intervention with SISTA).

The purpose of this study is to evaluate the efficacy of Chieh Mei Ching Yi on HIV risk and prevention knowledge and condom use skill among Chinese monolingual women who work (or have worked) as masseuses in Los Angeles using a randomized controlled study design. This study was reviewed and approved by the UCLA Institutional Review Board.

## METHODS

Recruitment for the study was conducted from November 2010 to July 2012. Recruitment methods included outreach by trained study staff to massage parlors, word of mouth, advertisements in Chinese newspapers (in language, these ads were placed in the employment section and mimicked and were placed next to massage parlor employment advertisements), and referrals from community agencies, law offices that provide services, and massage schools targeting Chinese-speaking women.

All potential participants were screened by an APAIT Health Center trained staff, either by phone or in person. Inclusion criteria were: self-identifying as a Chinese woman, low to limited English proficiency, and history of working in massage parlors. English proficiency was assessed by asking the participants, in English, how they heard about the program and their comfort level speaking English. Participants who responded clearly in English and/or acknowledged being comfortable speaking English were determined to be ineligible. Low proficiency in English was used to target the most vulnerable Asian women participants working as masseuses in Los Angeles.

Eligible participants provided oral consent to be randomized into either the intervention or control condition. After participants screened eligible, they were randomly assigned to one of the two conditions, and were informed of the date and time of the first session by the session facilitator. The facilitator also gave a reminder call to eligible participants a day before their scheduled workshops.

TABLE 1. Comparison of SISTA to Chieh Mei Ching Yi ("Sister Love")

SISTA Core Elements (DiClemente & Wingood, 1995)	Chieh Mei Ching Yi
Five small-group sessions to discuss the session objectives, model skills development, role-play women's skills acquisition, and address the challenges and joys of being an African American woman	Two small group sessions that include activities to model skills, role-play, and generate discussion focused on coping with isolation, stress, and rejection related to immigration, massage parlor work stigma, and shame
Use skilled African American female facilitators to implement SISTA group sessions	Use skilled Chinese female facilitator who speaks both Mandarin and Cantonese
Use cultural and gender appropriate materials to acknowledge pride, enhance self-worth in being an African American woman	Use of cultural and gender appropriate materials to enhance the self-worth of immigrant Chinese women
Teach women to communicate both verbally and nonverbally to show that she cares for her partner and needs to protect herself (i.e., negotiation skills, assertive communication skills)	Engage women in discussion about how to negotiate (bargain) over price of varying desired or needed services or objects, with one case being condom use with a male partner
Instruct women on how to effectively and consistently use condoms	Women learn to properly use a male and female condom through demonstration and practice
Discuss cultural and gender-related barriers and facilitators to using condoms (e.g., provide information on African American women's risk of HIV infection)	Provides basic information about HIV risk and prevention (e.g., provide information on Asian American women and HIV case rates in California)
Emphasize the importance of partner's involvement in safer sex (i.e., enhance partner norms)	Not included

### INTERVENTION CONDITION

Randomization resulted in 22 intervention condition groups ( $n = 101$  participants total), with a mean of 4.59 participants in each session. Group size ranged from 2 to 8 participants. The intervention condition consisted of two, 3-hour sessions over 1 to 2 weeks. The intervention was delivered in a small group format by a Chinese female facilitator, who was fluent in Mandarin and Cantonese, enabling participants to establish a social connection with others in a similar situation and to build social support.

The first session included information on HIV/AIDS prevalence in California, an HIV/AIDS knowledge review game, an activity to address misconceptions about HIV transmission and risk (especially that HIV cannot be transmitted via mosquitoes, a belief reported by almost all participants at baseline during the pilot study), and condom demonstrations with both male and female condoms. The first session also included participants practicing steps for proper condom use to increase skills. The second session included skills building focused on coping with stress, isolation, and rejection, as well as activities focused on dealing with pressure from customers to not use condoms, including strategies such as bargaining to negotiate condom use with male clients. The second session concluded with a self-affirmation activity focused on identifying personal strengths as a Chinese woman. Referrals (to health services and community activities) and safe sex kits were distributed based on participant stated need after the second workshop. The safe sex kits included information about free anonymous HIV testing.

### CONTROL CONDITION

The control condition was a 2- to 3-hour one-session workshop delivered by the same female facilitator who delivered the intervention condition. Twenty-two control groups ( $n = 99$  total participants) were conducted with a mean of 4.5 par-

ticipants in each group. Group size ranged from two to eight participants. Content was presented didactically in Mandarin or Cantonese. The workshop included HIV/AIDS statistics, HIV/AIDS transmission information, and condom demonstrations of both male and female condoms. Referrals (to health services and community activities) and safe sex kits were distributed based on participant stated need after the workshop. The safe sex kits included information about free anonymous HIV testing.

#### BASELINE DATA COLLECTION PROCEDURES

For both conditions, prior to the start of the first session, participants provided oral consent and completed a self-administered paper and pencil baseline questionnaire that assessed participant socio-demographic and health characteristics as well as knowledge about HIV risk and prevention and condom use. Participants were asked to provide information to enable APAIT Health Center to contact them for a 3-month follow-up visit.

#### FOLLOW-UP PROCEDURES

Two post-intervention assessments were conducted for participants in both conditions. Immediately post session (intervention and control), participants completed a self-administered questionnaire. Participants received \$50 gift cards to a local grocery store after completing the post-session questionnaire. Three months after this date, all participants were asked to complete a self-administered follow-up questionnaire. Retention of the sample at 3-month follow-up was 93% and did not vary by condition. Of the participants completing the 3-month follow-up questionnaire, 9% of the sample completed the follow-up visit via a phone survey with study staff; this rate did not vary by condition. Participants received \$50 gift card at the 3-month follow-up contact.

#### MEASURES

Socio-demographic measures included age, highest education attained, and current employment status (yes/no). Court-mandated status (whether participants were required to attend an HIV education course after being arrested on suspicion of prostitution) was recorded (yes/no). Health measures included whether the participant currently had health insurance, received a gynecological exam in the prior 12 months, and been tested for sexually transmitted infections in the past 12 months. Participants were also asked if they had ever received information about HIV from a health care provider (yes/no).

*Massage Parlor Work.* To assess massage parlor work, participants were asked if they had worked as a masseuse in the prior 12 months. Of those who responded affirmatively, they were asked whether other workers performed sexual services (yes/no) and received money for sexual services (yes/no).

*Knowledge About HIV Risk Factors.* To assess knowledge about HIV risk factors, indicators were drawn from studies of female sex workers in China (e.g., Yang et al., 2005) and measures developed by APAIT Health Center staff during the pilot study. Participants were asked to identify the body fluids that transmit HIV (blood, semen, pre-cum, vaginal secretions, and breast milk) from a list of fluids. A correct

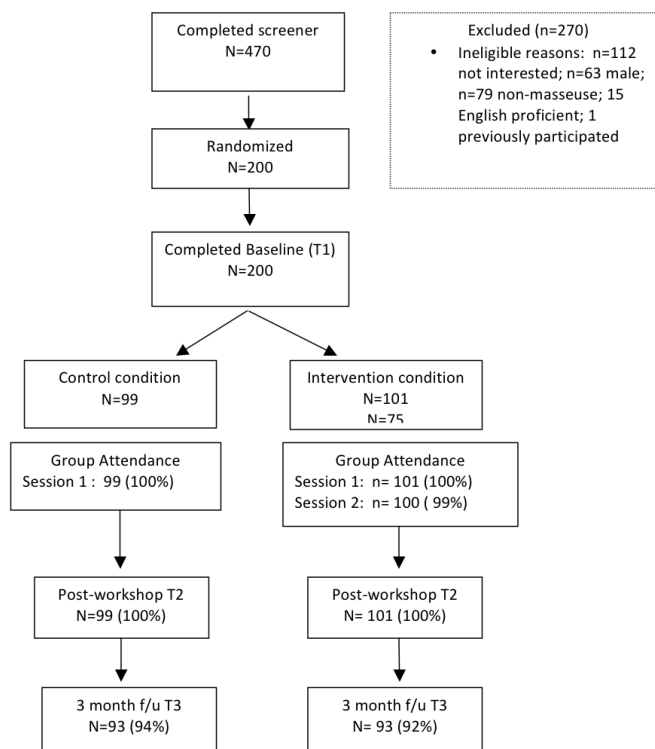


FIGURE 1. Participant Flow—Randomized Assignment into Intervention and Control Conditions.

response to this item was coded as 1 if all five fluids were identified. Other items to assess knowledge were “people can get HIV from...” (1) mosquitos and (2) hugging an HIV positive person (yes, no, don’t know). Responses were recoded to indicate the response was correct, incorrect, or don’t know.

*Knowledge About Preventive Factors.* To assess knowledge about preventive factors, participants were asked whether “people can prevent HIV by...” (1) using Chinese medicine and (2) a vaccine. Responses were recoded to correct, incorrect, or don’t know. Participants also indicated if they knew where to buy condoms (yes/no).

*Condom Use Skill.* Condom use skill was measured using two items: “I can place a condom on a man” and “I can put on a female condom before having sex” (yes/no).

## STATISTICAL ANALYSIS

Chi-square tests for categorical variables and *t*-tests for continuous variables were used to compare participants by randomized condition at baseline, post-workshop, and 3-month follow-up. Fisher’s exact test was used in lieu of chi-square tests when variables had sparse cells (fewer than five participants in a category). All analyses were based on the intent-to-treat assumption regardless of number of sessions attended. These analyses were conducted using Stata 10 (StataCorp, 2007).

TABLE 2. Sample Characteristics of Randomized Participants at Baseline

Variables	Total Sample N = 200 (100%)	Experimental Condition) N = 101 (51%)	Control Condition N = 99 (49%)	p-value
Number Completing a Phone Follow-Up Survey	17 (9)	9 (10)	8 (9)	1.00
Participant Court-Mandated				
No	176 (88)	88 (87)	88 (89)	
Yes	24 (12)	13 (13)	11 (11)	0.83
Mean Age ( <i>SD</i> )	48.5 (10.1)	48.9 (9.24)	48.1 (10.9)	0.56
Age Categories				
20–35 years	21 (11)	8 (8)	13 (14)	
> 35–49 Years	81 (42)	47 (48)	34 (35)	
> 49 Years	91 (47)	42 (43)	49 (51)	0.15
Educational Attainment				
< High School	31 (16)	14 (14)	17 (18)	
High School	91 (47)	47 (47)	44 (47)	
College or Greater	70 (36)	38 (38)	32 (34)	0.70
Single/Never Married	27 (4)	6 (6)	21 (21)	0.002
Currently Employed				
No	102 (52)	50 (50)	52 (54)	
Yes	95 (48)	50 (50)	45 (46)	0.61
Currently Have Health Insurance				
No	131 (66)	62 (62)	69 (70)	
Yes	67 (34)	38 (38)	29 (30)	0.21
Ever Obtained Information About HIV From Health Provider				
No	179 (91)	91 (91)	88 (91)	
Yes	18 (9)	9 (9)	9 (9)	0.95
Worked as a Masseuse in Past 12 Months				
No	67 (35)	34 (34)	33 (36)	
Yes	125 (65)	66 (66)	59 (64)	0.79

## RESULTS

A total of  $n = 200$  women screened eligible and were randomly assigned to the intervention ( $n = 101$ ) or control condition ( $n = 99$ ; Figure 1). Table 2 presents characteristics of the baseline sample. Age of the sample ranged from 20 to 74 years, with the mean age being 48.5 years. Slightly less than half (48%) were currently employed and nearly two-thirds (65%) reported working as a masseuse in the prior 12 months. Of the women who reported working as a masseuse in the prior 12 months, 25% reported that other workers performed sexual services and that nearly all (93%) received money. A small proportion of the sample (12%) was court mandated to attend an HIV education course as a consequence of arrest on suspicion of prostitution. A smaller proportion (9%) had obtained information about HIV from a health provider prior to participating in the study. There were no statistically significant differences between the intervention and control conditions on baseline socio-demographic characteristics, except the proportion single/never married.

Table 3 presents intervention effects over time on knowledge about HIV transmission risk. Participants in both conditions demonstrated marked increases from pre-workshop to post-workshop in knowledge about where to get condoms and how to put on a male and female condom. These effects were sustained at the 3-month follow-up period.

Table 4 presents intervention effects on knowledge about HIV risk and transmission factors. Correct knowledge on all items improved in both conditions and



TABLE 3. Intervention Effects on Knowledge About HIV Risk and Prevention

Variables	Baseline			Post			Follow-up		
	Experimental N (%)	Control N (%)	p-Value	Experimental N (%)	Control N (%)	p-Value	Experimental N (%)	Control N (%)	p-Value
People Can Get HIV From...									
Mosquitos									
Incorrect Response	35 (35)	33 (34)		1 (0)	22 (23)		5 (5)	20 (22)	
Don't Know	27 (27)	35 (36)		0 (0)	3 (3)		0 (0)	4 (4)	
Correct Response	37 (37)	28 (29)	0.33	100 (100)	72 (74)	<0.001	87 (95)	69 (74)	< 0.001
Hugging an HIV+ Person									
Incorrect Response	11 (11)	12 (12)		5 (5)	9 (9)		1 (1)	6 (6)	
Don't Know	15 (15)	20 (20)		0 (0)	1 (1)		0 (0)	3 (3)	
Correct Response	73 (74)	67 (68)	0.60	96 (96)	88 (90)	0.22	92 (99)	84 (90)	0.03
Knowledge About Fluids That Transmit HIV									
Incorrect	53 (54)	36 (38)		5 (5)	7 (8)		3 (3)	11 (12)	
Correct	46 (46)	58 (62)	0.03	94 (95)	85 (92)	0.47	89 (97)	79 (88)	0.02
HIV Can Be Prevented by... a Vaccine									
Incorrect Response	40 (43)	33 (34)		14 (14)	29 (31)		15 (16)	25 (27)	
Don't Know	21 (22)	28 (29)		1 (1)	4 (4)		1 (1)	13 (14)	
Correct Response	33 (35)	35 (36)	0.43	85 (85)	62 (65)	0.005	796 (83)	54 (59)	< 0.001
Chinese Medicine									
Incorrect Response	12 (13)	12 (12)		3 (3)	14 (15)		3 (3)	8 (9)	
Don't Know	33 (34)	38 (38)		1 (1)	4 (4)		4 (4)	15 (16)	
Correct Response	51 (53)	49 (49)	0.84	94 (96)	78 (81)	0.006	85 (92)	70 (75)	0.006
I Know Where to Get Condoms									
No	43 (43)	43 (46)		2 (2)	1 (1)		6 (7)	10 (11)	
Yes	57 (57)	51 (54)	0.70	99 (98)	98 (99)	1.00	85 (93)	81 (89)	0.43

TABLE 4. Intervention Effects on Condom Use Skills

Variables	Baseline		<i>p</i> -Value	Follow-Up		<i>p</i> -Value
	Experimental	Control		Experimental	Control	
	<i>N</i> (%)	<i>N</i> (%)		<i>N</i> (%)	<i>N</i> (%)	
I Can Place a Male Condom On						
No	47 (48)	50 (57)		12 (13)	10 (11)	
Yes	51 (52)	38 (43)	0.23	77 (87)	81 (89)	0.61
I Can Use a Female Condom Before Having Sex						
No	75 (81)	68 (80)		44 (49)	43 (47)	
Yes	18 (19)	17 (20)	0.91	46 (51)	48 (53)	0.83

was sustained at the 3-month follow-up survey. The intervention condition was associated with a greater proportion of correct knowledge on HIV transmission risk from mosquitoes and hugging an HIV-positive person at 3-month follow-up, and marginally significant with correct knowledge about HIV transmission risk from dining with an HIV-positive individual or breastfeeding. The intervention condition was also associated with increased correct knowledge about the ineffectiveness of HIV prevention from a vaccine and Chinese medicine.

## DISCUSSION

We reported the results of a tailored HIV prevention program for low-English-proficient Chinese female current and former masseuses. The intervention sought to enhance racial/ethnic and gender pride as a mechanism for heightening relevance of the information presented in the program, especially for women who experience stigma and isolation related to working as a masseuse. Many of the participants described to the facilitator experiences of shame related to their employment in massage parlors.

Participants in both conditions improved their HIV knowledge levels and condom use skill over a 3-month period. However, the intervention condition was associated with greater retention of certain HIV transmission risk knowledge items over a 3-month period as compared to the control condition. We found low levels of knowledge about HIV risk factors at baseline and misconceptions about risk (e.g., transmission by mosquitoes) that are not typical in US domestic samples. This may reflect an overall lack of HIV prevention education in China or limited education for women in China. This finding underscores the need for and importance of programs that aim to improve HIV transmission knowledge, especially for low-English-proficient immigrant populations.

In terms of condom use skills, both the intervention and control conditions in this study included a review on steps for proper condom use; results indicated increases in self-reported knowledge about where to purchase condoms and condom use skill for male and female condoms with no significant differences observed between the two conditions. This suggests that condom knowledge may be effectively improved for low-English-proficient women using one 2-hour workshop in language that includes condom demonstration and participant practice in condom application.

The sample included women who were current or former massage parlor workers who ranged in age from 20 years to over 49 years. There were no statistical differences by age in whether they were current workers. The wide range in age may suggest that Chinese women of many different ages are employed as masseuses, which may have implications for further refining HIV education and prevention strategies.

Limitations of this study should be noted. The mean age of the sample was almost 50 years old. Results from this study may not be generalizable to younger women who work in massage parlors. There is also the potential for reporting bias due to the self-administered method of data collection, as the self-administered aspect of the questionnaire is similar to test taking, and the norm for Asian immigrants is to provide the correct answers as opposed to accurately reporting behavior and perceptions. If self-reporting bias is present, however, baseline measures would be overestimates of participant knowledge, which confirms the need for education with this population (i.e., baseline knowledge was very low).

## CONCLUSION

This study is an important contribution to the limited body of HIV prevention research focused on immigrant Asian female massage parlor workers and highlights areas for future research for developing and adapting efficacious HIV prevention interventions. As the results of this study indicated, there are large gaps in HIV knowledge within Asian American female populations, but possible varying ways to effectively deliver interventions for knowledge increase or for risk reduction behavioral change. As this industry appears to be growing, more research is needed to ascertain the degree of HIV and sexually transmitted infection transmission risk, and what interventions might be most efficacious in improving health for these women.

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