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Combination Microfinance and HIV Risk Reduction Among Women Engaged in Sex Work

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Abstract

The purpose of this paper is to summarize 15 years of intervention science in combination HIV prevention and microfinance among women engaged in sex work (WESW) in Central Asia, identifying gaps in our understanding and recommendations for future studies. We begin by describing the emergence of HIV/STI risk among WESW in the Central Asia region, specifically Mongolia and Kazakhstan, and bridge to the formative stages of our methodology as well as completed prevention intervention studies. We describe the development of combining HIV prevention with asset-based microfinance interventions, lessons learned, and contributions these studies make to HIV prevention, intervention science, and practice. We end by recommending next steps to move prevention science forward in this area and among this key population, which continues to be underserved in HIV prevention science worldwide.

Keywords

female sex worker, HIV prevention, microfinance, violence, economic empowerment

Women who engage in sex work (WESW; here sex work is defined as engaging in sexual acts for payment) remain a key population at high risk for HIV and other sexually transmitted infections (STIs) globally. While we recognize that the term "female sex worker" or FSW is standard in publications, throughout this manuscript we promote the person-first language "women engaged in sex work," or WESW. Both terms, however, are limited and problematic in that they refer broadly to "sex work," instead of more narrowly to "a sexual act in exchange for money or goods," which is only one form of sex work perhaps more popularly referred to as "prostitution." In low- to middle-income countries, estimates put the odds of HIV infection for WESW at 13.5 times that of all women of reproductive age (Baral et al., 2012). For WESW, HIV risk is widely associated with poverty and inequality, due to the environments and risky contexts in which sex work is engaged (Kim et al., 2008; Stratford et al., 2008). Many people who engage in sex work as a means of economic support have a compromised ability to be concerned about long-term health consequences such as HIV (Dworkin & Blankenship, 2009). Since historically women—cisgender and Transwomen—may generally lack economic independence to a greater extent than men, they may be less able to negotiate safer sex with heterosexual partners, and less able to leave abusive relationships (and therefore be at greater risk of HIV), and more likely to exchange sex for survival: that is, for basic subsistence, income, food, and shelter (Exner et al., 2003; Greig & Koopman, 2003; Hallman, 2004). Women engaged in survival sex work may typically be paid very low amounts for their sex acts, earning under $5 USD per day, most living in poverty, yet also typically the primary income earner in their household (Tsai et al., 2013). This paper focuses on a series of studies that targets samples of cisgender WESW who are predominantly engaged in survival sex work and indicate that if another vocation were available to them, that they may transition away from sex work.

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Structural interventions such as microfinance have the potential to address the economic risk environment faced by WESW and to offer alternative vocational or income-generating options. The promise of microfinance for HIV risk reduction (HIVRR) has received much interest, though prior to the work described in this manuscript, few empirical results (Dworkin & Blankenship, 2009). Such results suggest that providing women with increased economic opportunities decreases their reliance on sex work and high-risk unprotected sex for income. Microfinance interventions for HIVRR can take many forms, including a range of programs focused on financial literacy education, vocational training, conditional or unconditional cash transfers, formal or informal microcredit or lending, small-business development, and asset-building through savings programs (Arrivillaga & Salcedo, 2014; Cui et al., 2013; Kennedy et al., 2014).

To follow we describe the development and implementation of combination HIVRR and asset-based or savings-led microfinance interventions in support of WESW in Central Asia. As part of the Global Health Research Center of Central Asia (GHRCCA) at the Social Intervention Group (SIG), and over the course of 15 years, a series of 18 studies have recorded the health and well-being of women engaged in sex work as they relate to issues of human immunodeficiency virus (HIV) prevention in both Mongolia and in Kazakhstan. We describe our team's evolving intervention science through three completed clinical trials, including intervention development, testing, and implementation of HIVRR combined with asset-based microfinance to reduce behavioral risk of HIV/STIs among women. Asset-based microfinance will be defined later. We also summarize lessons learned regarding women's mental health, financial status, experiences of intimate and paying (commercial) partner violence, and nonfatal drug overdose experience through sub-studies of these intervention trials. Lessons learned point to new directions of inquiry to further develop and strengthen economic empowerment and health interventions for key populations of women globally.

Economic Transition and the Rise of Women's Survival Sex Work and HIV/STIs Risk in Mongolia and Kazakhstan

The Central Asian region has moved through considerable sociopolitical evolution in the past 30 years, a history that influences the state of present day public health issues (Brittanica, n.d.; Sayabayev, 2016). The countries of Mongolia and Kazakhstan have similar experiences: seven decades of Communist/Soviet rule, followed by transformation to parliamentary democracies in the 1990s. Situated between China and Russia, Mongolia, with a population of almost 3 million, adopted a new constitution and transitioned to a multi-party representative government in 1992. Growing pains resulting from its newly minted free-market economy saw nearly a third of the population struggling below the poverty line 20 years later (United Nations Development Programme, 2011). Under Soviet education policies, women were highly engaged in the workforce, and enjoyed access to medical care at minimal cost. The transition period brought state funding cutbacks, which led to great instability in social services, education, and healthcare access. Trickle-down approaches to job creation at the expense of funding for social welfare failed to slow growing poverty rates, and in-migration from rural areas to the capital city for food or jobs increased pollution and public health hazards due to inadequate infrastructure (Rossabi, 2005). Accustomed to the role of heading households, and without legal employment options, more women became engaged in sex work (National AIDS Foundation, 2001, 2003; for a more comprehensive description of the economic, social, and political context for HIV prevention among WESW in Mongolia, please see Witte et al., 2018 and Carlson et al., 2014).

Along with rapid economic and systemic changes, Mongolia saw growing rates of alcohol dependence, eroding health and social services, and increased migration of workers through and out of the country (National AIDS Foundation, 2003). HIV/STI rates increased among WESW and their clients, a key bridge population to a more generalized HIV epidemic (United Nations General Assembly, 2010). In 2012, half of women newly diagnosed with HIV were WESW (Ministry of Economic Development, 2013). These women were at especially high risk of STIs and HIV infection, in part because of forgoing condom use as a way to receive higher payment or as a result of trust between themselves and their regular paying partners (Le et al., 2010). Alcohol, too, was a factor, as 60% of WESW reported alcohol use as a means of coping and as a primary reason for non-condom use (National AIDS Foundation, 2001, 2003).

Similarly to Mongolia, the transition in Kazakhstan to a free-market economic system and parliamentary democracy in the 1990s resulted in large-scale economic shifts, which were accompanied by a reduction in state-funded services. Economic inequality has steadily increased in Kazakhstan since the 1990s. Job growth has primarily occurred in the natural resource sectors of the economy (Shahbaz et al., 2017), which skew overwhelmingly male. Women face significant economic inequalities, including a large wage gap and larger representation among informal or lower-paid sectors or the economy (Maltseva, 2021). Kazakhstan's geographic position has made it a natural hub on many trade routes, and particularly its largest city, Almaty, is a destination for many migrant workers, including WESW.

Kazakhstan also has one of the world's highest prevalence rates of injection drug use, and has experienced one of the fastest growing HIV epidemics in the world (El-Bassel et al., 2013). Sex trading has contributed to the rise in heterosexual HIV transmission in Kazakhstan (Baral et al., 2013),

where there is an estimated 19,600 people—mostly women—engaged in sex work country-wide (Baral et al., 2012; International Planned Parenthood Federation, 2014). The UNAIDS estimated that one in eight HIV cases in Central Asia occurs among WESW and their male clients (UNAIDS, 2012a, 2012b), making them a key bridge population (Thorne et al., 2010; UNAIDS, 2012a).

Confirming these country-level risk factors, a systematic review found that WESW in lower- to middle-income countries (LMICs) have an increased probability of HIV infection relative to the general female population, with the highest odds observed in Asia (Baral et al., 2012). Individual and structural factors play a part in shaping risks of infection among WESW and their clients in this region, including work environment, violence, stigma, criminalization of sex work, and cultural issues such as gender norms (Blankenship & Koester, 2002; El-Bassel et al., 2010; Rhodes et al., 2012). For many WESW, especially those who also use drugs, poverty lies at the core of their risk. Poverty and the absence of employment opportunities make transactional sex a survival strategy (Pinkham & Malinowska-Sempruch, 2008; Stratford et al., 2008). Women may have sex with someone who supplies them with money, a place to stay, food, drugs, or protection. For WESW, and who use drugs, sex work is a rational, economic strategy adopted to meet subsistent needs in the face of large-scale structural inequities (Shannon et al., 2008). While drug treatment, job training, and placement assistance can help women become financially independent and avoid economic dependence on partners who may be abusive (Strathdee et al., 2010), approaches need to be sensitive to the needs of this population (Blankenship & Koester, 2002). A growing body of evidence suggests that in order to be effective, HIV prevention interventions must address such risk factors beyond the level of the individual. Therefore, with drug-using women more likely than non-drug-using women to be economically dependent on men (Cavanaugh et al., 2010), interventions must determine ways for women to engage in legal economic activities by means of skills-based training and empowering economic opportunities (Coates et al., 2008).

For the GHRCCA team, this empirical evidence and sociopolitical history converged in a planning study to develop and test a culturally informed intervention specific to the needs of cisgender WESW (Witte et al., 2010). As described below, this study would ultimately lead to a series of clinical trials and related investigations culminating in an integrated health-related intervention that included elements of asset-based microfinance. We describe the evolution of three parent studies, two in Mongolia, and one in Kazakhstan, which inform the current state of combination asset-based microfinance and HIV prevention interventions for WESW in the region. Table 1 provides a brief description of study elements, objectives, and key findings.

Women's Wellness Project

Consistent with best practices in international community-based participatory research, our formative work in Mongolia and subsequent work in Kazakhstan was intentionally collaborative, including local scholars, non-governmental organization service providers, clinicians, and researchers from the GHRCCA (Pinto et al., 2014; Witte et al., 2019). Stakeholders were brought together as community advisory boards to inform all aspects of intervention and study development. Our first study, a mixed methods investigation into barriers and facilitators to HIV/STI risk reduction among a purposive sample of 48 cisgender WESW in Mongolia, found that over 85% reported drinking alcohol at harmful levels; 70% reported using condoms inconsistently with any sexual partner; 83% reported using alcohol before engaging in sex with paying partners; and 38% reported high levels of depression (Witte et al., 2010). These findings informed the Women's Wellness study, conducted from 2007 to 2009 and funded by the National Institute on Alcoholism and Alcohol Abuse (R21AA016286), the first behavioral clinical trial of an intervention addressing both HIV/STI prevention and reduction of alcohol use in Mongolia. Findings suggested that even low impact behavioral interventions can achieve considerable reductions of HIV/STI risk and harmful alcohol use with a highly vulnerable population in a low resourced setting (Witte et al., 2011).

This clinical trial generated important insights and successes related to HIV intervention science in the region. We demonstrated feasibility and implementation of a behavioral change program based on social cognitive theory and harm reduction with highly stigmatized and vulnerable women in an LMIC. We learned that an HIVRR program is easily adaptable and could be implemented at relatively low cost. The research team was able to recruit 270 women engaged in street-based sex work and to enroll 166 and sustain them over time with a 75% retention rate, comparable to U.S.-based HIV prevention studies. Rigorous quality assurance measures were implemented to assure standardized assessment, intervention, and training activities. Participant attendance was high, with 88% of women attending all intervention sessions and completing a six-month follow-up assessment, and no serious adverse events recorded. Ninety-two percent of participants positively endorsed the program experience (Witte et al., 2011). These findings highlight the importance and promise of integrating growing areas of determinants of health related to prevention of HIV/STIs, including alcohol use, into behavioral interventions.

The Women's Wellness study also pointed to theoretical and conceptual frameworks that center poverty, inequity, and violence as social structural factors responsible for most health inequities, and indicated that individual-level interventions alone are insufficient to end the epidemic (Bekker et al., 2015; Gupta et al., 2008). HIV prevention strategies must rely on combinations of theories to target from individual to

Table 1. Summary of Referenced Studies

Study	Dates	Design	Target	Objective	Key Findings
Mongolia					
Witte et al. (2010)	2005–2007	Formative: Mixed-methods: surveys & focus groups ($n = 48$)	Sexual risk behaviors, IPV, mental health	Examine impacts of HIV/STI risk behaviors, alcohol use, IPV & mental distress to inform design of gender- specific, HIV/STI prevention.	Women reported harmful alcohol use (85%), using condoms inconsistently w any sexual partner (70%) using alcohol before engaging in sex w paying partners (83%) and high levels of depression (38%).
Witte et al. (2011)	2007–2009	Quantitative: Randomized clinical trial ($n = 166$)	Sexual risk behaviors, harmful alcohol use	Examine efficacy of HIV risk reduction (HIVRR) and motivational interviewing (MI) intervention to reduce sexual risk of HIV/STI and harmful alcohol use.	The estimated number of times that women in each group engaged in unprotected sex is significantly smaller after intervention compared to the times at baseline.
Carlson et al. (2012)	2007–2009	Quantitative: Randomized controlled trial ($n = 229$)	IPV outcomes	Examine efficacy of HIV risk reduction (HIVRR) and motivational interviewing (MI) intervention to decrease paying and intimate partner violence.	Low-impact interventions can achieve reductions in violence experienced by WESW in a low-resourced setting. Peer group support may address co-occurring issues related to HIV risk reduction & IPV.
Carlson et al. (2017)	2007–2009	Quantitative: Cross-sectional ($n = 222$)	Mental health	Examine the rates of depressive symptoms and associated risk factors among WESW in Mongolia.	60.4% of participants were at high risk for depression Lifetime prevalence of sexual violence from a paying partner, perceived stigma, less social support, and higher levels of harmful alcohol use significantly predicted women's risk for depressive symptoms
Parcesepe et al. (2015)	2008–2009	Quantitative: Cross-sectional ($n = 222$)	Childhood sexual abuse (CSA), IPV, sexual risk	Examine if CSA or recent physical or sexual violence was associated with sexual risk behaviors.	Sexual risk with paying partners was associated with CSA and sexual violence by paying partners. CSA modified the association between recent sexual violence and unprotected sex with intimate partners.
Tsai et al. (2011).	2009–2011	Mixed methods: Pilot survey and focus groups ($n = 9$)	Intervention development and feasibility testing	Pilot elements of a microfinance intervention to decrease sexual risk behavior & increase economic empowerment.	Increased confidence to manage finances, greater hope for vocational goals, moderate financial literacy knowledge gains, and an initial transition from sex work to alternative income generation. Demonstrates feasibility and need for larger clinical trial.
Offringa et al. (2017)	2011–2013	Quantitative: Cross-Sectional: (n = 204)	Sexual risk, financial dependence, mental health, IPV	Create subgroups of women engaged in sex work, based on	Three latent classes, representing unique profiles of personal and financial risk.

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Table 1. (continued)

Study	Dates	Design	Target	Objective	Key Findings
				personal and financial risk factors.	Mixed personal risk with low financial risk group exhibited higher unprotected vaginal sex acts suggested that women at low financial risk may be more likely to respond to microfinance interventions targeting HIV prevention.
Tsai et al. (2013)	2011–2013	Quantitative: Cross-sectional ($n = 204$)	Financial well-being, stability, knowledge, economic responsibility	Overview of the financial lives of women engaging in sex work in Ulaanbaatar, Mongolia.	Women are primary household earners, & sex work is primary income source. Participants report low savings, high debt, high levels of harmful alcohol use and higher payment for protected sex. Financial instability increases risk for HIV/STI due to a compromised ability to negotiate safer sex.
Tsai et al. (2018)	2011–2013	Quantitative: Randomized clinical trial ($n = 107$)	Economic outcomes	Examine the impact of the microfinance intervention on income from sex work and whether sex work remained the main source of income for participants after intervention.	Participation in the MF condition enabled some women to substitute some of their sex work income with income from other sources without incurring significant reductions in their overall household income or total personal income.
Witte et al. (2015).	2011–2013	Quantitative: Randomized clinical trial ($n = 107$)	HIV/STI sexual risk outcomes	Examine if a savings-led microfinance and HIV prevention intervention would reduce sexual risk behaviors among WESW.	Participants exhibited a 39% decrease in the number of unprotected vaginal sex acts with paying partners at each time point and contrasts within specific time points indicated that participants in the Undarga Program group were 3.72 times more likely to report no unprotected vaginal sex acts at the 6-month FU.
Tsai et al. (2016)	2011–2013	Quantitative: RCT ($n = 107$)	IPV outcomes	Does participation in a microsavings intervention increase reports of paying partner violence among WESW.	Participation in a microsavings intervention did not significantly impact women's risk for paying partner violence.
Kazakhstan					
McCrimmon et al. (2018)	2014–2018	Protocol: Randomized controlled trial		Protocol for two-arm, cluster-randomized controlled trial for WESW who use drugs to test efficacy of HIV-prevention in	Identified design components of a combination HIVRR + savings-led microfinance, structural intervention, and the implementation of this intervention through a

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Study	Dates	Design	Target	Objective	Key Findings
				combination with microfinance interventions.	rigorous study design shows potential in mitigating harms that WESW experience.
Mergenova et al. (2019)	2014–2018	Descriptive: Intervention implementation ($n = 354$)	Intervention implementation process and challenges	Test an HIV prevention and microfinance intervention designed to decrease HIV risk behaviors and increase financial literacy.	Findings suggest that it is feasible to implement a combination HIV-prevention and microfinance intervention with WESW, and address implementation challenges successfully.
Vélez-Grau et al. (2020)	2014–2018	Qualitative trajectory approach ($n = 19$)	HIV sexual risk, drug use, financial/ econknowledge & empowerment	Examine participant narrative reports of impact of combination HIVRR & savings-led microfinance on sexual & drug risk behaviors, & ability to reduce income from sex work.	Participants report increased condom use knowledge and skills,, safe sex practices, & drug use reduction. MF participants described perceived gains on budget management, capacity to plan for the future, & motivation to find alternative income sources.
El-Bassel et al. (2020)	2014–2018	Quantitative: Cross-sectional ($n = 400$)	IPV and substance use	Examine the association between intimate partner violence (IPV), non-partner violence (NPV), and nonfatal drug overdose among WESWs who use drugs.	Women reported high levels of recent food insecurity (89.5%), homelessness (58%); lifetime violence (89.7%), incarceration (32.5%), & nonfatal overdose (37.5%). Severe physical violence, >10 years of sex work & incarceration history were associated with greater odds of recent nonfatal overdose.
El-Bassel et al. (2021)	2014–2018	Quantitative: Randomized controlled trial ($n = 354$)	HIV/STI sexual risk reduction and substance use outcomes	Examine if a microfinance and HIV prevention combination intervention would decrease STI/HIV rates and risk behaviors among WESW.	Few between group differences. HIVRR + MF participants showed a 72% greater reduction in unprotected sex acts with paying partners at the six-month assessment, and a 10% greater reduction in the proportion of income from sex work at the three-month assessment compared to HIVRR participants.
Vélez-Grau et al. (2021)	2014–2018	Quantitative: Cross-sectional ($n = 400$)	Mental health	Examine risk and protective factors associated with suicidal ideation among WESW and drug use.	52.5% of WESW reported recent suicidal ideation. Women with vulnerabilities such as CSA, harmful alcohol use, and stigma were more likely to think about suicide compared with those who did not.
Yang et al. (2021)	2014–2018	Quantitative: Cross-sectional ($n = 354$)	Financial/econ well-being, stability,	Examine the financial status, sex work involvement, and individual and structural	Findings underscore the need for better understanding of the capabilities of WESW

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Table 1. (continued)

Study	Dates	Design	Target	Objective	Key Findings
			knowledge, economic	vulnerabilities of WESW and drug use.	and use drugs, including financial autonomy and community supports, that may guide the design of programs that effectively promote women's economic well-being.

Note. WESW = women who engage in sex work; C-RCT = cluster randomized controlled trial; MF = microfinance; HIVRR = HIV risk reduction; CSA = childhood sexual abuse; IPV = intimate partner violence; NPV = non-partner violence; MI = motivational interviewing.

macro-level factors of influence (Hargreaves et al., 2016; Sipe et al., 2017), including social cognitive theory, socioecological theory, harm reduction, and others. In post-project focus groups, participating women praised the value of HIV prevention techniques while expressing an even stronger desire to have options for income generation that avoid sex work risk exposures. They described the dilemma of taking on the risk of sex work to support their families while being unable to find alternative income-generating options.

Though microfinance has been one of the leading global poverty-reduction strategies (United Nations Development Programme, 2011), in 2007 none specifically targeted WESW. Microfinance is defined broadly as financial information and services provided to low-income individuals, and includes microloans or microcredit (small loans given to those otherwise unable to borrow money); microenterprise (building a small business begun with a microloan/microfinance); and micro savings initiatives, which allow low-income clients to create and maintain a savings account by reducing barriers such as minimum opening amounts and required balances (Armendáriz & Morduch, 2010). In the early 2000s, some controversy remained regarding the success of microfinance at reducing poverty (Banerjee et al., 2013), particularly among the poorest, most stigmatized groups. Microcredit or loan programs, whether usurious loans from money lenders or subsidized microcredit loans by nongovernmental organizations (NGOs), represent "saving down," which may keep women in a vicious cycle of debt and poverty, making it impossible for them to reduce their reliance on sex work and thus further expose them to violence and to HIV/STI risks (Mayoux, 1999). However, data from a systematic review of combined microfinance and HIV-prevention programs demonstrated that income-generating interventions may lead to reductions in sexual and/or drug-risk behaviors among WESW (Cui et al., 2013; Sherman et al., 2010).

Undarga: Combination Savings-led Microfinance and HIV Prevention for WESW

In response to the urging of Women's Wellness participants, and supported by emerging literature, we developed and tested a savings-led or "asset-based" microfinance approach to HIV prevention: the Undarga intervention (Witte et al., 2011). *Undarga*, which in Mongolian literally means "natural spring or fountain," carries the figurative connotation of being a source of good things. Nine Women's Wellness participants were purposely selected and completed a pilot study, including study outcome and process assessments, followed by 12 financial literacy sessions and 16 business development training sessions. For a complete description of the evolution of the program components, see Tsai et al. (2011). A final piloted component was an abbreviated 5 weeks of matched savings grounded in the work of our co-investigator, Fred Ssewamala (Ssewamala et al., 2010). For 5 weeks of the intervention, a woman who made a deposit to her savings account received a matched amount in a parallel bank account kept on her behalf from which she could withdraw funds for business development or vocational education. Participants were compensated financially for attending each training session, at the end of which they could have built sufficient matched savings to enter vocational training or start a small business. Figure 1 illustrates the evolution of intervention components. Here, asset theory complements social cognitive theory for behavioral change, and informs savings-led microfinance, or microsavings interventions. Asset theory posits that having assets, inclusive of concrete savings and educational or income-generating investments, may positively affect future orientation as well as promote long-term development of individuals (Sherraden, 1991). Assets differ from income in that assets are stocks of resources that are accumulated over time and can provide for future consumption or a source of security against financial crises (Beverly et al., 2008). An asset-based approach to microfinance enables women who face significant financial insecurities to accumulate long-term assets without accruing additional financial strains from increased debt or interest rates on loans (Swann, 2018).

Pilot findings demonstrated the feasibility of the savings-led microfinance intervention program for women (Tsai et al., 2011). Outcome and process data from the pilot program informed a funded proposal to finalize an adaptation and implement a full trial (NIMH R34MH093227) to test the combination microfinance and HIVRR intervention. This trial

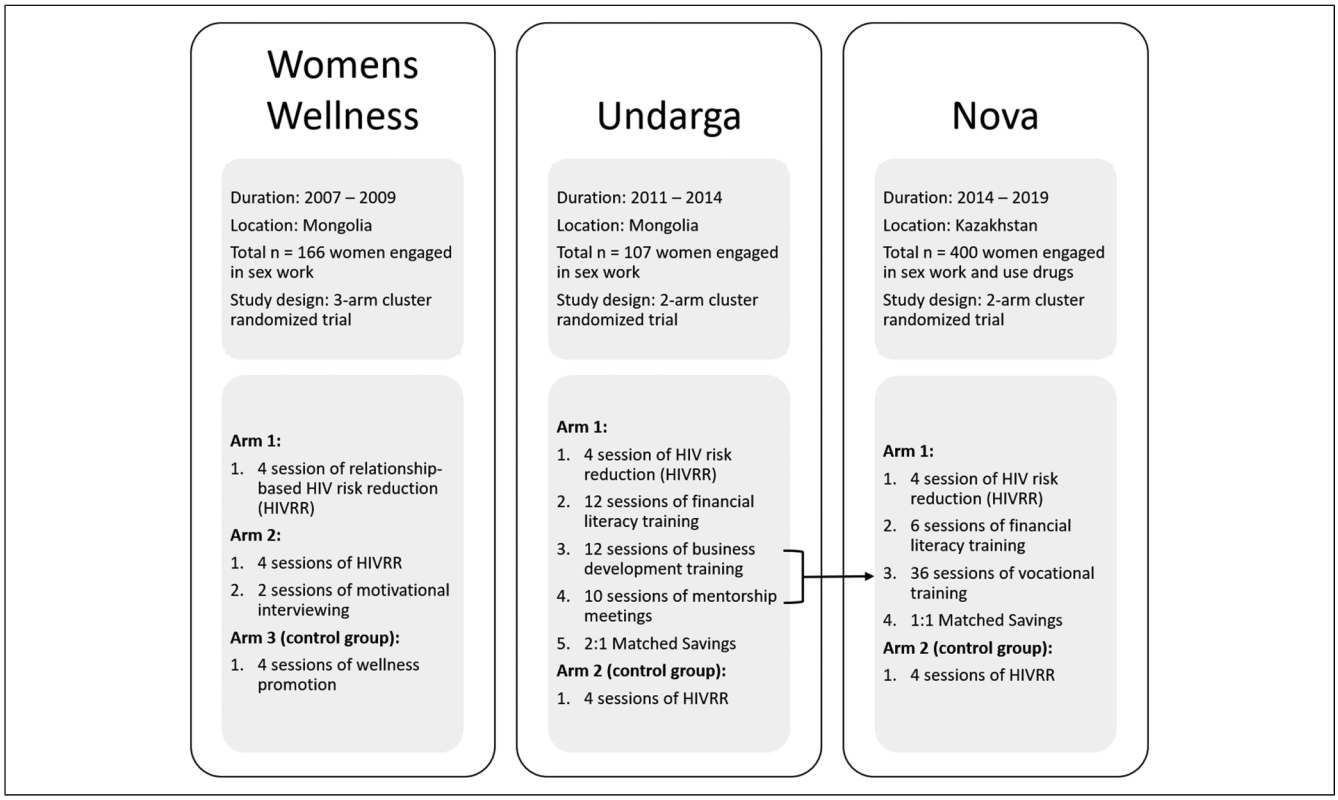

Figure 1. Evolution of combination HIVRR and MF intervention components across studies.

was novel by using a savings-led approach to microfinance, enabling participants to build assets faster and to pay for life-cycle events without accumulating debt or fostering an over-reliance on microloans. Further, savings accounts and matched savings accounts were established in each woman's name to give her control over accessible economic resources. We hypothesized that the combination intervention (increasing financial literacy, business development knowledge and skills, and personal savings) would lead to more significant reductions in sexual risk behaviors compared to a sexual risk reduction intervention alone (Witte et al., 2015). We used a cluster-randomized design, enrolling and randomizing 107 women to a combined 4-session HIVRR or a combination of HIVRR plus 34 microfinance training sessions (12 financial literacy, 12 business development, and 10 mentorship meetings) and including 4 months of 2:1 matched savings. Participants in the treatment group were encouraged to save all or some portion of their session incentives in a bank account, and that amount could be matched 2:1. The match cap (the maximum amount of individual contribution to be matched by the intervention program) was the equivalent of US $40 per month for 4 months or a total of US $160. Matches up to the total of US $160 continued until the end of the intervention period (last small-group mentorship meeting). Participants could then spend their matched savings on any continuing education/vocational training opportunities or expenses towards developing a new business. Participants completed a baseline assessment and then follow-up assessment at 3 and 6 months post-intervention on sexual risk and economic outcomes, theory-based mediators, and moderators.

The clinical trial findings showed that participants randomized to both conditions demonstrated decreases in sexual risk behavior over time, while those randomized to the HIVSRR + MF demonstrated significant reductions over and above the HIVSRR. A significant group by time interaction indicated that participants in the treatment group exhibited a 22% greater decrease in the number of paying sexual partners, compared to those in the control group, for each time point. Contrasts within specific time-points indicated that participants in the microfinance group reported 50% fewer paying sexual partners at the 6-month time point. A significant main effect of time indicated that all participants exhibited a 39% decrease in the number of unprotected vaginal sex acts with paying partners at each time point. Findings also indicated that participants in the microfinance group were 3.72 times more likely to report no unprotected vaginal sex acts at the 6-months mark (Witte et al., 2015). When asked in a focus group what has changed in her life since participating in the study, one woman, "Grace," said:

> A lot, a lot! First of all, emotionally, I am stable. And we all feel this way. Emotionally we are a level up. Self-confidence has increased because before at home I would be afraid of everyone

> and everything, but now even knowing that I can start my business at home, makes me feel so much more confident. It feels like a step up in the security of our life.

The study also led to positive economic outcomes. Women assigned to the treatment condition demonstrated significant reductions in percentage of income from sex work, increased odds of reporting no income from sex work, and increased odds that sex work was not their main source of income. Women showed no significant changes in their household income, ensuring no loss of income but rather a shift in income sources. Thus, this study reinforced the importance of interventions targeting the economic structures that influence risk among WESW (Tsai et al., 2018). While shifts in women's income occurred, not all were able to stop engaging in sex work completely, despite developing new businesses. One woman, "Lena," explained:

> Going out is less now than before…Itchka and others are doing the vocational training so they say that they have no time anymore to do sex work because after the training they have to run home. But I will be honest and say that when a few clients call me I will also go to make some money in order to buy some of the fabric and materials in order to keep my business going.

The study demonstrated the feasibility of incorporating a savings-led approach among women where gender, power, and economic issues restrict the impact of existing individual-based prevention strategies (Dworkin & Blankenship, 2009; Stratford et al., 2008).

Nova: Extending Combination HIVRR and Microfinance for WESW who also Use Drugs

By 2010, given the lower rates of HIV infection in Mongolia compared to the more acute seriousness of the dual crises of HIV and substance use epidemics among WESW in Kazakhstan, the GHRCCA team, in consultation with our community partners, adapted Undarga for efficacy testing in Kazakhstan. In 2014, the team was funded by the National Institute on Drug Abuse (NIDA) (R01DA036514) for a 5-year intervention study called Nova, a cluster-randomized controlled trial that evaluated the efficacy of a combination HIVRR and microfinance intervention among WESW and who use drugs (McCrimmon et al., 2018). Also developed through community engaged methods, the formative work for Nova included adapting the microfinance intervention to include vocational training sessions in lieu of business development training to better target capacity building for and transition to alternative income generation (Mergenova et al., 2019). While we kept the same number of HIVRR sessions and reduced financial literacy training from 12 to 6 sessions, women assigned to the HIVRR + MF arm decided during their financial literacy sessions which vocational training component they wished to enroll in. Vocational training ran 3 sessions per week for 3 months, or 36 sessions. Traditionally "female" industries such as hairdressing, manicuring, and cooking or baking were endorsed by the national Business Women's Association as in regional demand, with better potential to provide stable employment and income production for women. Mergenova et al. describe in detail the development and implementation of the Nova intervention and its components (2019).

For recruitment, we employed similar methods to Undarga but, based on input from key stakeholders, we added a peer outreach and referral procedure to strengthen our ability to engage this highly stigmatized population (McCrimmon et al., 2018). Participants were recruited from NGOs, sex work venues, drug treatment clinics, HIV clinics, hotels, and saunas in Almaty and Temirtau, Kazakhstan between 2015 and 2017. Women were eligible for the study if they were at least 18 years of age, reported illicit drug use within the past 12 months, exchanged sex for money, goods or services in the past 90 days, reported at least one incidence of unprotected sex within the past 90 days, were able to communicate in Russian, did not intend to move away from the study site within 12 months of the study enrollment, and were not cognitively impaired.

Nova strengthened the study rigor compared to Undarga by incorporating biomarkers for HIV/STI testing. It also incorporated local, existing service structures such as narcology centers, NGO services, and vocational training centers (selected based on stakeholder's preferences and economic viability) to ensure rapid and sustainable dissemination, should findings demonstrate efficacy. Finally, it tested a microfinance model sensitive to the unique needs of WESW who use drugs by (a) offering resources and referral, including drug treatment options for stability; (b) ensuring sensitivity training for staff, including local police, regarding barriers presented to women with a history of trauma and active drug use to build support and a safe participation environment; (c) providing training in personal financial literacy including loan repayment; and (d) providing matched savings to build assets towards making a transition from sex work to another vocation. The combination of both vocational training in an area with high employability and a matched savings component, we believed, could support transitioning participants to employment that puts them at far lower HIV/STI risk. The microfinance component, embedded in the context of communities in which risk-taking is happening, could lead to sustainable change, providing skills and knowledge that may be generalized across employment industries and offering more flexibility in becoming economically self-sufficient.

Nova findings showed that over a 12-month follow-up period, few differences in study outcomes were noted between arms (El-Bassel et al., 2021). There was only one newly detected HIV case, and study arms did not significantly

differ on STIs incidence. At post-intervention assessments compared to baseline, both groups significantly reduced sexual and drug use risk behaviors and showed improvements in financial outcomes, condom use attitudes and self-efficacy, social support, and access to medical and social care. Of note was the finding that HIVRR + MF participants showed significantly improved performance on financial self-efficacy compared to HIVRR over the 12-month follow-up period.

Understanding the Process of Undarga and Nova Intervention Implementation

The complexity and the rigor of intervention research requires careful attention to processes of implementation. Three manuscripts—one on Undarga and two on Nova—examined the process of study implementation, yielding an understanding of the utility and value of intervention components and informing problem-solving strategies for issues like recruitment, retention, managing intervention sessions and components such as matched savings, and ensuring participant safety. Aira et al. describe the challenges and opportunities of implementing Undarga sessions that included banking services and matched savings among WESW (2014). Issues including location and timing of sessions, recruitment strategies, and the non-economic benefits of the intervention are highlighted. Mergenova et al. describe high session attendance rates for the Nova trial, but also the challenges that arose during session implementation and the solutions facilitators implemented in response (2019). Some examples include a participant arriving to the group under the influence of illicit substances, or a participant being arrested or detained by the police, and concerned how to deal with charged conversations related to sex, sexuality, and sex work. The work details these solutions and serves as an important resource for researchers seeking to propose and carry out such an intervention study. Of particular importance is the finding that even when immersed in local culture and with the support of a community advisory board, research teams must consider local cultural norms, taboos, and stigmatized identities in order to assure open conversations about sex work, sexual language (colloquial as well as academic), and sexual behaviors. Teams should train local service providers in harm-reduction practices and in sensitivity to the needs of highly stigmatized groups such as WEW and women who use drugs. This could be a bidirectional effort, with the research staff sharing lessons learned and best practices with local providers and local providers sharing experience-based practical wisdom with the research staff. Sharing language, experiences, and sensitivity can only strengthen efforts to reduce stigma and promote implementation of research components and related service referrals.

Vélez-Grau et al. examined 56 qualitative narrative in-depth interviews from 19 participants asking about their experience attending the Nova sessions (2020). Template analysis and a qualitative trajectory approach were used to understand women's perceptions of the impact that intervention had over time. Identified themes consistent with social cognitive and asset theories indicated that women increased knowledge and skills related to condom use, safe sex practice, and drug use reduction. Women who received the microfinance component described perceived gains on budget management, capacity to plan for their future, and motivation to find alternative sources of income. Giving women the opportunity to express experiences over time regarding the impact of this structural intervention may better inform needed cultural adaptations of intervention components and nuances of the environment in which the intervention is offered.

The Role of Violence and Mental Health Components in HIV Prevention Among WESW

WESW are at a heightened risk for interpersonal violence from multiple perpetrators, including intimate partners, paying partners, law enforcement, and pimps/managers (Dunkle & Decker, 2013). Extant evidence also shows that while there are few examinations of women's mental health and trauma histories, we know they are related to HIV/STI risk behaviors. To understand the role of intimate or family violence and related adversities in the lives of participants, two cross-sectional studies were conducted using the baseline data from Women's Wellness and Nova. Women's Wellness participants reported high rates of recent physical (58%) and sexual (35%) violence from paying partners, and also high levels (55%) of childhood sexual abuse (CSA; Parcesepe et al., 2015). Recent sexual violence was associated with engaging in unprotected sex with paying partners, but not intimate partners.

El-Bassel et al. examined associations between women's violence history and nonfatal drug overdose among 400 NOVA participants at baseline (2020). Many women experienced lifetime physical (88%) and sexual (79%) violence as well as nonfatal overdose (37.5%). Key findings suggested that women who experienced severe physical violence had 27% higher odds of prior overdose. Women who engaged in sex work for over 10 years and those with a history of incarceration were significantly more likely to have experienced recent overdose.

Both cross-sectional studies add to the literature with important implications for practice. They highlight the overwhelming rates of lifetime violence that WESW endure. Although the directions of causality cannot be inferred from cross-sectional studies, exposure to past and present trauma are correlated with behaviors that increase women's HIV risk. This calls for more comprehensive and trauma-informed mental health components integrated into HIVRR and support for policies to expand mental health services targeted to WESW.

An additional concern raised in the microfinance literature is the risk for increased violence against women when interventions increase economic independence (Gibbs et al., 2017; Vyas & Watts, 2009). This concern led to examining violence outcomes among participants. Carlson et al. examined the efficacy of the Women's Wellness intervention at decreasing intimate and paying partner violence among the 222 participants (2012). Several components of the intervention included safety awareness and planning. A multilevel logistic model found that women who participated in all three groups reduced their exposure to recent (past 90 days) physical and sexual violence at the 6-month follow-up ($p < .05$). However, there were no significant reduction differences between groups.

Building upon this in a sub-study of Undarga, Tsai and colleagues examined intervention impact on paying partner violence (2016). Linear growth models revealed significant reductions over time in physical violence and sexual violence from paying partners. While the combination HIVRR plus microfinance intervention group reported a slightly larger decrease than the control group, these differences were not significant.

The two longitudinal studies offer similar lessons and implications for future work. Neither included an unexposed control group and everyone who participated in the study received some degree of treatment in a peer group format. Thus, the common element of meeting as a group may have led to strengthened peer networks among the women and connections to community resources that the women might not have been exposed to otherwise. The power of peer support may be amplified in the context of a LMIC where sex work is criminalized and highly stigmatized. WESW in these restricted settings are less likely to seek help from law enforcement and more likely to feel isolated and ashamed to share their circumstances with family and friends who do not know about their sex work. Both studies indicate potential for minimal, economical interventions for low-resourced settings lacking access to HIV and violence prevention services. Finally, neither study demonstrated increases in violence among participants suggesting that neither HIVRR nor combination economic empowerment interventions for this group of women was associated with increased risk for partner violence.

Less attention has been paid to the psychological impacts of exposure to multiple adversities and trauma among WESW and how best to integrate them into HIV/STI interventions. Carlson et al. examined the rates of depressive symptoms and associated risk factors among 222 WESW in the Women's Wellness study (2017). Most participants (60%) were found to be at high risk for depression. Linear regression analysis revealed that social support was negatively associated with depressive symptoms while sex work stigma, sexual violence from a paying partner, and higher levels of harmful alcohol use were significant factors of depressive symptoms. While not significant, women in the low-risk group for depression reported fewer sex acts and fewer unprotected sexual acts with a paying partner.

Vélez-Grau et al. examined the risk and protective factors associated with suicidal ideation among the 400 participants in the Nova study (2021). More than half of the women (210 of 400) reported suicide ideation in the past 7 days. Multiple logistic regression analyses found that experiences of childhood sexual abuse, harmful alcohol use, and stigma were positively and significantly associated with suicidal ideation. On the other hand, women who reported keeping their earnings from sex work were less likely to think about suicide.

These two cross-sectional studies confirm high risk for depression and suicide ideation among women due to their high exposure to violence, cumulative trauma, and the experience of stigma associated with engaging in sex work. A remaining gap in the literature is longitudinal studies investigating whether our interventions in any way influence these mental health outcomes and what trauma-informed components might be integrated into HIV/STIs interventions to reduce distress. Structurally, WESW need and deserve comprehensive, trauma-informed services that can address their immediate and long-term mental health needs.

Understanding Women's Financial Lives to Inform Economic Empowerment Strategies

Despite growing attention to structural approaches to HIV prevention such as those that address economic determinants of risk for WESW, few studies examine the specifics of women's financial affairs and center their own existing capacities and strengths in intervention development. During the implementation of Undarga, the team conducted the first cross-sectional examination of the financial lives of 240 Mongolian women engaged in sex work (Tsai et al., 2013). Findings showed that most women were highly educated, had high levels of financial self-efficacy, and were the primary financial providers for their households. Sex work constituted the primary income source. Most (63%) women entered sex work due to family financial crises and an inability to find licit employment.

Women's resilience while balancing numerous financial, personal, familial, and health challenges was strong. Due to great debt and little savings, many women expressed clarity of purpose in their need to engage in sex work despite the stigma and dangers. As one woman shared: "There is no other option. We have to feed our families…who else would do it?" (Tsai et al., 2013). Findings reinforced the fact that high levels of financial responsibility for household welfare, combined with few employment options, heighten women's HIV/STIs risk.

Extending this work to better understand how women who are actively engaged in the informal labor sector operate and survive within challenging socio-economic contexts, Yang et al. applied the paradoxical autonomy framework to examine baseline data of 400 Nova participants (2021). As in Mongolia, most women (65%) reported being the highest

household income earner, supporting an average of 3 family members. Women had been engaged in sex work an average of 10 years, which suggests that women may be making a deliberate choice to stay in sex work. Women exhibited entrepreneurial characteristics in activities such as operating a sex work business without a manager and keeping all earnings for themselves. Almost all the women aspired to becoming financially secure and having adequate employment and education in order to improve their current and future safety, but their confidence level to meet their goals was low. Women reported strong social network support to manage daily expenses.

Women in our clinical trials engage in sex work despite the associated detrimental health risks and social stigma that limit their opportunities. The findings underscore the importance of providing economic support in conjunction with HIV prevention services so that the women do not have to choose between safety and survival. Although from two different countries in Central Asia, all women had high levels of education and most engaged in sex work without a boss. These characteristics suggest that future intervention among WESW could include components to help increase self-efficacy of women and support them to transfer their existing skills into new forms of income generation through business development training or vocational training. More importantly, while the resiliency of the women in these studies and their ability to adapt within their circumstances of inequity should be highlighted, the ultimate goal should be to change the societal structures that render poverty constant for these women.

In an effort to understand how to better target combination interventions for women based on both syndemic issues and their unique personal, financial, and environmental risk factors, Offringa et al. used latent class analysis to examine sex work risk typologies (2017). Baseline data from 204 women in Undarga included an eleven variable model including syndemic issues such as harmful alcohol use, experiences of violence, and sexual risk behaviors, revealing three latent classes. The findings suggest important differences among women's personal and environmental contexts and unique needs to target programming and services to better accommodate them. For example, women with mixed personal risk and low financial risk may be more likely to respond to financial empowerment interventions targeting HIV prevention. Further research is warranted for a more nuanced understanding of women's risk typologies to ensure that the complexities of their lives are not reduced to simple categories and a "one size fits all" intervention approach.

Discussion and Applications to Practice

Over 15 years and 18 studies in collaboration with key stakeholders in Mongolia and Kazakhstan, we have demonstrated that combination interventions may simultaneously reduce sexual risk taking and violence, while enhancing financial efficacy and choices for income generation or employment, and that they are feasible and acceptable among WESW in countries like Mongolia and Kazakhstan, which still struggle with high rates of poverty, economic instability, and lack of health and social services for the neediest. A savings-led microfinance-based intervention aimed at providing alternative means of income-generation does not increase reported experiences of violence, but may reduce sexual risk taking with paying partners, and may decrease income from sex work without reducing overall income. Such efforts may be replicated in many countries in social, economic and political transition among women engaged in sex work who do or do not use drugs and/or alcohol.

Trial findings demonstrated mixed outcomes and raised more questions. While Undarga demonstrated significant differences in increased risk reduction and income from sex work between groups, in both Undarga and Nova, all groups reduced sexual risk over time. Nova findings challenged the added value of microfinance components, finding that a robust HIVRR intervention alone may be sufficient to reduce sexual and drug risk behaviors among WESW and who use drugs. There may be structural limitations to the promise of microfinance for HIVRR among this population, requiring further study. We may need further adaptation of the Nova microfinance elements, as well as to call for broader policy changes that can expand employment opportunities (Khamzina et al., 2020) and decriminalize sex work, in order to observe the sustainable improved impact of microfinance. Given accumulated knowledge regarding the structural barriers to risk reduction, particularly in a LMIC and among this vulnerable population, we encourage continued examination of the potential of microfinance for HIVRR.

In order to inform practice, social intervention research must also respond to the questions "how," "why," and "for whom," which in the absence of closer examination of mediators and moderators we cannot yet answer. Questions regarding more or less effective mechanisms of change in our combination intervention testing remain, as do questions that consider the specific risk environments of our participants. WESW are not a homogeneous group and they do not work in homogeneous risk environments. They require practice approaches that center their unique and individual needs. We are currently examining savings behavior data from Nova participants to examine their role in economic empowerment and reduced sex work and other HIV/STIs risk behaviors. We recommend implementation of research designs that include adaptive approaches such as Sequential Multiple Assignment Randomized Trial (SMART) or the Multiphase Optimization Strategy (MOST) in order to more intentionally isolate contributions from intervention activities that may in isolation or combinations be responsible for changes among varying contextual factors, consistent with the Offringa et al. findings, for example (2017). These may further inform future practice with this population.

Cross-sectional studies highlight the significant syndemic effect of drug or alcohol use, partner violence, and HIV/STI risk on women's mental health in the region (Jiwatram-Negrón

et al., 2018). We have yet to examine longitudinally whether combination interventions are having an impact on improved mental health over time. Forthcoming examination of Nova data on IPV experiences reported over time again suggests that economic empowerment added to HIVRR interventions does not increase reported IPV among women and in fact may offer some added reductions in violence with some partners (Witte et al., 2022).

Living with complex histories of mostly untreated traumas including childhood sexual abuse, intimate partner violence, poverty, high levels of depression, stigma, and suicidal ideation while managing financial responsibilities for themselves and their families demonstrates the resilience of WESW in these LMIC. We find in numerous studies the important role of social support as a critical buffer against IPV and poor mental health, and in sexual risk reduction, and that social support comes from many different sources beyond family and friends, including within intervention study groups that include their peers. Practitioners may explore supports with women, identifying ways they may ameliorate some of the many challenges women are facing. Our research measures need to expand to identify a broader list of social support sources to further understand how to leverage more support as potential mediators or moderators of sexual risk and economic empowerment outcomes. Additionally, future research and practice should consider engaging dyadic and/or family-based intervention based on expressed interests of study participants or community members. Stigma associated with sex work and/or HIV in both countries and globally may impede development of family-based interventions. However, in conjunction with needed local advocacy for decriminalizing sex work (Radačić & Antić, 2022) and drug use (Matyushina-Ocheret, 2020), such efforts might help strengthen and sustain outcomes.

An important note regarding this body of research is to recognize that the decisions of all women to enter into sex work are often personal choices, based on a rational strategy as they confront social and economic inequities. Our microfinance-based intervention targets sexual risk reduction by offering women the ability to shift their income from sex work to alternative income generation, and is intended to be implemented with women who are motivated to make such a transition so that they may reduce their risk for HIV/STIs, stigmatization, and associated danger.

Further, we note that even when a country's transitional economy struggles to provide access to healthcare and social services (Deryabina & El-Sadr, 2019), as is the case in Mongolia and Kazakhstan, women can benefit from low-impact HIVRR interventions. As we noted in our introduction to these studies, the broader economic and political forces are drivers or "push" factors into sex work. Within great challenges to health and well-being lie opportunities to empower even marginalized factions, such as WESW, so as to reduce their health risks and better provide for themselves and their families in spite of cultural and economic factors that impede their efforts toward greater income generation. Many women throughout the world confront health concerns, gender-based violence, and cultural restrictions that reduce or limit their options. In Mongolia and in Kazakhstan we have seen that savings-led microfinance-based intervention enables even the most vulnerable women—those engaged in sex work—to improve their economic circumstances and reduce their HIV/STIs risk.

Conclusion and Implications for Social Work Research and Practice Intervention

Our work has demonstrated successful implementation of longitudinal behavioral trials testing complex combination interventions aimed at both individual and structural-level HIVRR among a highly marginalized population in low resource settings, and with promising results. Findings inform approaches that can be integrated into services provided through NGOs to the community of WESW and who use alcohol or drugs in Mongolia and Kazakhstan. To scaffold any benefits of such interventions and to see them implemented and sustained requires local structural support to leverage adjunctive services through the NGO sector, such as violence prevention or response, health and mental health prevention, suicide prevention, drug or alcohol treatment, and basic housing needs targeting WESW throughout the region. Also needed is local advocacy for policy changes at the local and national levels, such as decriminalizing drug use and sex work (Deryabina & El-Sadr, 2019; Matyushina-Ocheret, 2020). These structural-level supports require long-term investments and collaborations between NGOs, research groups such as GHRCCA at SIG, and local and federal government offices. Given the fact that in the absence of such policy change, sustainable HIV/STI risk reduction and ending the epidemic within these key populations of WESW and those who use drugs will not be feasible, it is also critical to ensure adoption of innovations, particularly those that combine evidence-based biomedical, behavioral, and structural interventions tailored to the needs of the PWID.

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