Predicting Lay Provider Competency in Addressing Suicidal Behavior in Nepal: 'Let's Talk About It'

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Abstract

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Suicide is a critical global public health issue in low- and middle-income countries (LMIC) in which the majority of the world's suicides occur. Low provider competency in managing suicide risk, particularly, among non-specialist or "lay" providers with minimal health or mental health training, is a theoretically critical yet poorly studied aspect of global suicide prevention that has received limited attention in the global suicide arena. The current series of four studies examined barriers (provider stigma, competency, validation, and invalidation) to competent delivery of suicide prevention services by non-specialists in Nepal ($N = 205$ providers) as well as their impact on patient outcomes (depressive symptoms and suicidal ideation) ($N = 96$ patients receiving treatment over six months).

In **Chapter II**, pre-training competency in delivering common therapeutic factors was significantly associated with suicide-specific clinical competency ($\beta = .48$, $p < .001$). A small percentage of lay providers (14.2%) assessed for suicidality, and one developed a safety plan.

In **Chapter III**, 48.7% of providers assessed for suicide and 4.9% conducted safety planning 4-months post-training. These percentages increased to 57.5% and 11.9% 16-months post-training. Pre-training common factors competency significantly predicted suicide clinical competency 4-months post-training (($\beta = .24$, $p < .05$). Contrary to hypotheses, pre-training provider implicit bias ($\beta = .30$, $p < .001$) and mental health knowledge ($\beta = .23$, $p < .05$) significantly predicted suicide clinical competency 16-months post-training.

In **Chapter IV,** lay provider validation ($\beta = 0.63$, $p < .001$), but not invalidation ($\beta = 0.22$, $p > .05$) was associated with suicide clinical competency.

In **Chapter V**, the relationship between lay provider suicide clinical competency and patient outcomes was mixed. An increase in post-training suicide clinical competency did not predict change in depressive symptoms ($\beta = 3.14$, robust $Z = 1.86$). However, there were significant products between pre- and post-training suicide clinical competency ($\beta = -5.92$, robust $Z = -3.51$), such that for providers with low pre-training suicide clinical competency, an increase in post-training suicide clinical competency predicted a worsening of depressive symptoms, relative to a reduction in depressive symptoms for providers with high pre-training suicide clinical competency. There was also a significant product between post-training common factors competency and suicide clinical competency ($\beta = 3.49$, robust $Z = 3.79$), such that for providers with higher suicide clinical competency, an increase in provider common factors competency predicted a reduction in depressive symptoms.

Additionally, provider post-training explicit bias predicted a greater odds of improving SI (OR = 8.15; robust Z = 4.98), and there was a significant product between post-training provider implicit bias and suicide clinical competency (OR = 2.77, robust Z = 2.97). At high provider suicide clinical competency (vs. low provider suicide clinical competency), the odds of patient suicidality improving increased an additional 17.5%.

Future studies should replicate the original investigation and conduct a deeper examination of modifiable processes that explain the link between common factors competency, validation, suicide clinical competency, and patient outcomes over time. This knowledge can be used to improve training of health workers, systematic detection of suicidal behavior within healthcare settings, and suicidal patient outcomes.

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CHAPTER I

Introduction

Worldwide, suicide accounts for nearly one million deaths annually (World Health Organization, 2014). The majority of the world's suicides take place in low- and middle-income countries (LMIC), with a disproportionate burden in Asian LMIC. Despite rising suicide rates in LMIC and decades of research identifying risk factors, the scientific field is no better at predicting and preventing suicide in neither high-income country (HIC) nor LMIC settings than it was 50 years ago (Franklin et al., 2017). Further, despite the high rates of documented suicide in LMIC, only 10% of studies of global studies on suicide and mental health are conducted in LMIC, with low-income countries in South-East Asia routinely excluded (Guzmán et al., 2019). Of the 10% of studies originating from LMIC, an even smaller percentage meet criteria for scientific rigor (i.e., involve more than one-off cross-sectional studies with small sample sizes and an exclusive focus on high-risk populations).

Suicide prevention interventions housed within primary care settings are among the most effective interventions for reducing suicide risk across the life span (Mann et al., 2005; Zalsman et al., 2016), particularly in HIC where the vast majority of data originate. Suicide prevention interventions at the primary care level also align with the cultural, economic, and healthcare systems-level context in LMIC where access to specialized mental services and referrals is limited (Weinmann & Koesters, 2016), primary care services are frequently utilized (Gardner et al., 2010; Raue et al., 2014), and high rates of contact between PCWs and individuals with suicidal behaviors are well-documented (Appleby et al., 1999; Arean et al., 2002; Luoma et al., 2002; Stene-Larsen & Reneflot, 2019).

Despite unique and timely opportunities for LMIC suicide prevention in primary care settings, the accessibility and availability of suicide prevention services are not sufficient unto

themselves to reduce the burden of suicide. In primary care settings, a number of barriers to utilization of suicide prevention resources remain. Healthcare provider stigma, defined as "prejudice and discrimination voiced or exercised, consciously or unconsciously, by occupational groups designated to provide assistance to stigmatized groups" (Pescosolido & Martin, 2015, pp. 92), is one barrier that may indirectly or directly influence suicide risk. Provider mental illness stigma may have consequential and downstream impacts, including poor-quality provider-patient interactions, patient concealment of suicidal behavior, and missed opportunities for suicide screening and prevention (Cerel et al., 2006; Dunster-Page et al., 2017; Frey et al., 2016; Reavley et al., 2014; Richards et al., 2019).

Low provider competency (defined as "the extent to which a therapist has the knowledge and skill required to deliver a treatment to the standard needed for it to achieve its expected effects") in assessing and intervening on suicide is a second barrier to suicide prevention in global primary care settings (Fairburn & Cooper, 2011, p. 373). Research in both HIC and LMIC primary care settings indicate significant knowledge gaps in suicide prevention (Silva et al., 2016), minimal suicide-specific training (Chow et al., 2007; Eynan et al., 2015), and low willingness to treat suicidal patients (Boukouvalas et al., 2019; Boudreaux & Horowitz, 2014; LeCloux et al., 2020). Combined, these stigma, knowledge, and skill barriers can compromise suicide prevention fidelity and efficacy in LMIC primary care settings. Extensions of existing suicide theory (Klonsky & May, 2015) can also buttress the link between provider stigma and competency and the etiology and maintenance of patient suicidal behavior.

Despite strong potential for provider stigma and competence to compromise quality and efficacy of care delivered to suicidal individuals, there are significant limitations in the current literature that impede our understanding of if—and how—stigma and competency influence

management of suicidal behavior by LMIC PCW. First, despite the existence EBPs and associated training packages for suicide prevention exist at the primary care level, it is grossly unclear to what extent these packages generalize to lay PCW in LMIC, and existing packages for LMIC suicide prevention are largely non-evaluated (Keynejad et al., 2018). Second, the overwhelming majority of studies in both HIC and LMIC examine associations between experiential stigma variants (particularly perceived stigma) and suicide, at the expense of understanding the unique impact of *healthcare provider stigma* on PCW suicide clinical competency (Sudak, Maxim & Carptenter, 2008). Third, the majority of data on provider stigma are the level of attitudes towards suicidal individuals, with even fewer studies examining explicit stigma variants (e.g., social distance) that capture discriminatory behaviors providers may engage in during clinical interactions (e.g., Obert, 2017). Fourth, there are no studies that that examine provider competency, stigma, and suicidal behavior together, and existing studies are compromised methodologically through overreliance on cross-sectional designs and small sample sizes with high-risk sub-populations. Finally, these variables, either separately or combined, are rarely examined in LMIC, despite the fact that the majority of the world's suicides occur in these settings. A rigorous understanding of modifiable factors that contribute to suicidal behavior in LMIC primary care settings is essential to improving the weak evidence base in these regions of the world.

Dissertation Objectives

In this dissertation, I leverage secondary, multi-method (observational, implicit bias, and self-report) data previously collected in Nepal through NIMH-funded research (K01MH104310, PI: Brandon Kohrt) in Nepal to examine relationships between lay provider stigma, clinical competency, and suicide-specific competency. The core of the dissertation is divided into four

chapters (Chapters 2-5), each composed as separate peer-reviewed manuscript submissions that correspond to a single specific aim.

The first aim (Chapter II) seeks to explore pre-training correlates of lay PCW ($N = 205$) competency in responding to suicidal behaviors (i.e., asking about suicide and developing a safety plan) in primary care-based structured role-plays with standardized patients. Correlates include (1) mental health explicit and implicit bias; (2) knowledge and attitudes regarding mental illness; and (3) observational ratings of lay provider competency in delivering common factors treatment strategies.

In the second aim (Chapter III), I examine how (1) mental health explicit and implicit bias; (2) knowledge and attitudes regarding mental illness; and (3) observational ratings of lay provider ($N = 205$) competency in delivering common factors treatment strategies predict suicide clinical competency after mental health training is delivered, and over three time points (pre-training, 4-month post-training, 16-month post-training).

In the third aim (Chapter IV), I adapted and conducted competency ratings from videorecorded sessions (N = 91 dyadic sessions) between lay providers and standardized patient "actors" to explore modifiable skills that may influence lay provider willingness to assess for suicide and conduct safety planning. I focus on lay provider validating and invalidating behaviors, since both have theoretical potential to influence provider assessment and management of suicidality by activating stigma and interpersonal emotion dysregulation pathways. I also examine the psychometric properties of a modified measurement of lay provider clinical competency with additional response options and ratings of specific provider behaviors.

In the final aim (Chapter V), I use exploratory analysis to examine how lay provider stigma and competency (both in common factors and suicide prevention skills) predict patient

depression and suicidal ideation over six months of treatment in outpatient primary care settings (N = 25 providers and 96 patients).

Combined, it is my intention that data from this series of studies can (1) guide initial modification and development of enhanced strategies for training lay providers in suicide assessment and intervention; and (2) shed light on deeper conceptual and empirical gaps in global mental health research at the intersection of task sharing and suicide prevention, in order to guide further theory development and applied research in this critical yet poorly studied area.

CHAPTER II

Baseline Examination of Associations Between Lay Provider Stigma, Common Factors Competency, and Suicide Clinical Competency in Nepal

Abstract

Suicide is a critical global public health issue that is poorly understood in low- and middle-income countries (LMIC) in which the majority of the world's suicides take place. Suicide screening and risk management in primary settings is a crucial first-level intervention for suicidal behaviors and one of few evidence-based risk-reduction strategies. In Nepal and other LMIC, however, salient and understudied barriers (e.g., provider mental illness stigma and lack of competency in delivering suicide prevention services) may prevent individuals with suicide risk from receiving crucial care. The current investigation utilized mixed-method data (behavioral, observational, implicit bias, and self-report) to explore provider stigma and competency as pre-training barriers to delivery of suicide prevention services by lay Nepali primary care workers ($N = 205$). We found that, at baseline (i.e., before receiving mental health training), only competency in delivering common therapeutic factors was significantly associated with suicide-specific clinical competency ($\beta = .48$, $p < .001$). A small percentage (14.2%) assessed for suicidality, and one developed a safety plan. Future studies should explore mechanisms linking common factors competency to suicide-specific clinical competency, in order to identify modifiable processes that can be used to increase lay provider skill in managing suicidality. The relationship between provider social distance and suicide clinical competency should continue to be examined, given potential for a masked association in the current study.

Introduction

Suicide and suicidal behavior are rapidly rising and critical global public health issues (Bertolote & Fleischmann, 2002). Suicide is among the 10 leading causes of death in many countries, with every record of completed suicide accompanied by approximately 20 attempted acts (Gelder et al., 2001). In 2016 alone, 793,000 people died of suicide internationally, representing a global mortality rate of 10.5 people per 100,000, or approximately one death every 40 seconds (World Health Organization, 2016). Despite decades of research identifying risk and protective factors for suicide and suicidal behavior (e.g., suicidal ideation, suicide attempts, completed suicide, and non-suicidal self-injury), our ability to accurately predict—and ultimately, prevent—suicide has remained virtually unchanged over the past five decades (Franklin et al., 2017).

Despite overall rises in suicide and suicidal behavior globally, regional and cross-national rates vary considerably (WHO, 2014). Paralleling international population distribution trends, 79% of the world's suicides are in low- and middle-income country (LMIC) settings. In the past decade, in particular, the world witnessed a shift in rates of suicide rates to Asia, due to population growth within the region combined with declining suicide rates in many Western high-income countries (HIC). For instance, the 11 countries in the WHO's South-East Asia Region comprise nearly one quarter of the global population, yet account for 39% of all suicides. Despite this concentrated burden of suicide, however, only 10% of studies of global studies on suicide and mental health are conducted in LMIC, with low-income countries in Southeast Asia routinely excluded (Guzmán et al., 2019). Of the 10% of studies originating from LMIC, an even smaller percentage meet criteria for scientific rigor (i.e., involve more than cross-sectional

studies with a small sample sizes and an exclusive focus on high-risk populations), concealing crucial data on suicide epidemiology in these high-risk regions.

In Nepal, a South Asian LMIC, epidemiology on suicidal behavior is growing yet concerning. The WHO estimates a national suicide rate of 24.9 deaths per 100,000 individuals, ranking it 7th globally (2014). Another national report, based on a prospective epidemiological survey across eight districts, found that suicide is the leading cause of death among reproductive-age women between 15-49 years, accounting for 16% of deaths, with a mortality rate of 28/100,000 (compared to 5.5/100,000 in the United States; U.S.) (Pradhan et al., 2011). Published literature also indicates that the suicide rate among youth (age 15-29 years) is the second highest in South Asia, with 85% of all suicides occurring before the age of 25 (Hagaman et al., 2017). Although published findings underscore a need to relieve the national suicide burden in Nepal, suicide has historically been neglected as a government and public health priority in Nepal and other South Asian settings (Vijayakumar et al., 2005), leading to minimal initiatives to accurately detect and prevent suicidal behavior. At present, fewer than one third of individuals who demonstrate suicidal behavior receive any form of treatment in middle-income countries, and fewer than one sixth receive treatment in low-income countries like Nepal, compared to over one-half in HIC (Bruffaerts et al., 2011).

Suicide Prevention in Primary Care Settings

Among the myriad forms of individual and population-based suicide prevention interventions, those housed within primary care settings are among the most effective for reducing suicide risk across the lifespan (Mann et al., 2005; Zalsman et al., 2016), particularly in HIC where the vast majority data originate. In the suicide literature, there are consistent and strong pathways to care between suicidal individuals and primary care workers (PCW).

Findings from individual studies of at-risk populations indicate that upwards of 75% of suicide completers saw a PCW in the previous 30 days (e.g., Arean et al., 2002; Luoma et al., 2002; Appleby et al., 1999). Suicidal individuals are also more likely to visit PCW relative to mental health providers (Vannoy et al., 2011; Schwartz-Lifshitz et al., 2012; O'Connor et al., 2013; Raue et al., 2014). In one study across five LMIC (Nepal, India, Ethiopia, South Africa, and Uganda), 10.1% of individuals presenting at a primary care clinic reported suicidal ideation within the past year, 2.5% reported making a suicide plan, and 2.2% reported an attempt (Jordans et al., 2018). In Nepal specifically, 50% of suicide planners presenting at a primary clinic made a suicide attempt. Although these data do not specifically focus on populations at highest risk (i.e., those that eventually die by suicide), they indicate that (1) the primary care network does indeed capture individuals with suicidal behaviors; and (2) primary care may be an important venue for suicide assessment and risk reduction in LMIC.

The forms of suicide prevention in primary care settings are heterogeneous, including (1) education of PCW in managing suicidal behavior; (2) management of depressive symptoms; (3) direct assessment and management of suicidal behavior; and (4) screening for suicide and/or depression (Dueweke & Bridges, 2018). Each has shown varying levels of effectiveness in both LMIC and HIC.

In LMIC, large-scale efforts to expand access to mental healthcare have focused on integrating mental health services into primary care, with services delivered by lay PCW (WHO, 2008). In 2008, the WHO disseminated the Mental Health Gap Action Programme (mhGAP), which outlines the implementation and scale up of integrated mental healthcare worldwide within a primary care model. Two years following the introduction of mHGAP, the mHGAP intervention guide (mhGAP-IG) was released (WHO, 2010), which provides evidence-

based tools and clear protocols for assessment and management of priority mental health disorders, with a focus on simplified language and guidance for training of lay providers with no prior mental health experience. Priority disorders were identified by consultation with international mental health experts, and include depression, psychosis, dementia, alcohol and drug use disorders, epilepsy, bipolar disorder, behavioral and developmental disorders, and suicidal behaviors. Since its release in 2010, mhGAP-IG has been used to scale up mental health services in over 90 countries worldwide, and translated into over 20 languages. Version 2.0 was published in 2016, and incorporated updated evidence and feedback from on-the-ground users (WHO, 2016).

The mhGAP-IG includes a suicide-specific module with education and direct suicide assessment and management practice elements, and lasts 3.5 hours over five days in its original field testing manual (WHO, 2010). The module provides direct clinical guidance on assessment and management of suicidal behavior, and includes didactic materials (including videos), role-play exercises, and a knowledge assessment. One trial in Mexico examined the effectiveness of mhGAP-IG training on PCW knowledge of and readiness for identifying and managing suicide risk (Robles et al., 2019). Findings showed increased knowledge of suicide risk management practices (measured via a written knowledge test), as well as increased willingness to treat patients with suicidal behaviors. However, no impact on patient outcomes was observed. To date, and to the authors' knowledge, no studies have examined the effects of mhGAP-IG on suicidal behaviors in LMIC primary care settings with high documented rates of suicide.

Barriers to Suicide Prevention in LMIC Primary Care Settings

Despite high rates of contact between suicidal individuals and PCW in LMIC and efficacy of suicide prevention services in primary care settings, the existence of these services

are not sufficient unto themselves to reduce the burden of suicide. In primary care settings, a host of barriers to utilization of suicide prevention resources remain. At the patient level, quantitative and qualitative findings from suicidal individuals in HIC indicate two salient threats to integration of suicide prevention services into primary care settings: (1) high provider stigma; and (2) low provider competency.

Stigma as a barrier to suicide prevention in primary care settings. Stigma, defined as "the situation of the individual who is disqualified from full social acceptance" (Goffman, 1963, pp. 140) has been identified as both a risk factor and consequence of suicidal behavior in global contexts. Suicidal individuals are highly stigmatized and, resultantly, subject to negative endorsements of their private (i.e., cognitive and affective) and public (i.e., overt) behaviors, as well as overt acts of discrimination (e.g., Downs & Eisenberg, 2012; Mayer et al., 2020; Oexle et al., 2017; Sheehan, Dubke, & Corrigan, 2017). Stigma experienced by suicidal individuals may also directly or indirectly activate increased suicidal behavior (Carpinello & Pinna, 2017), which may lead to further experiences of stigma through a negative feedback loop.

The overwhelming majority of studies on the relationship between stigma and suicide focused on *experiential* stigma, which emphasizes the direct experience of stigma on the stigmatized individual, and includes commonly studied domains such as perceived, anticipated, and enacted stigmas (Pescosolido & Martin, 2015). Few studies have understood the unique impact of *healthcare provider stigma* on suicide. Healthcare provider stigma is understood as "prejudice and discrimination voiced or exercised, consciously or unconsciously, by occupational groups designated to provide assistance to stigmatized groups" (pp. 92), and includes endorsement of stigmatizing beliefs, attitudes, and discrimination (Henderson et al., 2014). This stigmatization has consequential and downstream impacts, including both

inaccuracies in and missed opportunities for screening, diagnosis, and treatment of mental illness, which compromise healthcare delivery and lead to early mortality (Fox, 2012; Schulze, 2007).

The harmful impacts of healthcare provider stigma, in particular, can have negative consequences for suicidal individuals. Suicide attempt survivors report higher rates of received and enacted stigma by non-mental-health providers (including primary care providers) compared to mental health providers (Frey et al., 2016; Reavley et al., 2014), suggesting that suicidal individuals may be at greater risk for encountering stigma in primary care settings. Studies also indicate that suicidal attempters felt dismissed or judged by their physician after disclosing a suicide attempt (Cerel et al., 2006), and were often more hesitant to disclose suicidal ideation to their provider for fear of being stigmatized (Richard et al., 2018). However, in LMIC with high suicide rates and limited availability of suicide prevention services, no published data has synthesized literature on primary care provider stigma and suicide. These studies are especially critical in LMIC since a high suicide burden falls on the shoulder of a small number of providers, creating pressure for PCW to "get it right" in the comparatively fewer moments they have to address and manage suicidality. Of equal importance, there are no studies examining the extent to which interventions for reducing healthcare provider stigma can improve the ability of PCW to address suicidality. Knowledge that reduced healthcare provider stigma can both (1) increase PCW competency in assessing and managing suicidal behavior; and (2) decrease patient suicidality could drive novel intervention innovation in the global suicide prevention sphere.

Provider competency as a barrier to suicide prevention in primary care settings. PCW stigma, unto itself, is unlikely to account for all barriers to suicide prevention in primary care settings. In addition to research on the interconnections between suicide and provider stigma,

there is a parallel and growing body of research on the effects of low PCW competency in mental health services on suicide prevention. Provider competency can be defined as "the extent to which a therapist has the knowledge and skill required to deliver a treatment to the standard needed for it to achieve its expected effects" (Fairburn & Cooper, 2011, p. 373). Research in both HIC and LMIC settings indicate significant knowledge gaps in managing suicidality at the primary care level. In one review of knowledge and skills among behavioral healthcare staff in the U.S., 52.9% had no prior training in suicide assessment or management, and this number was expected to be greater for primary healthcare staff (Silva et al., 2016).

One specific gap in suicide competency in adequate assessment of suicidality. Mixed-methods data indicate that PCW are reluctant to ask about suicide (e.g., Boudreaux & Horowitz, 2014; LeCloux et al., 2020). In one meta-analysis, PCW feared they would prompt suicide by asking patients about suicidal ideation, despite replicated data that suicide assessment does not increase short- or long-term risk for suicide (Dazzi et al., 2014). Primary care physicians also rely on the patient to initiate the conversation about suicidal ideation (Schulberg et al., 2004), which may, in part, be due to discomfort regarding suicidal inquiry. Lack of suicide assessment by PCWs is concerning, as only 19-54% of HIC patients who completed suicide directly informed their providers of their suicidal ideation and plan. Data on eliciting suicide disclosures from LMIC populations are weak, but indicate that PCW, on average, ask about suicidal ideation less than 50% of the time (e.g., Eynan et al., 2015; Kohrt et al., 2018). Low levels of suicide assessment and risk management in LMIC raise the possibility that existing training programs may not be sufficient to reach competency in suicide assessment and management. More data on levels of competency in suicide assessment and risk management in LMIC with high suicide

rates, like Nepal, are critical in order to uncover gaps in existing PCW training programs and inform future training development initiatives.

Despite the complex linkages between PCW stigma, competency, and suicide, virtually no studies in LMIC have examined their combined effects on provider behavior. Further, most studies examining stigma or PCW competency are cross-sectional in nature, and fail to capture temporal relationships between these variables and suicidality. The majority also involve small sample sizes with high-risk populations, thus limiting their statistical power and generalizability across suicidal populations. A rigorous understanding of modifiable factors that contribute to suicidal behavior in LMIC primary care settings can be essential to improving the weak evidence base in these regions of the world. Specifically, an improved understanding of the impact of PCW competency and stigma on patient outcomes in a LMIC context would provide a more nuanced picture of how these variables interactively impact patient suicidal behavior, which can provide crucial data to inform new avenues for intervention in high-risk contexts, both globally and locally.

Study Objectives

The current study leveraged multi-method (i.e., behavioral, self-report, explicit bias, and implicit bias) data to explore factors that influence non-specialist (i.e., *lay*) health workers' clinical response to suicidal behaviors in primary care settings in Nepal. The goal of the study was to explore predictors of lay PCW ($N = 205$) competency in responding to suicidal behaviors (i.e., asking about suicide and developing a safety plan) in primary care-based structured role-plays with standardized patients. Predictors include (1) mental health explicit and implicit bias; (2) knowledge and attitudes regarding mental illness; and (3) observational ratings of lay provider competency in delivering common factors treatment strategies. In accordance with prior

theory and data described above, we hypothesized that poorer PCW mental health knowledge and attitudes, higher explicit and implicit bias, and poorer behavioral competency ratings will predict lower PCW competency in assessing and managing suicidal behavior.

Methods

Study Setting

Data for this study were collected in Chitwan, a rural district in Southern Nepal. (See Figure 1). Nepal is a low-income country and one of the poorest countries in Asia. Multiple studies have documented the negative impacts of humanitarian emergencies, including a decade-long civil war and two major earthquakes in 2015, on psychological distress (including suicide) and access to mental health services (Kane et al., 2018; Kohrt et al., 2002; Luitel et al., 2016). The government is the main provider of in-country healthcare. Among patients reporting to primary care services, 11% reported suicidal ideation and 1.2% attempted suicide in the year prior (Jordans et al., 2018).

Parent Study

Secondary data for the current study were leveraged from a pilot and feasibility cluster-randomized trial evaluating the preliminary efficacy of a stigma reduction intervention for Nepali lay providers operating in integrated primary care settings (Kohrt et al., 2018, 2020). This parent study included a novel stigma reduction strategy (Reducing Stigma among Healthcare providers to improve mental health services; RESHAPE; Kohrt et al., 2018, 2020) housed within an international research and implementation initiative (Programme for Improving Mental Health Care; PRIME) focused on integration of mental health services in primary care settings in five LMIC (Nepal, India, South Africa, Ethiopia, and Uganda). Prior to the development of PRIME, no systematic mental health services were available in Nepali primary care settings (Hanlon et

al., 2014; Luitel et al., 2015). Within Nepal's PRIME district plan, primary care providers were trained in assessment and intervention for priority mental disorders (i.e., epilepsy, psychosis, alcohol use disorder, and depression) using a delivery care package based on the World Health Organization's Mental Health Gap Action Programme Intervention Guide (WHO mhGAP-IG). The PRIME package in Nepal consisted of a 10-day, 65-hour long training. RESHAPE was added as an anti-stigma supplement to the WHO PRIME package to enhance lay provider competency in delivering mental health services, as well as quality of care. The comparison condition was the ten-day, PRIME training as usual (TAU). The current study leverages baseline (i.e., pre-intervention) data from the parent trial, and is not designed to test or compare intervention effects on lay PCW suicide clinical competency.

The parent study, conducted between 2014 and 2017, enrolled 205 lay providers across 34 healthcare facilities in Chitwan. These comprised a combination of auxiliary nurse midwives, health assistants, and community medical assistants. Common factors and suicide-specific competency were evaluated using structured role-plays with standardized patient "actors". Members of the research study team, who functioned as mental health specialists, were trained to perform as an adult patient with one of three mental health diagnoses: depression, psychosis, and alcohol use disorder (AUD). Trainings were conducted over a two-hour period, during which actors were given a written vignette describing the patient's current symptoms and key life history variables, in addition to patient "negative" (e.g., patient is not pregnant, patient did not have symptoms of a head injury). Both male and female versions of the three vignettes were developed. Across all vignettes, actors were instructed to disclose indirect or direct communication of suicidal ideation, intended to elicit assessment of suicidality and safety planning. Actors were instructed to continue role-plays for approximately ten minutes, or until

the lay PCW ended the session. After the ten-minute session, the actor (trained in use of the observational tool) scored the health worker for both common factors and suicide-specific competency using the Enhancing Assessment of Common Therapeutic Factors (ENACT) tool, described in detail in the "Study Measures" section below.

All study procedures were conducted in collaboration with Transcultural Psychosocial Organization (TPO)-Nepal, a mental health research-oriented organization based in Kathmandu. The parent study received approval by the George Washington University (051725) and Duke University (Pro00055042) Institutional Review Boards (IRBs), as well as the Nepal Health Research Council (110/2014 and 133/2016), the ethical body overseeing research conducted in Nepal. The current investigation received approval by the University of Washington (STUDY00011216) IRB.

Study Measures

The current study utilizes multi-method data using tools culturally adapted for and validated in Nepal.

Observational measure. Enhancing Assessment of Common Therapeutic Factors (ENACT): Developed in Nepal, the ENACT tool is used by raters observing standardized role-plays (approximately 10 minutes in length) of clinical trainees (Kohrt et al., 2015; Kohrt, Ramaiya, et al., 2015). The instrument includes 18 items measuring competency in common factors in psychological treatments (e.g., non-verbal communication and active listening, rapport-building and self-disclosure, assessment of functioning and impact on life). Each of the 18 items is scored at one of three levels. Level 1 (score of 1) refers to performing the skill in a potentially harmful manner. Level 2 (score of 2) refers to executing partial elements of the skill. Level 3 (score of 3) refers to completing of the elements in a manner consistent with therapeutic

benefit. Individual items are summed in a total score ranging from 18 to 54, with higher scores representing greater common factors clinical competency. In the parent study, any items not performed by the provider in the ten-minute role play were scored as a 2, with the exception of the suicide item (#18). The reliability of the Nepali version is $\alpha = 0.89$.

Item #18 is a measure of suicide-specific clinical competency (Level 1 = "*Clinician does not ask about harm to self or others*;" Level 2 = "*Clinician asks about harm to self or others, but does not help patient develop a plan for safety*;" Level 3 = "*Clinician asks about harm to self or others and facilitates appropriate actions to assure safety*"). This item served as the primary outcome in the current investigation.

Implicit bias measure. Implicit Association Test (IAT): The IAT is a computer-administered, response-latency test examining implicit bias against mental illness (Greenwald et al., 1998). The mental health version has been used across multiple and diverse high-resource settings (Greenwald et al., 2009). In Nepal, the IAT was adapted for use with culturally appropriate stimuli for healthcare workers (Kohrt, 2017), with test administration lasting approximately 7.5 minutes. A participant receives a continuous score for each IAT. Scores farther from zero (either in the positive or negative direction) indicate greater implicit preference for (for: scores in the positive direction) or against (against: scores in the negative direction) a group.

Self-Report measures. Mental Health Gap Action Programme (mhGAP) Knowledge: True–false and multiple-choice questions assess diagnostic and treatment knowledge based on mhGAP-IG trainings (Hanlon et al., 2018). Knowledge questions within the scale are used as a global supplement to mhGAP-IG trainings. Questions address general mental health, neurological, and substance use (MNS) disorders, psychosis, depression, and epilepsy, as well as

three additional questions about mania, bipolar disorder, and suicide (e.g., "*True or false: Asking people about suicidal thoughts increases the likelihood of suicide*"). The full battery of 26 questions was administered to health workers with prescribing rights. For non-prescribing health staff and community health workers, 19 of the questions were administered (i.e. medication-related questions were removed). Items are summed to create a total score, with higher scores representing greater mental health knowledge. The reliability of the Nepali version is $\alpha = 0.91$.

Mental Health Gap Action Programme (mhGAP) Attitudes: Likert-scale questions based on mhGAP-IG trainings for assessing general attitudes about MNS disorders, psychosis, depression, epilepsy, and bipolar disorder (Hanlon et al., 2018). One of the 25 questions is suicide-specific ("*A police officer is the best person to contact to help people with suicidal thoughts or a life-threatening suicide attempt*"). The scale of items on the Nepali version is 1 to 4, with higher scores indicating greater endorsement of stigmatizing attitudes. The reliability of the Nepali version is $\alpha = 0.89$.

Social Distance Scale (SDS): The SDS is a widely used self-report measure of explicit stigma (Bogardus, 1993; Link et al., 2004; Pescosolido et al., 2013). The adapted SDS assesses willingness to interact with persons from a stigmatized group (Kohrt et al., 2020). The SDS was adapted for use in Nepal and is a 12-item tool consisting of sections from the Stigma in Global Context – Mental Health Study (Olafsdottir & Pescosolido, 2011; Pescosolido, 2009; Pescosolido, Medina, Martin, & Long, 2013). The scale of items on the Nepali version is 1 to 6, for a total continuous score range of 12 to 72. Higher scores indicate greater social distance. The reliability of the Nepali version is $\alpha = 0.90$.

Analytic Plan

Analyses for this baseline study were conducted using *sem, lavaan*, *FactoMineR*, and *psych* statistical packages in R (Version 1.3). First, associations between all model variables (i.e., predictor and outcome variables) were examined, and missingness was examined to determine whether any systematic patterns emerged. Normality, homoscedasticity, outliers, and homogeneity of variance was also tested, and transformations conducted for any violated assumptions. We treated both common factors and suicide clinical competency as ordinal variables. Vignette type was quantified using two dummy-coded variables, with depression as the referent category (depression *vs*. psychosis, depression *vs*. AUD).

To examine the latent factor structure of the ENACT common factors competency tool, we tested two factor structures using a combination of Principle Component Analysis (PCA) and confirmatory factor analysis (CFA). First, we conducted PCA, a factor analytic technique aimed at reducing dimensions of variance among a set of variables, to explore underlying ENACT dimensions. Given the ENACT tool had no published factor structure, we began with PCA with promax rotation (presuming correlation among competency items) to explore whether this measure may be summarized as a single or multiple components in to guide the configural structure of our CFA. Results from CFA were used to identify a best-fitting model, which was subsequently compared to a higher-order model consisting of five, theoretically derived specific subscales (Kohrt & Jordans, unpublished) and one general factor. (See Figure 3.) The underlying structure of the higher-order model was assessed using CFA. Between-model fit comparison was assessed using the following fit indices: chi-square statistic (χ^2) and degrees of freedom, comparative fit index (CFI > 0.95), root mean square error of approximation (RMSEA < 0.08), Tucker-Lewis index (TLI > 0.90), Akaike's information criterion (AIC, relatively lower values

indicating better fit), and Bayesian information criterion (BIC, relatively lower values indicating better fit). For an extensive discussion of these indices, see Schumacker & Lomax, 1996.

To test the conceptual model examining multiple predictors of suicide clinical competency in Figure 2, we tested a structural equation model (SEM) in which the best-fitting ENACT factor structure (identified in the previous step) was entered into a path analysis as a latent predictor of suicide clinical competency. Remaining predictors (i.e., social distance, implicit bias, mental health knowledge, mental health attitudes) and outcome (i.e., suicide clinical competency) were treated as manifest time-varying covariates. Vignette type was entered a predictor, since prior evidence indicates that healthworkers are more likely to assess for suicidality in patients exhibiting symptoms of depression, relative to other diagnoses (Davidsen, 2011).

Handling of missing data. Only one male participant was excluded from analysis due to absence of data. Because missing data represented only .05% of the full sample and was thus expected to have little to no effect on biasing the coefficients produced, we chose use of listwise deletion rather than compensating for missing values (Widaman, 2006).

Results

Demographic Characteristics

Demographic characteristics are included in Table 1 for the 205 primary healthcare workers. The majority of participants were female (53.2%), upper caste (70.2%), and had prescribing privileges (53.7%). The average participant age was 35 years. Independent *t*-tests, Wilcoxon rank sum tests, and Spearman rank order correlations were used to examine differences between demographic variables and the primary outcome of suicide clinical

competency. All demographic variables were statistically unrelated to suicide clinical competency.

Suicide Clinical Competency and Correlates

At baseline, the majority (85.3%) of providers did no assessment of suicidality of safety planning in the mock therapist-client role-plays (as measured by item #18 on the ENACT tool). Twenty-nine providers (14.2%) assessed for suicidality, and one developed a safety plan.

Table 2 presents Spearman rank order correlations between predictor and outcome study variables. Social distance and common factors competency were significantly correlated with suicide clinical competency (Table 2 and Table 3). Specific clinical competencies (e.g., verbal communication skills, discussion and promotion of confidentiality, appropriate involvement of family members, collaborative goal-setting, and effective problem-solving) were also significantly associated with suicide clinical competency. (See Table 2.) There were also significant associations between model predictors (e.g., mental health knowledge and attitudes, mental health attitudes and social distance), as indicated in Table 3.

Latent factor structure of the ENACT tool.

Principle component analysis. Eigenvalues for each eigenvector (derived from a PCA with promax rotation) for common factors competency are provided as a scree plot in Figure 2. The largest eigenvalue for a given eigenvector was 5.46 (corresponding to a one-factor model), which constituted 61% of the total shared variance among the predictors. In contrast, the next-highest eigenvector had an eigenvalue of 1.52 (a two-factor model) and added only 10% additional explained variance. These results suggested that common factors competency may be adequately summarized as a single-factor latent variable solution.

Higher-order model. Although our PCA results suggested a single-factor solution, the common factors competency measure was developed to represent specific subscales based on prior theory (Kohrt & Jordans, unpublished). Thus, to synthesize our data-derived and theoretical structure, we specified a higher-order model solution using CFA and compared the higher-order solution to the single-factor solution. The five subscales represented the following lay provider domains: (1) communication; (2) emotional engagement; (3) assessment; (4) social relations; and (5) planning and process (See Figure 3.) Model fit was satisfactory: χ^2 (114) = 162.6, $p < 0.001$, RMSEA = 0.05, CFI = 0.94, TLI = 0.93, AIC = 4520.54, BIC = 4633.36). Higher-order model fit was marginally superior to the that of the single-factor model (χ^2 (119) = 182.9, $p < 0.001$, RMSEA = 0.06, CFI = 0.93, TLI = 0.92, AIC = 4510.21, BIC = 4639.61). Therefore, the higher-order model was therefore used in structural modeling described below.

Path analysis. We selected the higher-order solution for common factors competency for use in path analysis (. SEM was used to test the hypothesized relations among suicide clinical competency, explicit bias (social distance), implicit bias, mental health knowledge and attitudes, and latent common factors competency at baseline (pre-training). This model had satisfactory fit indices: χ^2 (232)=295.48, $p < 0.01$, RMSEA = 0.04, CFI = 0.98, TLI = 0.99. Common factors competency was a significant predictor of suicide-specific clinical competency *(*$\beta = .48$, $p <$ .001). No other paths (i.e., those from social distance, implicit bias, and mental health knowledge and attitudes to suicide clinical competency) emerged as significant.

Discussion

There is robust evidence that non-mental-health specialists can deliver psychological services to fidelity, and that delivery of these services reduces mental illness in global settings (Singla, Raviola, & Patel, 2018). However, the majority of lay competency evaluations focus on

common mental disorders at the expense of serious mental illness and high-risk behaviors, including suicidality. In other words, within the global literature, it is unclear whether lay providers can effectively manage suicidality when it appears in the therapy room, and barriers preventing competent delivery of suicide prevention services are similarly opaque. Further, unlike licensed professionals for whom there are professional bodies to assure a minimum standard of care, there are virtually no systems in place to measure whether non-specialist providers have adequate skills to deliver suicide prevention services.

These combined gaps motivated the current investigation, which focused on using SEM to evaluate multiple barriers to delivery of evidence-based suicide prevention services in primary care settings in Nepal. We focused on two theoretically derived barriers to delivery of basic suicide prevention services: PCW stigma (both explicit and implicit) and PCW competency (both in mental health knowledge and direct application of clinical skills). Our outcome measure was a suicide-specific item the well-validated and locally developed ENACT observational tool consisting of live ratings of "mock" therapy sessions with lay Nepali PCW and standardized patient "actors" (Kohrt et al., 2015a, 2015b).

At baseline (i.e., before delivery of any mental health training), the majority (85.3%) of providers ($N = 205$) did no assessment of suicidality, and only one developed a safety plan. These pre-training percentages mirror those found in Uganda and Liberia (Kohrt et al., 2018), and is unremarkable given our study focus on lay provider populations with none-to-minimal prior mental health training. Individual provider pre-training scores could be used as a benchmark performance metric from which to base improvement following suicide training and/or supervision.

Structural modeling revealed one significant path, from common factors competency to suicide-specific clinical competency. Factor analysis of the common factors competency latent variable, which yielded above-average fit statistics, strengthens confidence in our interpretation of this effect as significant. Although the directionality of effect cannot be ascertained in the current study, this result indicates the presence of a significant relationship between lay PCW competency in delivering key elements of common factors therapy and PCW' ability to ask mock patients about suicide risk and develop a safety plan. One explanation for this finding is that clinical strength in specific common factors elements increase PCW confidence in asking patients about suicide risk and attempting to reduce risk through safety planning. Another explanation is that PCW who are more likely to ask about and manage suicidality (e.g., because they received and/or were more likely to retain suicide-specific training) are more naturally skilled at delivering common elements of psychotherapy. Future studies should aim to delineate the direction of this effect, which would provide a more mechanistic understanding of how common factors competency influences—and is influenced— by suicide-specific competency.

Regardless of the directionality of effect, results indicate that measurement of common factors competency may be a useful marker for assessing suicide-specific competency in PCW delivering services in low-resource settings, both in Nepal and other LMIC. Indeed, prior literature indicates that an observational measurement of competency outperforms written knowledge and skill exams, as well as self-report measures, in predicting actual PCW performance (e.g., Ottman et al., 2020). Conceptually, this may be because clinical competency measures are closely linked to actual performance, since using role-plays require practical application of knowledge, attitudes, and in-the-moment skills. Prior studies in Nigeria (Adebowale et al., 2014), Ethiopia, Kenya, and Malawi (Fekadu et al., 2017; Jenkins et al., 2013;

Kauye et al., 2014) demonstrated lack of connections between multiple-choice knowledge tests and clinical skills. The insignificant path between mental health knowledge and suicide clinical competency mirrors this finding.

Despite our initial hypotheses, stigma, in none of its forms (i.e., social distance, implicit bias, and mental health attitudes) significantly predicted suicide-specific clinical competency in the structural equation model. Several reasons may explain this finding, excluding the possibility that, in our sample, stigma exerted no "real" effect on suicide clinical competency. One hypothesis is that the IAT used in the current study did not explicitly measure suicide-specific stigma, and did not therefore adequately capture implicit bias towards individuals with suicidal behavior (rather, it measured overall bias towards individuals with mental illness). Another controversial explanation is that implicit bias may be a weak predictor of provider-level discriminatory behaviors (including ignoring suicidality in the therapy room), as evidenced in a prior meta-analytic findings (e.g., Forscher et al., 2019; Oswald et al., 2013). Despite evidence that a death-specific IAT predicts future suicide attempts above and beyond commonly studied predictors (e.g., depression diagnosis, prior suicide attempts, clinician intuition) in patient populations (Nock et al., 2010), virtually no studies (with the exception of one, which used a written vignette of a mock patient as the outcome variables; Obert, 2017) have examined the effects of implicit bias on suicide clinical competency at the provider level. It is thus difficult to contextualize the lack of current effect. Future studies and additional replication are needed to further explore the nature of the implicit bias and suicide clinical competency relationship. Relatedly, despite the significant bivariate correlation between social distance and suicide clinical competency, this relationship did not emerge as significant in the structural path diagram. One reason for this discrepancy may be multicollinearity (i.e., high correlation between

independent variables used in the study), which has potential to mask individual-level effects. Analysis using existing methods to probe for multicollinearity (e.g., calculation of the variance inflation factor to determine if standard errors are inflated due to multiple correlated measures) is justified in future investigations.

Limitations

Despite a series of strengths (e.g., observational measurement of suicide-specific clinical competency with high interrater reliability, multi-method measurement of predictor variables, robust sample size, and use of culturally and clinically validated tools), the current study has a number of limitations which should be considered when interpreting findings or making recommendations for the broader field of suicide prevention and mental health service integration in LMIC settings. First, despite evidence that role-plays are strongly correlated with real-world provider behavior (Putz, Kattan, & Maestra, 2021), the brief (10-minute) nature of the ENACT tool may not capture the range of possible PCW-patient interactions in real-world settings, particularly those in which PCW are able to provide mental health services for extended periods of time.

However, the brief nature of the tool does not significantly detract from generalizability of study findings, since PCW-patient interactions in LMIC are likely to be brief for a host of reasons (e.g., high need and extremely low supply of available personnel, high provider burnout, and competing clinical priorities). Second, the outcome variable (item #18 of the ENACT tool) had three possible scores: a 1 (*no discussion of suicide took place*); 2 (*PCW asked about suicide and self-harm but did no safety planning*); and 3 (*PCW asked about suicide and self-harm and conducted appropriate safety planning*). This scoring option masked additional granularity in suicide measurement (e.g., specific assessment of suicidal ideation *vs*. planning *vs*. intent,

assessment of prior attempts, risks, and protective factors, and differentiation between suicidal and non-suicidal self-injurious behaviors) which is critical to capture when assessing for provider competency in suicide assessment. Third, as mentioned earlier, the directionality of effect between common factors and suicide-specific clinical competency is unresolved in the current study, and additional information would be crucial in guiding PCW training program development in this area. Fourth, statistically significant findings may be due to shared method and construct variance, as suicide clinical competency and common factors competency are measured using the same measurement tool. Finally, all competency measurement was done using mock PCW-patient interactions, and may not directly map onto PCW behavior with true patients in real-world primary care settings.

Future Directions

Multiple avenues exist to extend the current study. First, future studies should be conducted to ascertain the direction of the relationship between common factors competency and suicide-specific competency (e.g., which leads to which), as well as to explore mechanisms that explain how and why common factors competency and suicide clinical competency are related. For instance, it may be the case that individuals with high performance in specific common factors skills (e.g., establishing confidentiality, rapport building, use of higher-level validation strategies that communicate trust and safety with patients) are more likely to create environments in which patients are comfortable disclosing suicidality and amenable to change talk (e.g., during safety planning). Although the ENACT tool included these domain-specific competencies, our relatively small sample size and inclusion of multiple predictors in our SEM model reduced statistical power, thus preventing us from identifying which specific common factors skills were linked to greater suicide clinical competency in the overall model. Knowledge of both

directionality and mechanisms underlying this relationship are essential to identify specific strategies lay providers should receive training in to augment competency in management of suicidal individuals. Additionally, measurement of clinical competency in addressing non-suicidal self-injury (NSSI) would also be useful, since NSSI and suicide are often conceptualized as separate constructs that potentially require unique treatment modalities (Taylor et al., 2018).

Second, there are a host of variables that may moderate the relationship the predictor variables and suicide clinical competency within PCW-patient dyads. For example, gender differences between PCW and providers may influence the direction of relationship between common factors and suicide clinical competency, due to discrepant norms in South Asia concerning emotion expression and communication of distress (Friedlmeier et al., 2011). Between- and within-dyad caste differences could also have influenced study findings, due to social rules surrounding between-caste social interactions (Nightingale, 2011). Unfortunately, the study sample size and lack of variability in caste precluded these specific analyses. Future studies examining these moderators would be useful in determining under what specific contexts clinical competency is linked to suicide clinical competency.

Third, future research could examine whether a specific minimum threshold for common factors PCW competency is necessary to achieve minimum competency in addressing suicidal behavior (i.e., a score of 3 on ENACT item #18, or the highest score). Existence of a common factors competency threshold could be a pragmatic tool for selecting which lay providers are able to go on to provide suicide prevention services, and which providers require additional training. A threshold model like this could be used to establish a *stepped care* model for lay PCW in LMIC, in which only those with sufficient clinical skills after a first round of training would be

allowed to receive advanced suicide-specific trainings and go on to deliver suicide-specific clinical care.

Fourth, there are a series of methodological improvements future studies could take advantage of. More behavioral specificity in measuring suicide clinical competency would allow for a more nuanced picture of what lay PCW are doing—and *not* doing—in the room with suicidal patients (e.g., how do providers ask about suicide (e.g., are close- *vs*. open-ended questions used)? When and in what context are planning and intent assessed? What type of safety planning do PCW conduct?). Additionally, improved measurement of stigma (e.g., development an IAT for specific bias against individuals with suicide and use of a suicide-specific social distance tool) could provide a more precise and accurate test of how stigma impacts lay PCW suicide clinical competency. Further, the current study relied entirely on competency ratings performed by supervisors ('experts'). Peer, self, or actual patient ratings could have both greater utility and scalability.

Finally, it is crucial to connect these evaluations with actual patient outcomes since the ultimate goal of competency assessment is to detect and prevent suicide in real-world settings. Future studies should examine the extent to which suicide clinical competency mediates the relationship between competency barriers and patient suicide and mental health outcomes (e.g., depression, anxiety, post-traumatic stress, borderline personality disorder). Such data could have critical impact in establishing minimum training standards for lay PCW working in settings with high or rising rates of suicide.

Conclusion

Global calls to prevent suicide in LMICs with concerning suicide rates cannot succeed without the presence of skilled providers who are able to deliver evidence-based suicide

prevention services with high degrees of treatment fidelity and competency. Although task sharing models (i.e., where care is delivered by non-specialist or "lay" providers) have robust evidence in LMIC, it is unclear to what extent non-specialists can effectively deliver suicide prevention services, and what barriers preclude fundamental competencies in addressing suicidal behavior. We found that common factors competency (i.e., lay providers' ability to deliver common factors therapy) predicted the likelihood that lay PCW would ask patients about suicide and conduct basic safety planning in observed interactions with standardized patients. Future studies should probe mechanisms underlying the relationship between common factors competency and suicide clinical competency, in order to identify future areas of training innovation for lay providers delivering suicide prevention services in global settings with high suicide risk. Given potential for a masked association in the current study, future investigations should continue to explore the relationship between provider social distance and suicide clinical competency.

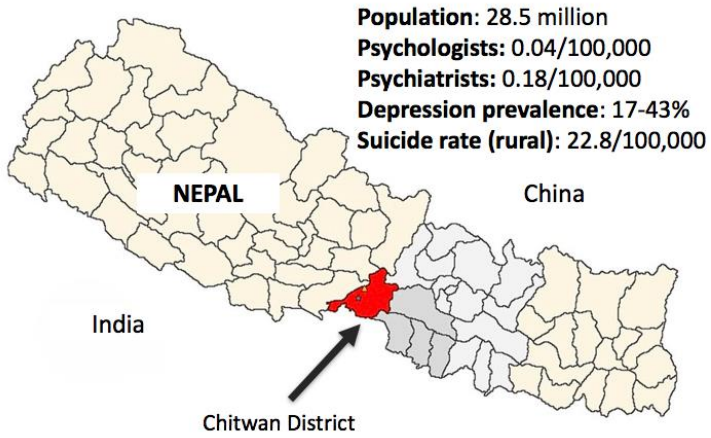


Figure 1. Map of Nepal and Chitwan District, Site of Study Data Collection

Table 1
Baseline Demographics of Lay Nepali Health Workers (N = 205)

	Participants
Age, Mean (SD, Range)	35.7 (9.6, 20-60)
Female, No. (%)	109 (53.2)
Provider Type, No. (%)	
Prescriber	110 (53.7)
Non-Prescriber	95 (46.3)
Caste, No. (%)	
Adibasi janajati (indigenous ethnic groups)	26 (12.7)
Janajati (hill ethnic groups)	21 (10.2)
Dalit (lower caste)	8 (3.9)
Brahman (upper caste)	109 (53.2)
Chhetri (upper caste)	35 (17.1)
Education, No. (%)	
School Leaving Certificate not completed (not high school graduate)	19 (9.3)
School Leaving Certificate Completed (high school graduate)	75 (36.6)
Intermediate degree (2 years of higher education)	46 (22.4)
Bachelor's degree (3 years of higher education)	33 (16.1)
Medical degree (5 years of higher education)	13 (6.3)
Master's degree	19 (9.3)
Years Working in Healthcare, No. (%)	
<1 year	10 (4.9)
1-5 years	62 (30.2)
6-10 years	25 (12.2)
>10 years	108 (52.7)

Table 2
Baseline Descriptive Statistics for Stigma and Competency Among Lay Nepali Lay Health Workers (N = 205)

	Participants Mean (SD)	Lower Suicide Clinical Competency	Higher Suicide Clinical Competency	Difference
Social Distance (*SDS*)	33.65 (12.21)	34.33	29.09	*
Implicit Bias *(IAT)*	0.08 (0.42)	.09	.02	
Mental Health Knowledge (*mhGAP Knowledge*)	0.61 (0.11)	.61	.64	
Mental Health Attitudes (*mhGAP Attitudes*)	1.80 (0.29)	1.81	1.78	
Common Factors Competency (*ENACT*)	26.23 (5.16)	25.38	31.20	***
Item-Level Competency (*ENAC*T)				
Item 1 (*Nonverbal Communication)*	2.01 (0.67)	1.97	2.27	*
Item 2 (*Verbal Communication)*	1.50 (0.55)	1.44	1.87	***
Item 3 (*Confidentiality)*	1.38 (0.54)	1.30	1.80	***
Item 4 (*Rapport Building)*	1.38 (0.54)	1.59	1.83	*
Item 5 (*Normalization*	1.63 (0.56)	1.66	1.97	*
Item 6 (*Empathy)*	1.71 (0.55)	1.31	1.60	**
Item 7 (*Life Events)*	1.35 (0.51)	1.19	1.40	**
Item 8 (*Mental Health Problems)*	1.22 (0.43)	1.31	1.47	
Item 9 (*Social Functioning)*	1.33 (0.50)	1.30	1.60	**
Item 10 (*Explanatory Models)*	1.34 (0.51)	1.25	1.53	**
Item 11 (*Family Involvement)*	1.29 (0.49)	1.41	1.80	***
Item 12 (*Collaborative Goals*	1.47 (0.56)	1.22	1.60	***
Item 13 (*Hope Generation)*	1.27 (0.46)	1.77	2.07	**
Item 14 (*Coping)*	1.81 (0.58)	1.61	1.90	*
Item 15 (*Psychoeducation)*	1.66 (0.60)	1.24	1.33	
Item 16 (*Problem Solving)*	1.25 (0.44)	1.56	1.93	***
Item 17 (*Feedback)*	1.62 (0.51)	1.23	1.20	

Note. * $p < .05$ ** $p < .01$ (via independent samples *t*-test or Spearman's Rank Order Correlation). SDS = Social Distance Scale; IAT = Implicit Association Test; mhGAP Knowledge = WHO Mental Health Gap Action Programme Knowledge Test; mhGAP Attitudes = WHO Mental Health Gap Action Programme Attitudes Test; ENACT = Enhancing Assessment of Common Therapeutic Factors; ENACT # 18 = Item 18 from ENACT Scale.

Table 3

Baseline Bivariate Correlations Between Stigma, Competency, and Suicide Clinical Competency Among Lay Nepali Health Workers (N = 205)

	A.	B.	C.	D.	E.
A. Common Factors Competency (*ENACT*)					
B. Mental Health Knowledge (*mhGAP Knowledge*)	0.16*				
C. Mental Health Attitudes (*mhGAP Attitudes*)	-0.12	-0.43***			
D. Social Distance (*SDS*)	-0.13	-0.22**	0.32***		
E. Implicit Bias (*IAT*)	0.06	0.09	-0.15*	0.11	
F. Suicide Clinical Competency (ENACT #18)	0.33***	0.07	-0.03	-0.15*	-0.07

Note. *$p < .05$; **$p < 0.01$; *** $p < 0.001$

SDS = Social Distance Scale; IAT = Implicit Association Test; mhGAP Knowledge = WHO Mental Health Gap Action Programme Knowledge Test; mhGAP Attitudes = WHO Mental Health Gap Action Programme Attitudes Test; ENACT = Enhancing Assessment of Common Therapeutic Factors; ENACT # 18 = Item 18 from ENACT Scale.

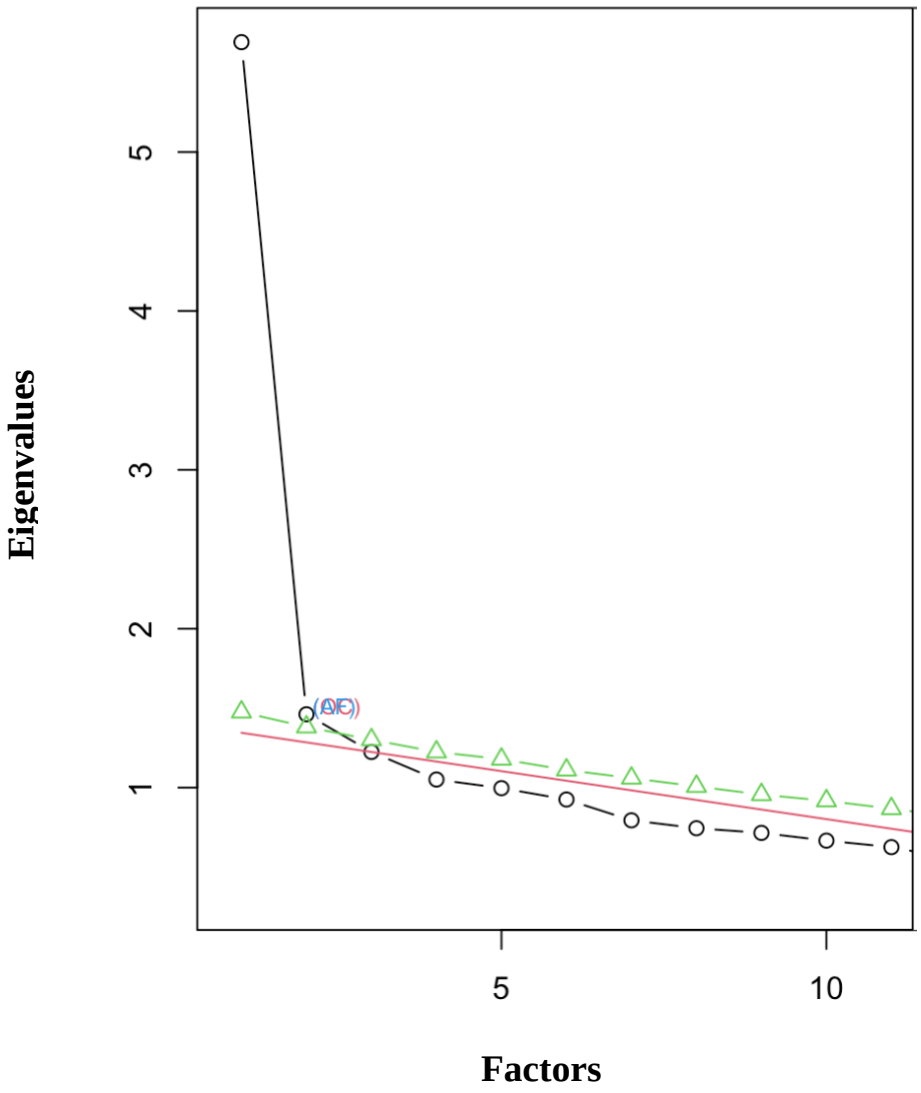
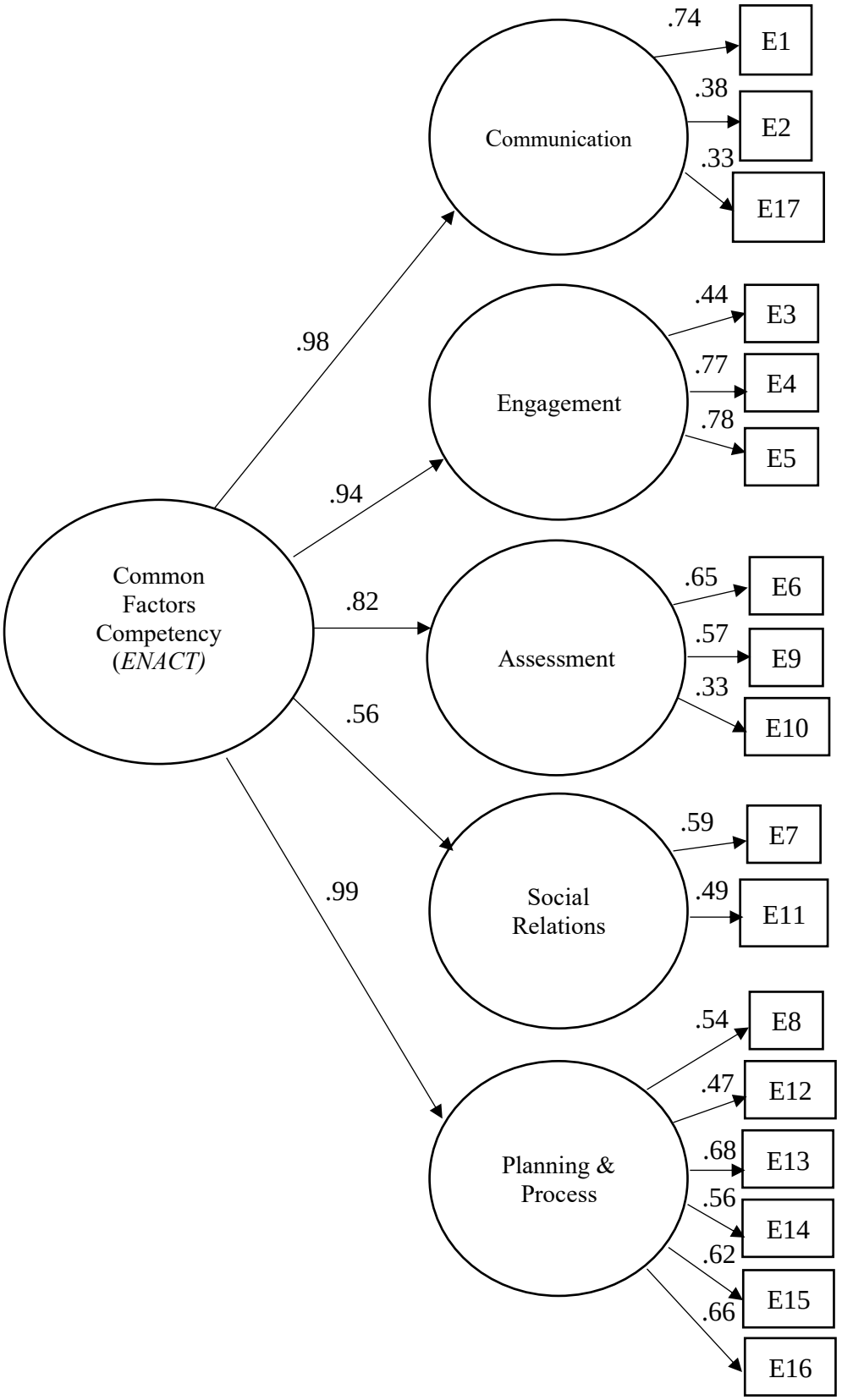


Figure 2. Scree Plot of Eigenvalues by Factors for Latent Common Factors Competency Measure (ENACT Rating Scale) (N = 205)


Common Factors Competency (ENACT)
.98
.94
.82
.56
.99
Communication
Engagement
Assessment
Social Relations
Planning & Process
.74
.38
.33
.44
.77
.78
.65
.57
.33
.59
.49
.54
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.68
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E16

Figure 3. Higher-Order Model of Common Factors Competency Among 205 Lay Nepali Lay Health Workers

Note. Circles reflect latent variables and squares reflect measured variables. Straight arrows reflect factor loadings. Straight arrows reflect standardized factor loadings. All factor loadings are statistically significant at $p < .001$. For ease of presentation, error variances are not depicted.

Table 4
Comparative Fit Indices for Two Possible Models of Clinical Competency Among Lay Nepali Health Workers (N = 205)

Model	χ2	df	CFI	TLI	RMSEA	AIC	BIC	90% CI
Higher-Order Model	**162.60**	**114**	**0.94**	**0.93**	**0.05**	**4510.21**	**4639.61**	**0.03 – 0.06**
Single-Factor Model	182.93	119	0.93	0.92	0.06	4520.54	4633.36	0.04 – 0.07

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = the root mean square error of approximation; CI = confidence interval; AIC = Akaike information criterion; BIC = Bayesian information criterion. Single-Factor Model = one common factors competency factor; Higher-Order Model = Five latent factors (subscales) and one superordinate (clinical competency) factor.

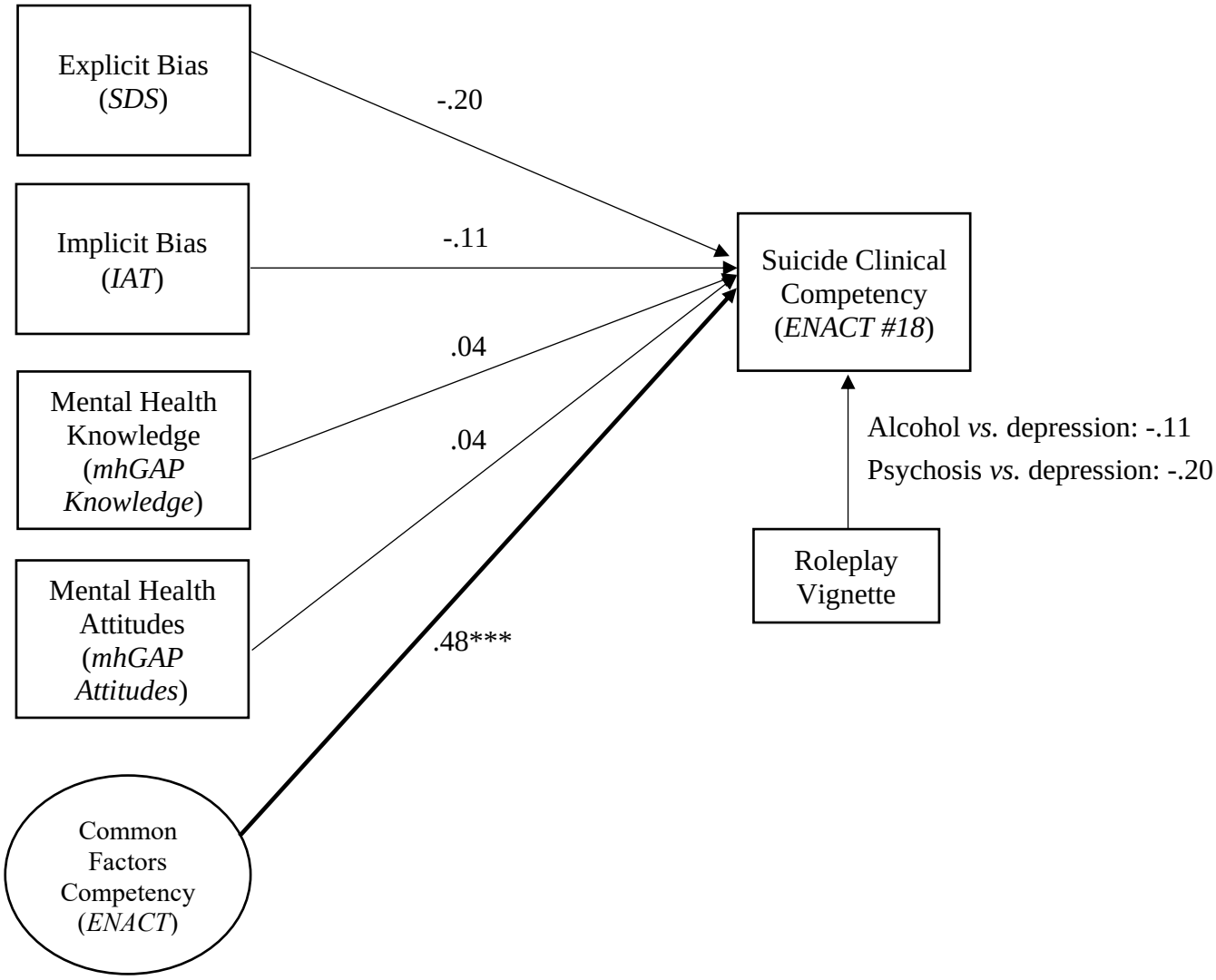

Figure 4. Standardized Path Analysis Regression Coefficients for Multiple Predictors of Suicide Clinical Competency Among Lay Nepali Health Workers (N = 205)
Note. *** $p < .001$. Circles reflect latent variables and squares reflect measured variables. Straight arrows reflect regressions. Manifest indicators for competency were removed for ease of illustration. SDS = Social Distance Scale; IAT = Implicit Association Test; mhGAP Knowledge = WHO Mental Health Gap Action Programme Knowledge Test; mhGAP Attitudes = WHO Mental Health Gap Action Programme Attitudes Test; ENACT = Enhancing Assessment of Common Therapeutic Factors; ENACT # 18 = Item 18 from ENACT Scale. For ease of presentation, error variances are not depicted.

Chapter III

Longitudinal Examination of Lay Provider Stigma and Common Factors Competency as Predictors of Suicide Clinical Competency in Nepal

Abstract

Suicide and suicidal behavior are critical global public health issues that have received limited attention and funding in low- and middle-income country (LMIC) settings. Although evidence-based suicide prevention strategies exist, the presence of skilled providers able to implement evidence-based suicide prevention services is both critical and understudied, particularly in LMIC that carry the majority of the international suicide burden. More research is needed to understand what factors inhibit and drive competency in addressing suicidality at the provider level, particularly in LMIC settings that carry the majority of the global suicide burden. The present study leveraged multi-method data (behavioral, observational, implicit bias, and self-report) to explore provider stigma and competency as longitudinal barriers to delivery of quality suicide prevention services by lay Nepali primary healthcare workers (N= 205). We found that pre-training provider common factors clinical competency significantly predicted suicide clinical competency 4-months post-mental health training ($\beta = .24$, $p < .05$). Contrary to hypotheses, pre-training provider implicit bias ($\beta = .30$, $p < .001$) and mental health knowledge ($\beta = .23$, $p < .05$) significantly predicted suicide clinical competency 16-months post-training. At 4-months post-training, 48.7% of providers assessed for suicide and 4.9% conducted safety planning. These percentages increased to 57.5% and 11.9% 16-months post-training. Future studies should replicate the original investigation and conduct a deeper examination of modifiable mechanisms that explain the link between common factors competency and suicide clinical competency over time. The relationship between provider social distance and suicide clinical competency should also continue to be examined, given potential for a masked association in the current study.

Introduction

Suicide and suicidal behavior are critical global public health issues, particularly in low- and middle-income country (LMIC) settings where the majority of the world's suicide deaths occur (World Health Organization, 2014). Global efforts to prevent suicide are thwarted not only by a lack of sufficient intervention development, but also by a lack of trained providers well-equipped to manage suicidality when it appears in the therapy room. More research is needed to understand what factors inhibit and drive competency in addressing suicidality at the provider level, particularly in low-resource settings which bare the majority of the global suicide burden.

In Chapter 1, I described the theoretical and pragmatic value of leveraging the primary care health network to deliver brief suicide prevention services by non-specialist ("lay") primary care workers (PCW) with minimal prior training in direct mental health services delivery. I highlighted two salient barriers (high provider stigma and low provider competency) to uptake of suicide prevention trainings, provider competency in delivering foundational suicide prevention services, and patient outcomes. I also described use of an innovative observational measure (the Enhancing Assessment of Common Therapeutic Factors, or ENACT, tool) utilizing brief, standardized role-plays between lay PCW and "actors" (i.e., mock patients) to measure lay PCW suicide clinical competency (operationalized as asking about suicide and conducted safety planning) (Kohrt et al., 2015). In the same chapter, I presented results from a baseline, cross-sectional examination in Nepal of five sets of attitudes and behaviors (implicit bias, explicit bias, mental health attitudes, knowledge of mental health services, and competency in delivering common-factors therapy) that have potential to impact lay PCW ability to detect and reduce risk of suicide. Results indicated that, at baseline (i.e., before any mental health and suicide-specific training), less than 15% of lay PCW asked about suicide or conducted safety planning. Results

also showed that higher common factors competency was significantly associated with improved competency in assessing and managing suicidal behaviors

In Chapter 2, I examine the durability of these effects in a longitudinal evaluation of barriers to suicide clinical competency after suicide-specific training (using the World Health Organization (2010) Mental Health Gap Action Programme Intervention Guide; WHO mhGAP-IG) was delivered to lay PCW working in integrated primary care settings in Nepal. Studies in HIC (e.g., McNiel et al., 2008; Neimeyer et al., 2001; Oordt, Jobes, Fonseca, & Schmidt, 2007; Palmieri et a., 2008; Scheerder et al., 2008; Terpstra et al., 2018) and LMIC (Robles et al., 2019) have found that mental health training increased healthworkers' knowledge, attitudes, confidence, and self-reported behavioral intentions with patients experiencing suicidal behaviors. However, there is a dearth of literature examining suicide clinical competency using behavioral measurement, despite recommendations from the WHO (2017) and International Medical Corps (2018). Further, to the author's knowledge, virtually no studies have examined if and how suicide clinical competency (behavioral or otherwise) in LMIC changes over time, and what modifiable factors might predict these changes. Similarly, few studies have examined the long-term uptake of PCW trainings on suicide clinical competency with lay providers operating in resource-constrained contexts. This knowledge would be crucial in identifying critical training gaps within global mental health suicide trainings, as well as inform development of novel intervention and supervision strategies for lay PCW delivering suicide prevention services in resource-constrained environments.

In Chapter 1, I hypothesized that poorer lay PCW mental health knowledge and attitudes, higher explicit and implicit bias, and poorer common factors competency ratings would predict lower PCW suicide clinical competency. We hypothesized the same directionality of effects

would persist over time, due to two reasons. First, there is an absence of empirical literature suggesting stigma and competency factors reverse their effect on clinical competency over time. Further, there is evidence suggesting that mental health training (in particular, anti-stigma training) does not lead to change in implicit bias levels beyond an immediate post-test (Lai et al., 2016). Thus, I hypothesized that poorer lay PCW mental health knowledge and attitudes, higher explicit and implicit bias, and poorer common factors competency ratings would predict lower PCW suicide clinical competency both 4-months and 16-months post-WHO training.

Methods

Study Setting

An overview of the study site (Chitwan, Nepal) is provided in Chapter 1.

Parent Study and Study Flow

An overview of the parent study, collaborating partners, and ethical procedures are also described in Chapter 1. The parent study enrolled 205 lay PCW who were randomized to either an "active" treatment condition (mhGAP-IG plus a novel stigma reduction intervention rooted in social contact theory; Kohrt et al., 2020) or a comparison condition (mhGAP-IG only) delivered through the Programme for Improving Mental healthcarE (PRIME) (Lund et al., 2012). Following training, one group of participants (lay PCW with prescribing privileges) participated in ongoing supervision with a psychiatrist once every three months.

Quantitative outcomes of interest were collected with the same lay PCW cohort over three time points: baseline or pre-training (Wave 0), 4-months post-training (Wave 1), and 16-months post-training (Wave 2). Table 5 includes a list of instruments and their measurement timeline.

In both active and control conditions, suicide-specific training was delivered on Day 7 of the 10-day mhGAP training, using the 2010 version of the mhGAP Intervention Guide (mhGAP-IG) suicide and self-harm module (WHO, 2010). The training was included didactics and psychoeducation on common presentations of suicide, risk and protective factors, assessment, safety planning development and use of psychosocial interventions, assessment and management of comorbid conditions (including physical illness), management of acute/emergency cases, and follow-up care. Group role-plays were also used to practice implementation of the mhGAP-IG Common presentations, risk and protective factors assessment skills, assessment and management of comorbid conditions (e.g., physical illness), safety planning and handling of acute cases, and follow-up, and referrals. Group role-plays were also used to practice implementing the mhGAP-IG to (1) assess for possible suicidal behavior; (2) implement psychosocial interventions for suicidal behavior; and (3) initiate and provide follow-up care after medical stabilization**.**

Study Measures

See Chapter 1 for an overview of study measures.

Analytic Plan

Analyses for this baseline study were conducted using *lavaan*, *sem,* and *psych* statistical packages in R (Version 1). First, associations between missing data and all model variables (i.e., predictor and outcome variables) were examined. Normality, homoscedasticity, outliers, and homogeneity of variance was also tested, and transformations conducted for any violated assumptions. We treated both common factors and suicide clinical competency as ordinal variables. Vignette type was dummy coded into two categories (depression *vs*. psychosis, depression *vs*. AUD), with depression as the referent category.

To examine the longitudinal effects of lay PCW stigma (i.e., explicit bias, implicit bias, mental health attitudes) and competency (i.e., mental health knowledge, common factors competency) on suicide clinical competency, a two-step procedure for structural equation modeling (SEM) was used (Schumacker & Lomax, 2004). The procedure consisted of a confirmatory factor analysis (CFA) of one latent variable (common factors competency) followed by a path analysis.

For CFA, a higher-order model (consisting of five subscales and one superordinate factor) was used in model specification. Selection of the higher-order model for model specification is described in Chapter 1. In order to maintain consistency, we used the baseline (Wave 0) CFA for clinical competency (using the ENACT tool) for longitudinal structural modeling. Factor loadings at Baseline were similar to 4-month and 16-month follow-up (as indicated in Table 6), increasing our confidence that the baseline factor structure of clinical competency would not increase measurement error in structural modeling. Model fit was assessed using the following fit indices: chi-square statistic (χ^2) and degrees of freedom, comparative fit index (CFI > 0.95), root mean square error of approximation (RMSEA < 0.08), and Tucker-Lewis index (TLI > 0.90).

For structural modeling, the higher-order model was specified as a latent variable. All other variables were specified as manifest indicators. We controlled for training type, since the added anti-stigma training component included in the RESHAPE intervention may have significantly impacted study variables, relative to the standard mhGAP training (TAU). Vignette type was entered as a time-varying predictor, since prior evidence indicates that health workers are more likely to assess for suicidality in patients exhibiting symptoms of depression, relative to other diagnoses (Davidsen, 2011).

Model 1 (Figure 5): Wave 0 predictors (i.e., explicit bias, implicit bias, mental health knowledge and attitudes, and common factors competency), Wave 0 suicide clinical competency, and Wave 1 suicide clinical competency.

Model 2 (Figure 6): Wave 1 predictors, Wave 1 suicide clinical competency, and Wave 2 suicide clinical competency;

Model 3 (Figure 7): Wave 0 predictors, Wave 0 suicide clinical competency, and Wave 2 suicide clinical competency.

Handling of missing data. The number of participants by wave is as follows: Wave 0 (205 participants), Wave 1 (185 participants), Wave 2 (165 participants). The maximum missing value percentage was 19, which is below minimum thresholds recommended for replacement of missing values using approaches that yield small standard errors (e.g., those that attempt to estimate the value of some population parameter, including Full Imputation Maximum Likelihood) (Widaman, 2006). Additionally, because common factors and suicide clinical competency were treated as ordinal variables, statistically recommended approaches were not appropriate. Rather than using alternative strategies for handling of missing data (e.g., multiple imputation), which commonly result in high bias and low precision, we chose to use listwise delete missing data, a conservative approach that would reduce introduction of additional bias into the dataset. (See Newman (2003) for a review of strategies for handling missing data in longitudinal samples.)

Results

Demographic Characteristics

Demographic characteristics are included in Table 7. The majority of participants across all three waves were female, upper caste (Brahman and Chhetri), and had prescribing privileges.

The average participant across all waves was 35.2 years. Independent *t*-tests, Wilcoxon rank sum tests, and Spearman rank order correlations were used to probe for differences between demographic variables and the primary study outcome (suicide clinical competency) over each wave; none were significantly associated with suicide clinical competency. At Wave 1, 20 participants (9.8%) of participants were lost-to-follow-up. At Wave 2, an additional 20 participants (for a total of forty participants; 19.5%) were lost-to-follow-up.

Suicide Clinical Competency and Correlates

Table 8 describes changes in suicide clinical competency over time. At Wave 0 (pre-training), 14.2% of providers asked about suicide, and one conduced safety planning. At Wave 1 (4-months post-training), 48.7% of providers asked about suicide and 4.9% conducted safety planning. At Wave 2 (16-months post-training), these percentages increased to 57.5% and 11.9%, respectively.

Table 9 presents bivariate correlations between all model variables (five predictors and one primary outcome), pooled across all waves. All correlations were statistically significant at the $p < .001$ level, excepting correlations between implicit bias and all model variables.

Higher-Order Model

A CFA was used to fit a higher-order model of common factors competency (with 5 subscales and one superordinate factor) that was developed based on prior theory on the clustering of ENACT items (Kohrt & Jordans, unpublished). The five subscales represented the following lay provider domains: (1) communication; (2) emotional engagement; (3) assessment; (4) social relations; and (5) planning and process. (See Figure 3.) Model fit was above-satisfactory: χ^2 (114) = 162.6, $p < 0.001$, RMSEA = 0.05, CFI = 0.94, TLI = 0.93.

Path Analysis

SEM was used to test the three hypothesized, longitudinal relations among suicide clinical competency, explicit bias (social distance), implicit bias, mental health knowledge and attitudes, and common factors competency.

Model 1. In the model including Wave 0 (pre-training) and Wave 1 (4-months post-training) variables (See Figure 5), common factors competency was the only significant predictor of suicide clinical competency, both at baseline ($\beta = .45$, $p < .001$) and Wave 1 ($\beta = .24$, $p < .05$). At Wave 1, vignette type significantly predicted suicide clinical competency ($\beta = -.50$, $p < .01$). That is, lay providers who received an alcohol vignette at Wave 1 were, relative to those who received a depression vignette, less likely to receive a higher suicide clinical competency score.

Model 2. In the model including Wave 1 (4-months post-training) and Wave 2 (16-months post-training) variables, only common factors competency at Wave 1 significantly predicted suicide clinical competency at Wave 1 ($\beta = .40$, $p < .05$) (Figure 6). At Wave 2, providers who received a psychosis vignette were, relative to those receiving a depression vignette, less likely to score highly on suicide clinical competency ($\beta = -.52$, $p < .05$).

Model 3. In the model including Wave 0 (pre-training) and Wave 2 (16-months post-training) variables (See Figure 7), common factors competency at Wave 0 significantly predicted suicide clinical competency at Wave 0 ($\beta = .41$, $p < .001$). At Wave 2, Wave 0 mental health knowledge ($\beta = .23$, $p < .05$) and Wave 0 implicit attitudes ($\beta = .30$, $p < .001$) significantly predicted suicide clinical competency. At Wave 2, vignette type significantly predicted suicide clinical competency (i.e., relative to individuals who received a depression vignette, those with a psychosis vignette were less likely to receive a higher score on suicide clinical competency; $\beta = -.46$, $p < .01$).

Discussion

Although non-specialists ("lay" providers) can effectively deliver mental health services for common mental health disorders in LMIC (Singla et al., 2018), it is unclear lay provider trainings in global mental health settings impact providers' ability to deliver competent suicide prevention services or how suicide clinical competency fluctuates over time. Although the WHO mhGAP has been widely disseminated in the global arena and includes suicide-specific training, no studies to the author's knowledge have examined how mhGAP training impacts lay provider clinical competency outcomes, explored provider suicide clinical competency over time, or evaluated how salient threats to provider competency (stigma and poor knowledge and skills in delivering psychosocial services) impact lay healthworkers' ability to deliver competent care for individuals experiencing suicidality.

The goals of the present investigation were to (1) examine how lay PCW suicide clinical competency changes over time; and (2) use SEM to evaluate how key theoretical and empirical threats to PCW suicide clinical competency (high provider stigma, low provider competency in delivering common factors interventions) impact PCW suicide clinical competency. Suicidal clinical competency was evaluated using a novel observational tool leveraging structured role-plays with lay PCW and standardized patient "actors" with suicidal ideation (Kohrt et al., 2016). In all SEM models, a latent, higher-order model of common factors competency with above-satisfactory fit statistics was specified.

Our focus was on Nepal, a LMIC with the seventh-highest global suicide death rate and second-highest in South Asia (WHO, 2014). Data originated from a secondary trial of a stigma reduction intervention for PCW working in integrated care settings in Nepal (Kohrt et al., 2020). We hypothesized that poorer lay PCW mental health knowledge and attitudes, higher explicit

and implicit bias, and poorer common factors competency ratings would predict lower PCW suicide clinical competency at baseline 4-months and 16-months post PCW training.

At 4-months post-PCW training (Model 1), we found that pre-training common factors clinical competency was the only significant predictor of suicide clinical competency, both at pre-training and 4-months post-training. Between 4 and 16 months post-training (SEM Model 2), 4-month common factors clinical competency was significantly associated with 4-month suicide clinical competency, but did not predict 16-month suicide clinical competency. Between pre- and 16-months post-training (Model 3), we found similar results, wherein common factors competency at baseline was significantly associated with clinical competency at baseline, but not 16-months post-training. Contrary to our hypotheses, higher pre-training provider implicit bias and mental health attitudes predicted an increase in suicide clinical competency at 16-months post-training. Vignette type was a significant predictor in all three models; relative to actors role-playing a patient with depressive symptoms, actors with epilepsy or alcohol use disorder were less likely to have providers ask about suicide or conduct safety planning.

The main finding of the present investigation is the significant link between lay provider common factors competency and suicide clinical competency. This link was present at baseline and also persisted four-months post-training. Although common method and construct variance may have accounted for this significant relationship, it was not observed at 16-month follow-up, thus increasing confidence in our findings. Although it is unclear whether this association is uni- or bi-directional, one explanation for this relationship is that some PCW may have a natural proclivity (e.g., due to personality or social influences) to implement common factors clinical skills, and that this ability predicted their ability to deliver suicide prevention services, above and beyond other factors. Although the small sample size and high number of predictors prevented

analysis at the subscale level of the ENACT tool, it is possible that providers had pre-existing competency in specific common factors skills (e.g. establishing confidentiality, rapport building, use of higher-level validation strategies that communicate provider trust and safety, which can increase disclosure of suicidality), and that proficiency in these specific skills contributed to suicide-specific competency. Community settings where task-shared mental health services are implemented could assess for pre-training common factors competency, and use ratings to identify and select PCW with higher common factors competency to deliver suicide-specific services.

Contrary to hypotheses, stigma variants exerted a neutral or counterintuitive effect on suicide clinical competency. No variety of stigma (e.g., implicit, explicit, or self-reported attitudes) predicted suicide clinical competency 4-months post-training. At 16-months post training, providers with greater pre-training stigmatizing mental health attitudes and implicit bias were more likely to earn a higher suicide clinical competency rating. It is possible this unexpected finding is spurious since these associations did not bear out either at baseline or 4-months post-training, where the effects of higher provider stigma on provider behavior should, in theory, be more potent and apparent. This unexpected effect could also be due to confounds not measured in the current dataset (e.g., measurement error during data collection, participating in additional suicide-specific or anti-stigma training, additional supervision, social factors). Related, despite the significant bivariate correlation between lay PCW social distance and suicide clinical competency, this relationship did not emerge as significant in the structural path diagram. One reason for this description may be multicollinearity (i.e., high correlation between independent variables used in the study), which has potential to mask individual predictor effects. Leveraging existing methods to probe for multicollinearity (e.g., calculation of the

variance inflation factor to determine if standard errors are inflated due to multiple correlated measures) is justified in future investigations to further determine if explicit bias predicts suicide clinical competency.

Interestingly, mirroring data on the difficulty of predicting patient suicidal behavior (Franklin et al., 2017), pre-training suicide clinical competency did not predict later measurement of it. Rather, standardized scores from earlier to later suicide clinical competency were close to zero, indicating virtually no relationship between suicide clinical competency over time. This finding may point to the need to continuously monitor suicide clinical competency over time, which in accordance with empirically supported guidelines for lay provider training and supervision in both HIC and LMIC (Kohrt et al., 2008).

There were also notably low scores in suicide clinical competency over time. Four months after PCW training, there was a 30% increase in the number of providers who asked about suicide, and a subsequent 9% increase from 4-months to 16-months post-training. However, nearly half (at 4-month follow-up) and a third (at 16-month follow-up) of all providers conducted no suicide assessment or safety planning. Additionally, a similar pattern emerged for safety plan developed. At baseline, only one provider conducting safety planning. This increased to nine providers (5%) at month four, and only 19 providers (12%) at month 16. In other words, nearly 90% of all providers conducted no safety planning 16 months after receiving the mhGAP-IG suicide training. These results mirror those from Uganda and Liberia where providers achieved less than 50% competency in suicide prevention after training (Kohrt et al., 2018), as well as studies from HIC indicating that one-off trainings did not improve perceived clinical interviewing and assessment skills (Moriss et al., 1999). This finding may point to the need to move beyond one-off trainings in suicide assessment and risk management. It also calls for

assessment of specific training weaknesses at the trainer, supervisor, and organizational level, in order to identify where gaps in implementation of suicide-specific training are occurring. Development of individualized provider competency reports may be one method for increasing competency over time. Such reports can include provider-specific weaknesses as well as specific plans to address them through additional training and supervision. Further, current data suggest that shifting existing training and supervision designs (which are often based on total hours or days of training or supervision) (WHO, 2017) to competency-based milestones may be useful in training lay PCW in suicide prevention services.

In addition to receiving low provider suicide clinical competency ratings, lay PCW also not uniform in assessing for suicidality across diagnostic type. In all SEM models, lay PCW who were matched with patient "actors" with epilepsy or AUD were less likely to ask about suicide compared to those matched with "actors" with depression. This finding mirrors those from HIC, where PCW only assessed for suicide among patients with depressive symptoms (e.g., Davidsen, 2011). This points to the need to provide additional training on the importance of conceptualizing suicide as a transdiagnostic behavior rather than only a depressive symptom (Nock et al., 2010).

Limitations

Despite the strengths inherent in the current study, such a focus on suicide prevention in high-risk contexts at the lay provider level, multi-method measurement of key study constructs, novel measurement of lay provider competency using an observational scale with strong psychometric properties, and use of longitudinal data to examine barriers to suicide clinical competency, there are also accompanying limitations. First, there was limited granularity in measurement of suicide clinical competency (i.e., only one item was used with only three scoring

options), which did not allow for assessment of competency in asking about suicide planning, intent, or risk and protective factors. Quality of safety planning and specific safety planning strategies implemented also were not captured in the current rating scale. Second, significant associations between common factors and suicide clinical competency may, in part, be due to shared method and construct variance since both were derived from the same tool. However, lack of significant associations between these variables across certain time points (e.g., baseline and 16-months post-training, 4-months and 16-months post-training) reduces the likelihood that common variance exclusively biased model estimates. Third, differential training impacts between active and control conditions could not be evaluated due to small sample size and use of structural modeling with multiple simultaneous predictors. Although we attempted to evaluate the effect of training type on suicide clinical competency, our model did not reach convergence. Fourth, there are a host of variables that could theoretically moderate the relationship between stigma, common factors competency, and suicide clinical competency (e.g., within-dyad gender and caste differences). Unfortunately, the relatively small sample size for SEM and lack of caste-based variation precluded examination of moderation by these potential variables. Fifth, we were unable to incorporate all time points (baseline, 4-months, 16-months) into a single structural model since the path analysis algorithm reached the maximum number of allowed iterations before signaling convergence. A single, combined longitudinal could provide the most accurate examination of fluctuations in provider suicide clinical competency, stigma, and common factors competency over time.

Future Directions

Multiple avenues for future study are apparent. First, more frequent measurement (i.e., additional points of data between 4-months and 16-months post-training) of lay PCW suicide

competency and its key predictors would allow for a more precise and accurate analysis of how these variables interact together over time. Additional information on what lay PCW are doing in the room with suicidal patient "actors" would provide a more nuanced snapshot of provider behavior with patients experiencing suicidality.

Second, a number of methodological changes could improve measurement quality and inference strength. Immediate post-PCW training measurement of suicide clinical competency, stigma, and common factors competency would be useful for identifying immediate training effects on provider behavior. This measurement was not possible with the existing dataset due to desires to minimize provider and research term burden in the longitudinal data collection process. Improved measurement of stigma (e.g., use of an IAT for specific bias against individuals with suicide, a suicide-specific social distance tool, and suicide-specific attitudinal questions) may be useful in determining to what extent it impacts lay PCW suicide clinical competency. In future models, mental health attitudes may also be omitted from path analysis estimates, since self-reported stigma tools underperform in behavior prediction relative to behavioral and implicit bias measures (Greenwald et al., 2009).

Fourth, an additional qualitative research component could aid in data interpretation and hypothesis generation surrounding mechanisms that account for study findings. Qualitative research (e.g., ethnographic observation of patient-provider interactions, cognitive or in-depth interviewing) could be used to generate theory explaining why, and how, high PCW common factors competency is associated with high suicide clinical competency. Theory generated from qualitative research could be directly tested in future replications or extensions of this work. Finally, the current study relied entirely on competency ratings performed by standardized patient "actors". Peer, self, or actual patient ratings could have both greater utility and scalability.

Results should also be linked to actual patient outcomes to examine the direct effect of lay PCW suicide clinical competency on real-world patient suicidality.

Conclusion

Low provider competency in delivering suicide prevention services inhibits global calls to reduce suicide in high-risk global regions with unique contextual factors and suicide epidemiology. There is a critical need for competent delivery of suicide prevention services in primary care settings by lay PCW where the majority of patients with suicidality in LMIC are seen. The current study used structural equation modeling to examine the longitudinal effects of Nepali lay provider stigma and common factors clinical competency on suicide clinical competency. We found that lay PCW common factors competency was strongly associated with suicide clinical competency, both at baseline (pre-training) and 4-month follow-up (post-training). Provider stigma (implicit and self-reported mental health attitudes) at baseline significantly predicted greater suicide clinical competency 16-months post-training (a direction contrary to our initial hypotheses). There was no associated between suicide clinical competency ratings over time. Future studies should explore mechanisms explaining the link between common factors competency and suicide clinical competency, in order to identify gaps and training solutions for lay providers working with suicidal patients in under-resourced LMIC contexts.

Table 5
Measurement Time Schedule for Assessment of Longitudinal Predictors Lay Provider Suicide Clinical Competency

Construct	Instrument	Type	Assessment time periods			
			Wave 0 (Pre-training)	Wave 0b (Immediate post-training)	Wave 1 (4-mo post-training)	Wave 2 (16-mo post-training)
Lay Provider Outcomes						
Stigma (Explicit)	Social Distance Scale (SDS)	Self-report	•	•	•	•
Stigma (Implicit)	Implicit Association Test (IAT)	Implicit measure	•		•	•
Stigma (Attitudes)	mhGAP Attitudes	Self-report	•	•	•	•
Mental Health Knowledge	mhGAP Knowledge	Self-report	•	•	•	•
Common Factors Competency	Enhancing Assessment of Common Therapeutic Factors (ENACT)	Behavioral/ Observational	•		•	•

Note. Grey-shaded columns indicate time points used in the current study. Post-training (Wave 0b) was excluded from analyses due to lack of ENACT and IAT measurement.

Table 6

Longitudinal Factor Leadings Between Stigma, Competency, and Suicide Clinical Competency Among Lay Nepali Health Workers (N = 205)

	Baseline Loading	Standardized Baseline Loading	4-mo Loading	Standardized 4-mo Loading	16-mo Loading	Standardized 16-mo Loading
Common Factors Competency						
Communication	1.00	0.98	1.00	0.77	1.00	0.93
Engagement	0.46	0.94	2.32	0.97	3.41	0.97
Assessment	0.56	0.82	3.77	0.98	2.76	0.94
Social Relations	0.29	0.56	1.34	1.09	2.53	1.1
Planning & Process	0.55	0.99	3.32	1.01	2.95	1.01
Communication						
ENACT1	1.00	0.74	1.00	0.36	1.00	0.44
ENACT2	0.42	0.38	2.98	0.87	2.98	0.85
ENACT17	0.29	0.33	0.59	0.18	2.27	0.44
Engagement						
ENACT3	1.00	0.44	1.00	0.7	1.00	0.69
ENACT4	1.81	0.77	1.22	0.68	0.68	0.67
ENACT5	1.81	0.78	0.81	0.50	0.56	0.61
Assessment						
ENACT6	1.00	0.65	1.00	0.77	1.00	0.66
ENACT9	0.87	0.57	0.78	0.58	0.91	0.58
ENACT10	0.49	0.33	0.79	0.63	1.10	0.71
Social Relations						
ENACT7	1.00	0.59	1.00	0.38	1.00	0.59
ENACT11	1.10	0.49	1.92	0.44	0.58	0.36
Planning & Process						
ENACT8	1.00	0.54	1.00	0.68	1.00	0.65
ENACT12	0.79	0.47	0.98	0.68	0.98	0.66
ENACT13	1.47	0.68	1.08	0.78	0.72	0.65
ENACT14	1.25	0.56	0.42	0.38	0.59	0.47
ENACT15	0.99	0.62	0.72	0.63	0.45	0.47
ENACT16	1.24	0.66	0.73	0.58	0.74	0.65

Note. ENACT = Enhancing Assessment of Common Therapeutic Factors Scale. Subscales are based on prior theory on item clustering (Kohrt & Jordans, unpublished).

Table 7
Longitudinal Demographics of Lay Nepali Health Workers

	Wave 0 (Baseline)	Wave 1 (4-mo FU)	Wave 2 (16-mo FU)
Sample Size, No.	205	185	160
Age, Mean (SD, Range)	35.71 (9.60, 20-60)	35.72 (9.37, 20-60)	36.59 (9.32, 20-57)
Female, No. (%)	109 (53.2)	97 (52.4)	85 (53.1)
Provider Type, No. (%)			
Prescriber	110 (53.7)	98 (53.0)	82 (51.3)
Non-Prescriber	95 (46.3)	87 (47.0)	78 (48.8)
Caste, No. (%)			
Adibasi janajati (indigenous ethnic groups)	26 (12.7)	22 (11.9)	18 (11.3)
*Janajati (*hill ethnic groups)	21 (10.2)	19 (10.3)	16 (0.1)
Dalit (lower caste)	8 (3.9)	7 (3.8)	4 (2.5)
Brahman (upper caste)	109 (53.2)	99 (53.5)	91 (56.9)
Chhetri (upper caste)	35 (17.1)	33 (17.8)	27 (16.9)
Education, No. (%)			
School Leaving Certificate not completed (not high school graduate)	19 (9.3)	16 (8.6)	15 (9.4)
School Leaving Certificate completed (high school graduate)	75 (36.6)	69 (37.3)	62 (38.8)
Intermediate degree (2 years of higher education)	46 (22.4)	42 (22.7)	37 (23.1)
Bachelor's degree (3 years of higher education)	33 (16.1)	31 (16.8)	27 (16.9)
Medical degree (5 years of higher education)	13 (6.3)	8 (4.3)	4 (2.5)
Master's degree	19 (9.3)	18 (9.7)	15 (9.4)
Years Working in Healthcare, No. (%)			
<1 year	10 (4.9)	9 (4.9)	6 (3.8)
1-5 years	62 (30.2)	51 (27.6)	42 (26.3)
6-10 years	25 (12.2)	25 (13.5)	21 (13.1)
>10 years	108 (52.7)	100 (54.1)	91 (56.9)

Table 8
Lay Nepali Healthworker Competency in Addressing Suicidality Over Time

	Did Nothing (n, %)	Asked About Suicide (n, %)	Safety Planned (n, %)
Wave 0 (*Baseline*)	174 (85.29)	29 (14.22)	1 (0.05)
Wave 1 (*4-mo FU*)	86 (46.49)	90 (48.65)	9 (4.86)
Wave 2 (*16-mo FU*)	49 (30.63)	92 (57.50)	19 (11.88)

Note. Frequencies are derived from Item #18 of the Enhancing Assessment of Common Therapeutic Factors (ENACT) Scale.

Table 9
Longitudinal Bivariate Correlations Between Stigma, Competency, and Suicide Clinical Competency Among Lay Nepali Health Workers (N = 160)

	A.	**B.**	**C.**	**D.**	**E.**	**F.**
A. Wave (Time)						
B. Common Factors Competency (*ENACT*)	0.74***					
C. Mental Health Knowledge (*mhGAP Knowledge*)	0.53***	0.51***				
D. Mental Health Attitudes (*mhGAP Attitudes*)	-0.40***	-0.43***	-0.62***			
E. Social Distance (*SDS*)	-0.30***	-0.29***	-0.36***	0.42***		
F. Implicit Bias (*IAT*)	0.00	0.04	0.04	-0.08	-0.02	
G. Suicide Clinical Competency (ENACT #18)	0.46***	0.59***	0.29***	-0.25***	-0.21***	0.05

Note. *$p < .05$; **$p < 0.01$; *** $p < 0.001$

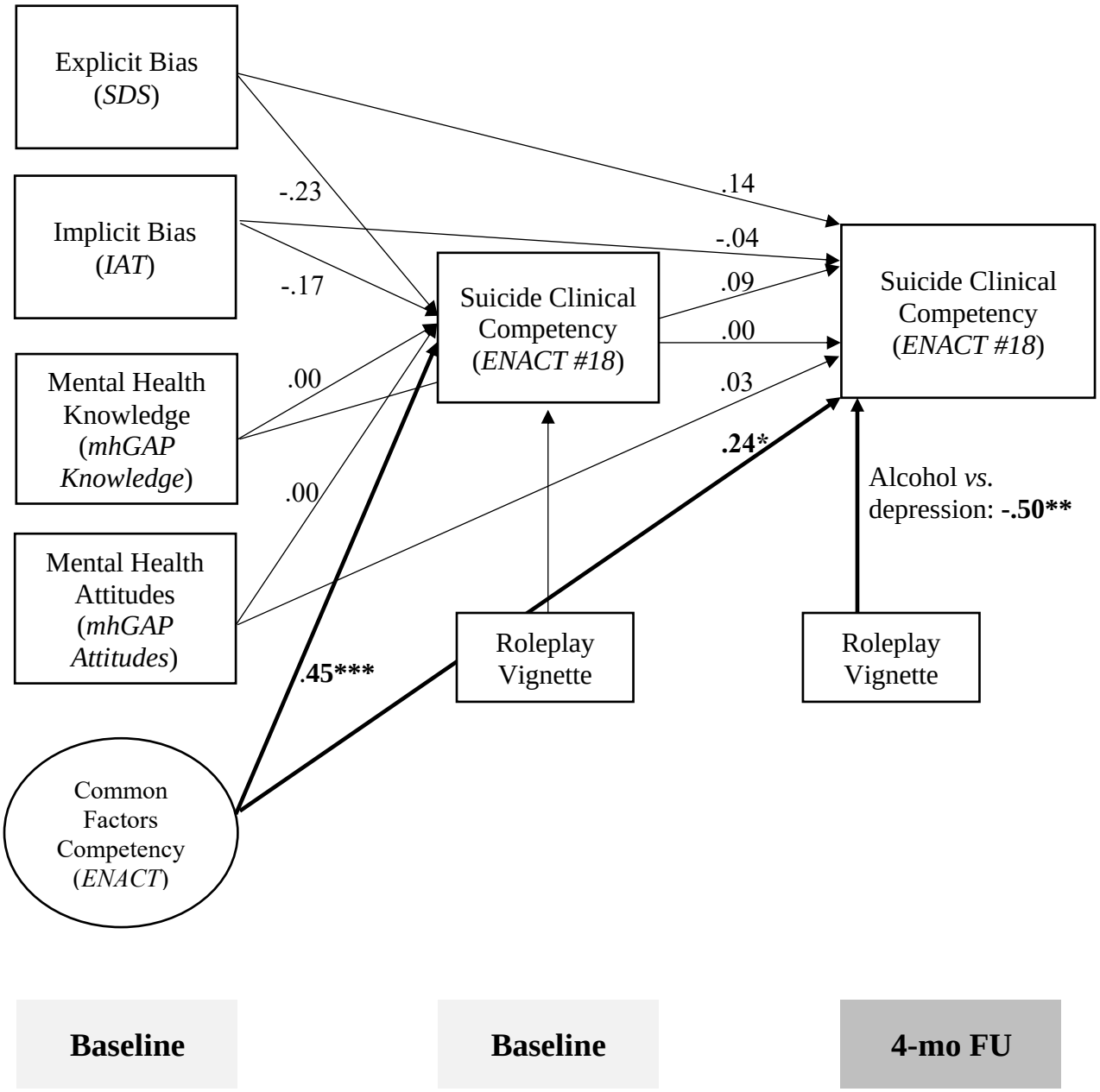

Figure 5. Standardized Path Analysis Regression Coefficients at Baseline (Pre-Training) and 4-Month Post-Intervention for Multiple Predictors of Suicide Clinical Competency Among Lay Nepali Health Workers (N = 185)

Note. *p < .05; **p <0.01; *** p<0.001. Circles reflect latent variables and squares reflect measured variables. Straight arrows reflect regressions. Manifest indicators for competency were removed for parsimony. SDS = Social Distance Scale; IAT = Implicit Association Test; mhGAP Knowledge = WHO Mental Health Gap Action Programme Knowledge Test; mhGAP Attitudes = WHO Mental Health Gap Action Programme Attitudes Test; ENACT = Enhancing Assessment of Common Therapeutic Factors; ENACT #18 = Item 18 from ENACT Scale. For ease of presentation, error variances are not depicted.

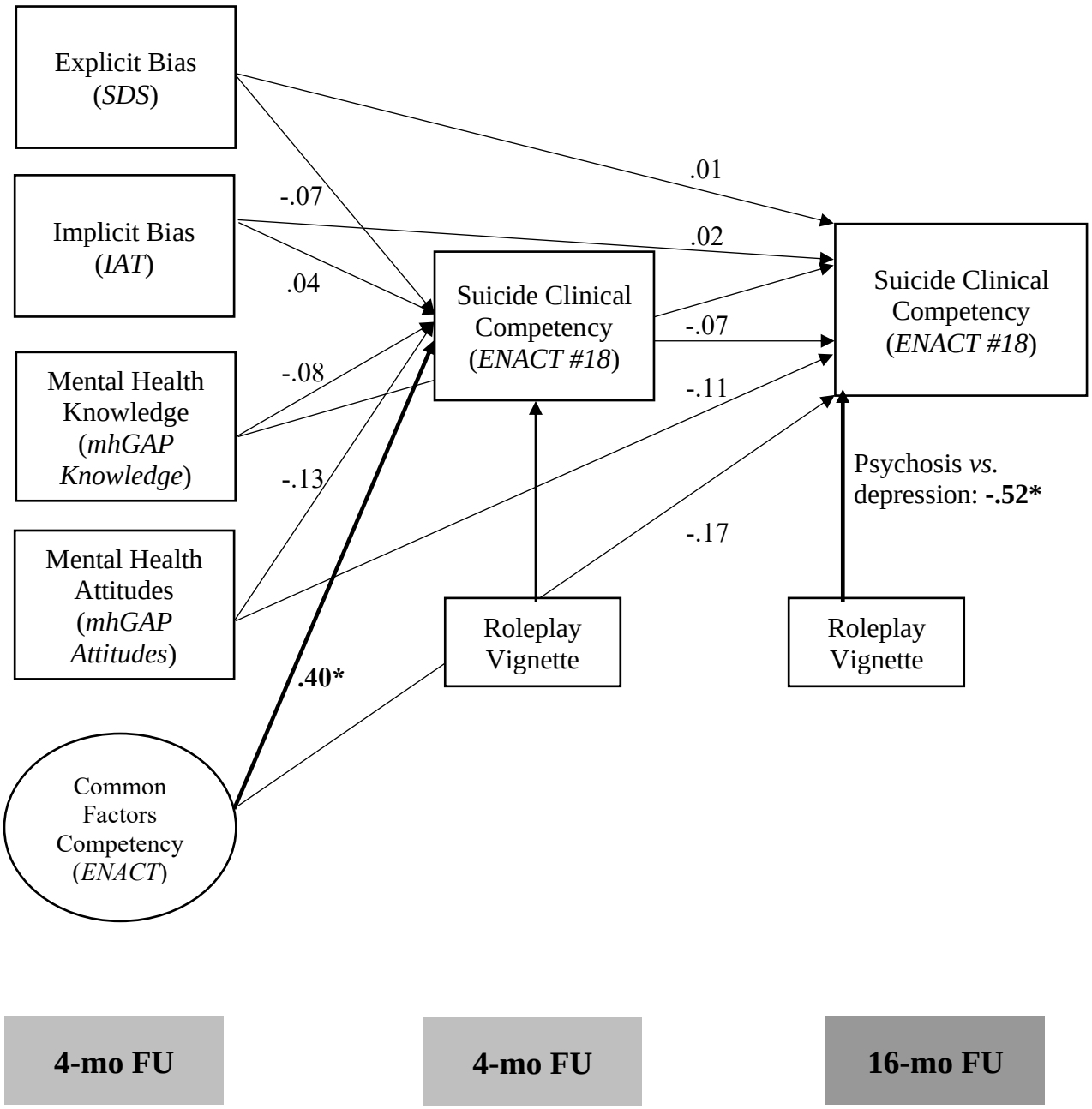

Figure 6. Standardized Path Analysis Regression Coefficients at 4-Month and 16-Month Post-Intervention for Multiple Predictors of Suicide Clinical Competency Among Lay Nepali Health Workers (N = 160)

Note. *p < .05; **p <0.01; *** p<0.001. Circles reflect latent variables and squares reflect measured variables. Straight arrows reflect regressions. Manifest indicators for competency were removed for parsimony. SDS = Social Distance Scale; IAT = Implicit Association Test; mhGAP Knowledge = WHO Mental Health Gap Action Programme Knowledge Test; mhGAP Attitudes = WHO Mental Health Gap Action Programme Attitudes Test; ENACT = Enhancing

Assessment of Common Therapeutic Factors; ENACT #18 = Item 18 from ENACT Scale. For ease of presentation, error variances are not depicted.

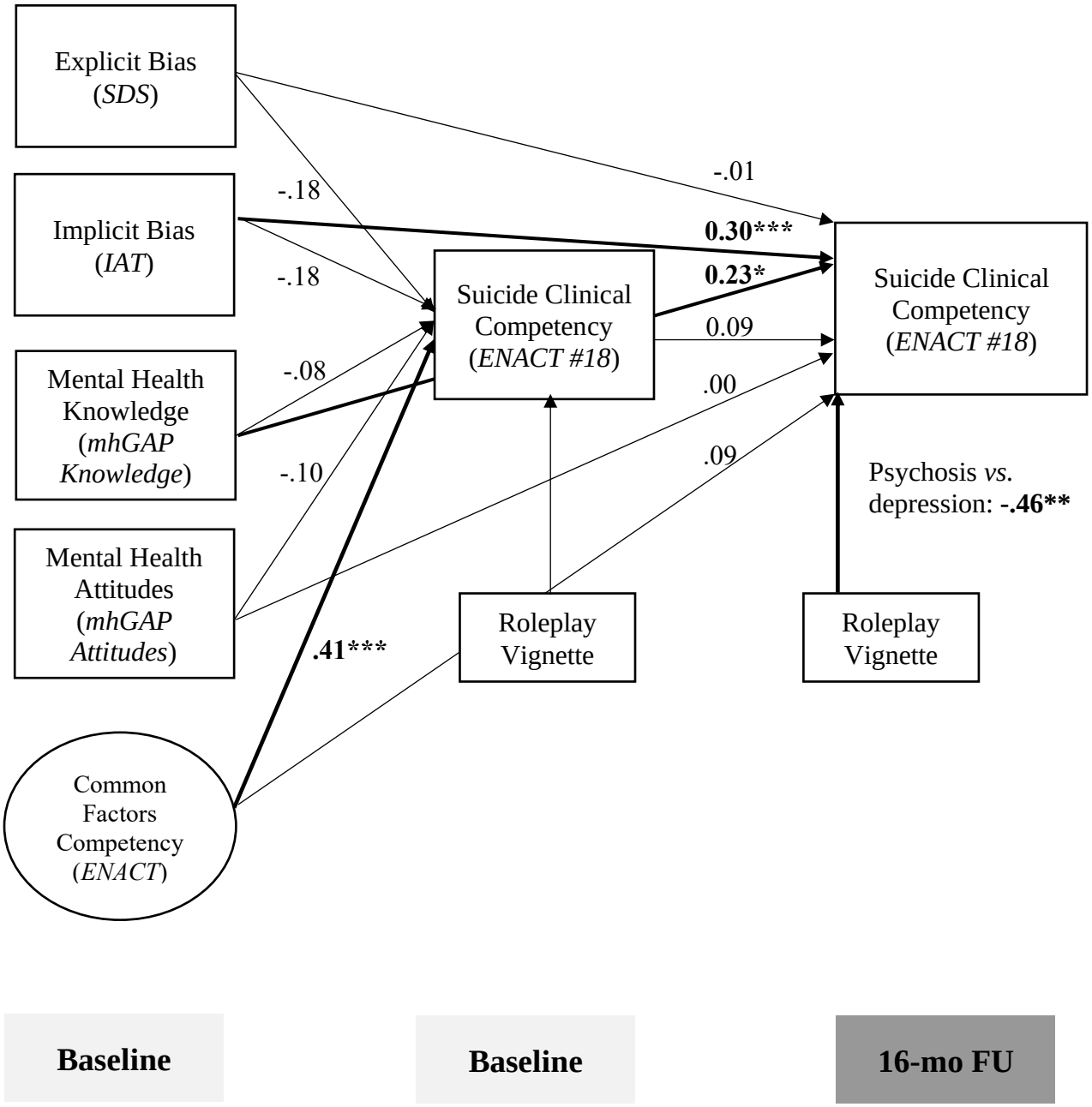

Figure 7. Standardized Path Analysis Regression Coefficients at Baseline (Pre-Training) and 16-Month Post-Intervention for Multiple Predictors of Suicide Clinical Competency Among Lay Nepali Health Workers (N = 160)

Note. *p < .05; **p <0.01; *** p<0.001. Circles reflect latent variables and squares reflect measured variables. Straight arrows reflect regressions. Manifest indicators for competency were removed for parsimony. SDS = Social Distance Scale; IAT = Implicit Association Test; mhGAP Knowledge = WHO Mental Health Gap Action Programme Knowledge Test; mhGAP Attitudes = WHO Mental Health Gap Action Programme Attitudes Test; ENACT = Enhancing

Assessment of Common Therapeutic Factors; ENACT #18 = Item 18 from ENACT Scale. For ease of presentation, error variances are not depicted.

Chapter IV

Associations Between Lay Provider Validation and Invalidation on Competency in Addressing Suicidal Behaviors in Nepal

Abstract

Although research on global suicide epidemiology and efficacy of prevention interventions is growing, few studies examine what factors facilitate or hinder providers' ability to deliver competent suicide prevention services. The current study used observational ratings of mock provider-patient interactions (N = 91) in Nepal to understand how lay provider validation and invalidation associate with competency in assessing for and managing suicidality. Structural equation modeling revealed that lay provider validation ($\beta = 0.63$, $p < .001$), but not invalidation ($\beta = 0.22$, $p > .05$), was significantly associated with suicide clinical competency. We also found that a measure of overall lay provider competency with specific behavioral attribute ratings had improved model fit compared to a non-attribute version of the same tool. Future research using micro-coding of dyadic interactions with suicidal patients, as well as patient outcome data, can help refine our theoretical and empirical understanding of underlying processes through which validation and invalidation influence lay providers' ability to prevent suicide and in low- and high-income settings with high rates of suicide.

Introduction

Despite an overall rise in suicide and suicidal behavior globally (World Health Organization, 2014), regional suicide profiles exist, with nearly 80% of the world's suicides occurring in low- and middle-income country (LMIC) settings. Despite this concentrated burden, only 10% of studies of global studies on suicide and mental health are conducted in LMIC (Guzmán et al., 2019), with the majority focusing on assessing risk and protective factors and evaluating intervention efficacy. Lack of properly trained personnel to deliver suicide prevention services is a critical and understudied barrier to dissemination, implementation, and scale-up of suicide prevention initiatives globally (Murray et al., 2014), particularly in settings where "lay" providers are the primary vehicles through which mental health services are delivered.

In Chapters 1 and 2, I examined baseline and longitudinal barriers to suicide clinical competency by lay Nepali providers working in integrated primary care settings. I found that, at baseline (i.e., before any mental health training was received), less than fifteen percent of lay primary care workers (PCW) asked about suicide or conducted safety planning. At 4-months post-intervention, the number of providers asking about suicide increased to 48.7%, yet only 4.9% conducted safety planning. At 16-months post-intervention, these percentages increased to 57.5% and 11.9%. I also found that common factors competency was significantly associated with suicide clinical competency, both at pre-training and 4-months post-training.

In this Chapter, I aim to examine what modifiable skills may influence provider competency in addressing suicidal behavior. I focus on provider validation and invalidation, based on prior qualitative and quantitative evidence in high-income country (HIC) settings indicating that suicide attempters felt punished, dismissed, and judged by their healthcare provider after disclosing a suicide attempt (Cerel et al., 2006), and were hesitant to disclose

suicidal ideation to providers due to fear of stigmatization (Richards et al., 2019). According to moral anthropological theory, invalidation may be a behavioral manifestation of stigma that results when healthcare providers' personal and group identities in a particular local world are threatened (Kleinman, 2006). In Nepal, specifically, suicide is highly stigmatized, partly due to misinformation that suicide is illegal and can only be managed by police, or due to beliefs that suicide is a permanent and "hopeless" act that cannot be prevented due to fate or enduring and trait-like personality characteristics (Hagaman et al., 2016; 2017). This stigma can threaten providers' social status and identities as healers with capacity to alleviate suffering and result in enacted stigma, which can include invalidation (Yang et al., 2014). This stigma can exert significantly deleterious, downstream impacts on pathways to care for patients and quality of care delivered (Hagaman et al., 2017; Kohrt et al., 2015a).

Validation occurs when an individual expresses their private experience to another person and this expression is met with understanding, legitimacy, and acceptance (Linehan, 1997). According to affective theory, validating responses do not seek to directly change or alter another's direct emotion experience, and instead serve to enhance it in order to facilitate appropriate acceptance and experiencing. Invalidating responses, on the other hand, are one in which "communication of private experiences is met by erratic, inappropriate, and extreme responses. In other words, the expression of private experiences is not validated; instead it is often punished or trivialized" (Linehan, 1993, p. 49). These responses communicate to another that their emotional experience or description of it is false and based on socially sanctioned standards. Extant theory from social and clinical psychology on the social genesis and maintenance of suicidal behaviors can link validation and invalidation to poor patient outcomes, primarily through a pathway of emotion dysregulation (Linehan, 1993). Emotion regulation

theory emphasizes that interpersonal factors impact a person's emotional reactivity and learning of context-specific and appropriate emotion regulation skills, and that exposure to interpersonal processes that increase emotion reactivity increase distress, dampen the probability of appropriate skill implementation, and increase suicide risk. Validating and invalidating responses, in particular, are important to this model since they are specific social processes that have shown to impact individual emotional reactivity and regulation. In prior studies of family interactions (Adrian et al., 2019; Hasking et al., 2020; Shenk & Fruzzetti, 2014; Vierira et al., 2019), couples (Leong et al., 2011) and unacquainted dyads (Shenk & Fruzzetti, 2001), invalidation from one partner increased emotion reactivity and, in some studies, increased the onset and frequency of self-harm (e.g., Adrian et al., 2019). In others, these effects were attenuated or reverse for validating responses (e.g., Adrian et al., 2019; Shenk & Fruzzetti, 2011). However, the extent to which these family models extend to provider-patient interactions has not been studied in a LMIC context. Information on how provider validation and invalidation contribute to competency in addressing suicide could provide critical data on what provider skills to emphasize in task sharing initiatives for suicide prevention using lay providers.

Study Objectives

The primary objective of the current study was to use videorecorded interactions of lay primary care workers (PCW) and standardized patients to examine associations between provider validation and invalidation on suicide clinical competency (i.e., asking about suicide and conducting safety planning). We hypothesized that greater use of validation strategies would be associated with an increase in suicide clinical competency, and that greater use of invalidation strategies would correspond to a decrease in suicide clinical competency. As an exploratory aim, we also sought to assess if an observational measure of lay provider competency that included

behavioral attributes (i.e., ratings based on specific provider behaviors) and greater response options led to improved predictions of suicide clinical competency, relative to an observational measure with no attributes and fewer response options. These data could aid in guiding appropriate selection and implementation of competency ratings when working with non-specialist providers delivering suicide prevention services.

Methods

Study Setting

An overview of the study site (Chitwan, Nepal) is provided in Chapter 1.

Parent Study and Study Flow

An overview of the parent study, collaborating partners, and ethical procedures are also described in Chapter 1. The parent study enrolled 205 lay PCW, who were randomized to either an "active" treatment condition (WHO Mental Health Gap Action Programme Intervention Guide (mhGAP-IG) combined with novel stigma reduction intervention rooted in social contact theory) (Kohrt et al., 2020; WHO, 2016) or a comparison condition (mhGAP-IG only) delivered through the Programme for Improving Mental healthcarE (PRIME) (Lund et al., 2012). A description of mhGAP training in suicide assessment and intervention provided to lay PCW is included in Chapter 2.

Of the 205 total providers at baseline, 94 providers consented to have their mock competency sessions video-recorded by a member of the study team. Video-recordings were conducted based on provider consent and availability of research personnel to record sessions. Upon completion, sessions were uploaded onto a secure platform for access by members of the study team. A total of 103 videos (58 from baseline, 33 at 4-month follow-up, and 12 at 16-

month follow-up) from 94 providers were included in the original study data set. Videos were coded using the measures and procedures described below.

Study Measures

Two observational measures of common factors clinical competency were used in the current study:

Non-Attribute Version of the Enhancing Assessment of Common Therapeutic Factors (ENACT): Developed in Nepal, the ENACT tool is used by raters observing standardized role-plays (approximately 10 minutes in length) of clinical trainees (Kohrt et al., 2015a, 2015b). The instrument includes 18 items, each measuring competency in a common factor of psychological treatments (e.g., non-verbal communication and active listening, rapport-building and self-disclosure, assessment of functioning and impact on life). Each of the 18 items is scored at one of three levels: level 1 (score of 1) refers to doing the skill in a potentially harmful manner; level 2 (score of 2) refers to executing partial elements of the skill, and level 3 (score of 3) refers to completing of the elements in a manner consistent with therapeutic benefit. Individual items are summed in a total score ranging from 18 to 54, with higher scores representing greater common factors clinical competency. Any items not observed in the ten-minute role play were given a score of 2. The full version of the tool is available in Appendix A. The reliability of the Nepali version is $\alpha = 0.89$.

Item #18 is a measure of suicide-specific clinical competency (Level 1 = "*Clinician does not ask about harm to self or others*;" Level 2 = "*Clinician asks about harm to self or others, but does not help patient develop a plan for safety*;" Level 3 = "*Clinician asks about harm to self or others and facilitates appropriate actions to assure safety*").

Attribute Version of the Enhancing Assessment of Common Therapeutic Factors (ENACT): Since development and publication of the original ENACT tool (2016) an updated version with 16 items and the addition of provider-level "attributes" (i.e., specific behaviors providers are engaging in over the course of a clinical session) was developed. Attributes are clustered into three categories: (1) "unhelpful" behaviors (e.g., "Uses *stigmatizing mental health terms*"); (2) "helpful" behaviors (e.g., "*Asks question to identify what emotions the client was feeling*"; and (3) "advanced" behaviors (e.g., "*Asks client to reflect on empathic statements from helper*"). This updated version of the tool (Kohrt et al., unpublished) includes four response options, compared to three in the original ENACT tool. Level 1 (score of 1) includes any theoretically harmful attribute engaged in by a provider (i.e., one or more unhelpful behavior). A score of 2 (Level 2) is assigned when one or more basic attributes are present. A score of 3 (Level 3) is assigned when all basic attributes for a given item are present. Level 4 (score of 4) is when all basic attributes as well as one or more advanced attribute are present. Individual items are summed for a total score ranging from 16 to 64, with higher scores representing greater common factors clinical competency. Any items not completed in the ten-minute role play were scored as a 2. The full version of the tool is included in Appendix B.

In the revised tool, item #7 is a measure of suicide-specific clinical competency. The item includes four "unhelpful" attributes (e.g., "*Does not ask about suicide or self-harm*" or "*Lectures client with religious or legal reasons against self-harm*"), four "basic" attributes (e.g., "*Asks about current intent, means, or prior attempts")*, and one advanced attribute ("*If current risk is high or low, helps client to develop safety plan").* A score of 1 is assigned when any unhelpful attribute is present. A score of 2 is assigned with no or some basic attributes are performed, and a score of 3 is assigned when all basic attributes are present. A score of 4 is

assigned when all basic and a minimum of one advanced attribute are performed. This item serves as the primary outcome in the current investigation.

Validating and Invalidating Behaviors: In addition to the 16 items from the Attribute ENACT described above, we included an additional item ("Provider Validation and Invalidation") in the attribute-level ENACT tool, in order to capture instances of validating and invalidating behaviors performed by lay providers not included in the original tool. Items were adapted from the Validating & Invalidating Behaviors Coding Scale (VIBCS; Fruzzetti, 2001), an observational coding system which has been successfully used with parent-child and couple dyads (Shenk & Fruzzetti, 2001, 2014). The VIBCS organizes validating behaviors across seven categories, or "levels": Level 1 = Attentive Listening; Level 2 = Acknowledging or Functionally Responding; Level 3 = Clarifying; Level 4 = Recontextualizing Experience; Level 5 = Normalizing; Level 6 = Radical Genuineness; and Level 7 = Reciprocal Vulnerability). Conceptually, higher levels of validation are associated with more advanced proficiency.

Similarly, invalidating behaviors are grouped in 6 categories, with Level 1 = Inattention, Missed Opportunities or Functional Unresponsiveness; Level 2 = Insisting; Level 3 = Increasing Negative Valence; Level 4 = Pathologizing; Level 5 = Attacking or Fragilizing; and Level 6 = Indifference to Vulnerability. Higher levels indicate theoretically greater potential for client harm.

Using the VIBCS tool as a guide, study team members identified attributes in the existing 15-item ENACT tool that captured instances of validating and invalidating behaviors for each of the seven (validating) and six (invalidating) levels. For levels that lacked corresponding attributes, we developed additional items. For validating behaviors, there were 31 corresponding

attributes. For invalidating behaviors, there were 35 attributes. Items were summed to reach separate total scores for validation (0 – 31) and invalidation (0 – 35).

Video Rating & Interrater Reliability Procedures

We adopted a three-phase process to guide rating of mock session videos. First, all raters (consisting of one South Asian doctoral student with proficiency in Nepali (MKR) and two Nepali masters-level researchers with Nepali-language fluency and extensive experience working with Nepali populations) participated in one day-long training (spanning 5 hours) with ENACT experts in tool rating and establishment of interrater reliability. Following training, five videos were separately rated by three study team members in order to refine the study tool and identify and resolve coding discrepancies. Rating consisting of watching a full video (approximately 10 minutes in length) in total, and immediately afterwards assigning an initial rating. Raters were able to go back to the original video to re-watch portions in order to make additional revisions before submitting a final rating. After resolving discrepancies and reaching consensus among all three raters, 10% of videos were independently rated by two study team members and interrater reliability assessed at the attribute level (with a required threshold of Krippendorff $\alpha > 0.80$). Further discrepancies were resolved among all three study team members. After establishing interrater reliability (final $\alpha = 0.81$), videos were randomly assigned and independently rated by the same two coders. All coding was done using an online platform for lay provider competency training and assessments, developed in conjunction with the World Health Organization (Kohrt et al., 2020). Raters were blinded to pre- v. post-training status of the health worker in the video.

Analytic Plan

Analyses for this study were conducted using SPSS (version 26) and *lavaan*, and *sem* statistical packages in R (Version 1.3).

Objective 1. To compare model fit and estimates of suicide clinical competency across rating tools, we implemented the following procedures. First, normality, homoscedasticity, outliers, and homogeneity of variance were tested, and transformations conducted for any violated assumptions. Common factors items and suicide clinical competency were treated as ordinal variables. Vignette type was dummy coded into two categories (depression *vs*. psychosis, depression *vs*. alcohol use disorder), with depression as the referent category.

To compare model fit and relative prediction of suicide clinical competency, we used a two-step procedure for structural equation modeling (SEM) consisting of confirmatory factor analysis (CFA) followed by path specification (Schumacker & Lomax, 2004). First, common factors competency was treated as a higher-order latent variable, with individual ENACT items loading onto sub-scales (latent variables), and sub-scales loading onto one superordinate factor of common factors competency. To accurately model fit across both measures of common factors competency, we only included items that were present in both attribute and non-attribute versions of the ENACT tool. Comparison of model fit was assessed using the following fit indices: chi-square statistic (χ^2) and degrees of freedom, comparative fit index (CFI > 0.95), root mean square error of approximation (RMSEA < 0.08), and Tucker-Lewis index (TLI > 0.90), Akaike's information criterion (AIC, relatively lower values indicating better fit), and Bayesian information criterion (BIC, relatively lower values indicating better fit). For an extensive discussion of these indices, see Schumacker & Lomax, 1996.

Following CFA, two structural models were specified: one with the attribute-version of common factors competency predicted suicide clinical competency and an identical model with the non-attribute common factors competency measure. In both models, wave (pre-training *vs.* post-training), vignette, and treatment arm (active *vs*. control) were entered as covariates.

Objective 2. To examine the relationship between PCW validation and invalidation on suicide clinical competency, we used a four-step process. First, items with small variance (<5% of "1" scores for each item) were removed from the original pool of validation and invalidation items. Next, we used a combined principle component analysis (PCA) and exploratory factor analysis (EFA) approach to explore the underlying latent structure of both validation and invalidation items (Worthington & Whitaker, 2006). For PCA, scree plots were used to select the appropriate components using the "elbow" rule (Stevens, 1996). After identifying the appropriate number of components for each set of items, two principle-axis EFAs with promax rotation (one for validation items, one for invalidation items) were conducted. We selected EFA as the desired approach since our goal was to understand the latent factors or constructs that account for the shared variance among items. Variables were considered to load on a component if they had an absolute factor loading of 0.40 or greater, following recommended guidelines. After rotation, items with factor loadings <0.40 were not retained.

We followed EFA with a common two-step procedure for structural equation modeling (Schumacker & Lomax, 2004), consisting of confirmatory factor analysis (CFA) followed by path analysis with model specification. Validation and invalidation were modeled as separate latent variables with shared covariance, and model fit was assessed using the following fit indices: χ^2 statistic, degrees of freedom, CFI > 0.95, RMSEA < 0.08, TLI > 0.90. For path analysis, the latent factor model of validation and invalidation was used to predicted suicide

clinical competency, measured using Item #7 of the attribute ENACT tool. Validation and invalidation items were treated as dichotomous variables, with a 0 = lack of observed behavior, and 1 = presence of observed behavior. Suicide clinical competency was treated as an ordinal variable. Wave and vignette were included as covariates. In addition to path analysis, we also ran correlations between individual validation items, individual invalidation items, and suicide clinical competency using Pearson correlation coefficients.

Handling of missing data. The study IDs for three video-recorded dyads could not be located. Because missing data represented only 5% of the full sample, we chose to use listwise deletion rather than attempt to compensate for missing values (Widaman, 2006).

Results

Demographic Characteristics

Demographic characteristics are included in Table 10 for the 91 primary healthcare workers who participated in the PRIME mental health trainings. The majority of participants were female (58.0%), upper caste (72.7%), and had prescribing privileges (55.7%). The average participant age was 35 years. Independent *t*-tests, Wilcoxon rank sum tests, and Spearman rank order correlations were used to examine differences between demographic variables and suicide clinical competency, the primary outcome. All demographic variables were unrelated to suicide clinical competency

Validation and Invalidation

Latent factor structure. Eigenvalues for each eigenvector (derived from a PCA with promax rotation) for validation and invalidation are provided as scree plots in Figures 2 and 3, respectively. For validation (Figure 9), a two-factor solution was apparent, and constituted 39% of the total shared variance among the predictors. There were, however, small loadings onto

Factor 2 (See Table 12), leading us to adopt a one-factor model of validation in structural modeling. After EFA of the one-factor model, eight items were removed from the 22-item pool.

For invalidation (Figure 10) , a one-factor solution was apparent, with 46% of the variance accounted for by the predictors. After EFA, two items were removed from the 12-item pool. (See Table 13).

Confirmatory factor analysis. Confirmatory factor analysis (CFA) with validation and invalidation both modeled using single factors (based on EFA results) had satisfactory model fit: χ^2 (273) = 287.5, p = 0.16, RMSEA = 0.06, CFI = 0.97, TLI = 0.98.

Path analysis and suicide clinical competency correlates. SEM was used to test the hypothesized relations between validation, invalidation, and suicide clinical competency. Validation (β = 0.63, $p < .001$), but not invalidation (β = 0.22, $p > .05$), was significantly associated with suicide-specific clinical competency. (See Figure 11.) In individual bivariate correlations, summarizing and paraphrasing, asking clients to identify emotions, and problem-solving after validating were significantly correlated with suicide clinical competency (Table 14). No invalidation items were strongly associated with suicide clinical competency (Table 15).

Comparing Attribute vs. Non-Attribute Measures of Common Factors Competency

Figure 8 includes factor loadings of the higher-order model of common factors competency using the attribute-level ENACT tool. Engagement of emotion, social relations, and planning and process subscales had particularly high loadings (>0.80).

Comparison of higher-order latent variable models of common factors competency is included in Table 11. Model fit was superior in the model using the attribute-level ENACT tool: χ^2 (100) = 142.00, $p < 0.001$, RMSEA = 0.07, CFI = 0.97, TLI = 0.97, relative to the non-attribute ENACT tool: χ^2 (99) = 380.37, $p < 0.001$, RMSEA = 0.18, CFI = 0.84, TLI = 0.85). In

both attribute (β = .58) and non-attribute (β = .80) models, common factors competency was significantly associated with suicide clinical competency.

Discussion

The ability of non-specialist, or "lay" providers to successfully assess for and manage suicidal behaviors is poorly documented in both high-income and low- and middle-income country (LMIC) settings, and is a potential barrier to dissemination and scale up of psychological interventions for suicide and suicide prevention (Oordt, Jobes, & Fonseca, 2009). In particular, knowledge of specific provider behaviors that are associated with competency in delivering suicide prevention services is key in identifying (and ultimately, remedying) gaps in current training approaches used to scale up delivery of suicide prevention services in LMIC settings.

The objectives of the current investigation were to explore the association between lay provider validation (i.e., expression of understanding, legitimacy, and acceptance of another's private experiences), invalidation (i.e., erratic, inappropriate, and extreme responding to another's private experiences), and lay provider skill in assessing for suicide and safety planning. Using an innovative observational role-play paradigm for assessing provider competency, results indicated that validation—but not invalidation—was associated with suicide clinical competency.

These results may suggest that high levels of validation could potentially compensate for high levels of invalidation throughout a provider-patient clinical interaction. Although the study was not able to establish temporal precedence in the validation-competency relationship (i.e., whether higher levels of validation directly increase providers' willingness to address suicide in the therapy room by targeting certain social processes, or whether providers who are already addressing suicide are already more likely to validate), this interplay suggests that training

providers in validation skills may be especially impactful in encouraging risk assessment and intervention. Prior observational data from the parent-child and couple literature have extended these findings to patient populations, with multiple studies indicating that parental invalidation, but not validation, predicted onset or frequency of self-harm attempts (Crowell et al., 2013) but not suicidal ideation (Adrian et al., 2019). Observational methodologies are well-suited to answer questions regarding the generalizability of family processes to provider-patient interactions and, ultimately, patient outcomes.

A number of hypotheses may explain this finding. First, validation items included in the sub-scale (e.g., encourages client to share emotion, shows concern and care, makes appropriate eye contact) may indicate greater provider tolerance of their own anxiety related to managing suicide risk or the onset of patient distress, either of which could increase willingness to assess for suicidality. It may also be the case that invalidation items included in the sub-scale (e.g., corrects client, dictates goal) are not, in practice, behaviors that inhibit suicide clinical competency. However, they may in fact inhibit patient outcomes which we did not test here. Cultural context and values around counseling and emotion expression indicate that practical guidance, advice-giving, and more frequent use of change strategies are common in South Asian settings and may have high cultural acceptability (Jordans, Keen & Pradhan, 2007). The positive association between invalidation and suicide clinical competency may provide some initial evidence for this hypothesis.

As an exploratory aim, I also compared the relative fit of a measure of a behavioral competency instrument using behavioral attributes (i.e., theoretically unhelpful, basic, and advanced behaviors providers are engaging in during patient interactions) *vs*. an instrument with only global competency ratings and no assessment of specific provider behaviors. The attribute

version of common factors competency had improved fit statistics compared to the non-attribute model, indicating that lay common factors competency may best be captured using the attribute tool. However, both attribute and non-attribute models were significantly and positively associated with provider suicide clinical competency, demonstrating both may be used as tools to help clarify what predicts suicide clinical competency in future studies.

Our finding that an attribute (with four response options) of lay provider competency (with four response options) outperformed a non-attribute scale with three response options also has implications for development and adaptation of competency tools in LMIC cultural contexts. In the original development of the Enhancing Assessment of Common Therapeutic Factors Tool (ENACT), decisions to use three response options, exclude behavior counts, and exclude attributes were made to minimize provider time and cognitive burden in LMIC settings with non-specialists, high provider case load and limited patient interaction time (Kohrt et al., 2015b). This decision was also made to enhance scalability of the tool in training and supervision in other LMIC contexts, in alignment with key implementation science goals (Murray et al., 2014). With the addition of attributes and an additional response option (1-4, rather than 1-3 in the original ENACT tool), the amount of time required to code each video was 30 minutes, an additional 20 minutes greater than average coding time for the non-attribute tool (10 minutes). Furthermore, although we had sufficient interrater reliability at the attribute level (Cronbach's alpha = 0.81) and group efforts were made to adapt items to the Nepali setting providers operated in (e.g., changing wording of items to reflect the cultural context, adding additional examples to provide guidance on when to select an attribute), raters expressed confusion regarding how many instances of a behavior were required to select an attribute. This confusion mirrored earlier discussions in the original tool development process, whereby behavior counts were omitted due

to provider difficulty keeping track of counts when making live ratings (Kohrt et al., 2015b), despite their successful use in other LMIC settings (Kabura et al., 2005). Decisions surrounding which tool to incorporate in future trainings and supervision, particularly for suicide prevention, highlight ongoing debates within the global mental health field between "excellence" and "relevance," with researchers emphasizing precision, detail, and internal validity, and practitioners focusing on pragmatic application issues and a "good enough" approach (Tol et al., 2012). The attribute tool may have particular utility in research contexts where clinical competency is tested as a mediator, moderator, or outcome of novel training initiatives. In contrast, the non-attribute tool may have enhanced utility in everyday, routine clinical practice (e.g., supervision, self-monitoring of progress, peer ratings in group provider settings). Links between both tools and patient outcomes could be a pragmatic next step in determining which tool should be used in which global mental health context, and when.

Limitations

This study represents efforts to begin to understand what modifiable provider behaviors predict likelihood of asking about self-harm and developing safety plans with suicidal clients. The strengths to consider in this study include observational coding of live interactions and close consideration of psychometric properties of implemented tools, which add to our confidence in our findings. However, it is important to note that the study had several limitations that affect its generalizability. Validation and invalidation items were added to the ENACT tool and not clinically or culturally validated with a patient population, coded interactions were not of specific provider-patient interactions, and we could not establish temporal precedence between validation, invalidation, patient disclosure and discussion of suicide, and provider suicide clinical competency. There may have also been differences within dyads (e.g., language, caste, or gender

differences) that impacted study findings that we were not able to assess due to lack of variability in these demographics in our data.

Future Directions

Additional studies could refine our current findings in five ways. First, microanalytic coding of provider-patient behaviors would increase understanding of how provider validation and invalidation are linked to suicide clinical competency. For instance, more precise coding would aid in understanding how provider validation and invalidation patient influence disclosure or non-disclosure of suicide and willingness to develop safety plans. Psychophysiological data (e.g., heart rate variability, skin conductance, salivary cortisol) would also aid in testing hypotheses linking provider emotional reactivity to suicide clinical competency behaviors. Second, future studies should link specific provider behaviors and competency to patient behaviors and to patient outcomes, in order to understand how if differences in provider validation and invalidation have clinically relevant impact on patient suicidality and related psychopathology. Studies examining how provider behaviors more directly influence suicide risk would be particularly informative, given prior research indicating that use of psychiatric crisis services may increase risk for suicide (Coyle et al., 2018). Third, studies should link provider validation and invalidation to patient engagement and retention in services, given prior data indicating low number of sessions attended in primary care settings, and high dropout (Wang, 2007). Fourth, experimental data is needed to confirm theoretically “unhelpful” and “helpful” invalidation behaviors in the current tool, in order to understand what types of counseling strategies are protective against suicide risk and should be scaled up. Finally, additional qualitative research on feasibility and acceptability of the attribute tool with providers, trainers,

and organizations delivering task-sharing trainings would aid in determining which tools should be used in lay provider suicide prevention trainings, by whom, and when.

Conclusion

Research focused on understanding lay provider-patient processes in the context of suicide is needed to drive training and dissemination efforts with non-specialist providers with limited knowledge and experience delivering suicide prevention services. Our findings indicated that lay provider validation is associated with increases in asking about suicide and developing a safety plan. These results highlight the importance of identifying modifiable provider behaviors that may increase or hinder suicide clinical competency in brief interactions with suicidal patients. Our finding of improved model fit with an observational measure of common factors competency with specific provider ratings indicate that a more granular measurement of competency may have utility in particular clinical settings. Future research using micro-coding of dyadic interactions with suicidal patients can help refine our understanding how validation and invalidation influence both provider's ability to manage suicide risk and, ultimately, patient outcomes.

Table 10
Baseline Demographics of Lay Nepali Health Workers (N = 88)

	Participants
Age, Mean (SD, Range)	35.0 (8.7, 21-56)
Female, No. (%)	51 (58.0)
Provider Type, No. (%)	
Prescriber	49 (55.7)
Non-Prescriber	39 (44.3)
Caste, No. (%)	
Adibasi janajati (indigenous ethnic groups)	12 (13.6)
Janajati (hill ethnic groups)	8 (9.1)
Dalit (lower caste)	4 (4.5)
Brahman (upper caste)	53 (60.2)
Chhetri (upper caste)	11 (12.5)
Education, No. (%)	
School Leaving Certificate not completed (not high school graduate)	4 (4.5)
School Leaving Certificate Completed (high school graduate)	33 (37.5)
Intermediate degree (2 years of higher education)	21 (23.9)
Bachelor's degree (3 years of higher education)	12 (13.6)
Medical degree (5 years of higher education)	9 (10.2)
Master's degree	9 (10.2)
Years Working in Healthcare, No. (%)	
<1 year	7 (8.0)
1-5 years	25 (28.4)
6-10 years	15 (17.0)
>10 years	41 (46.6)

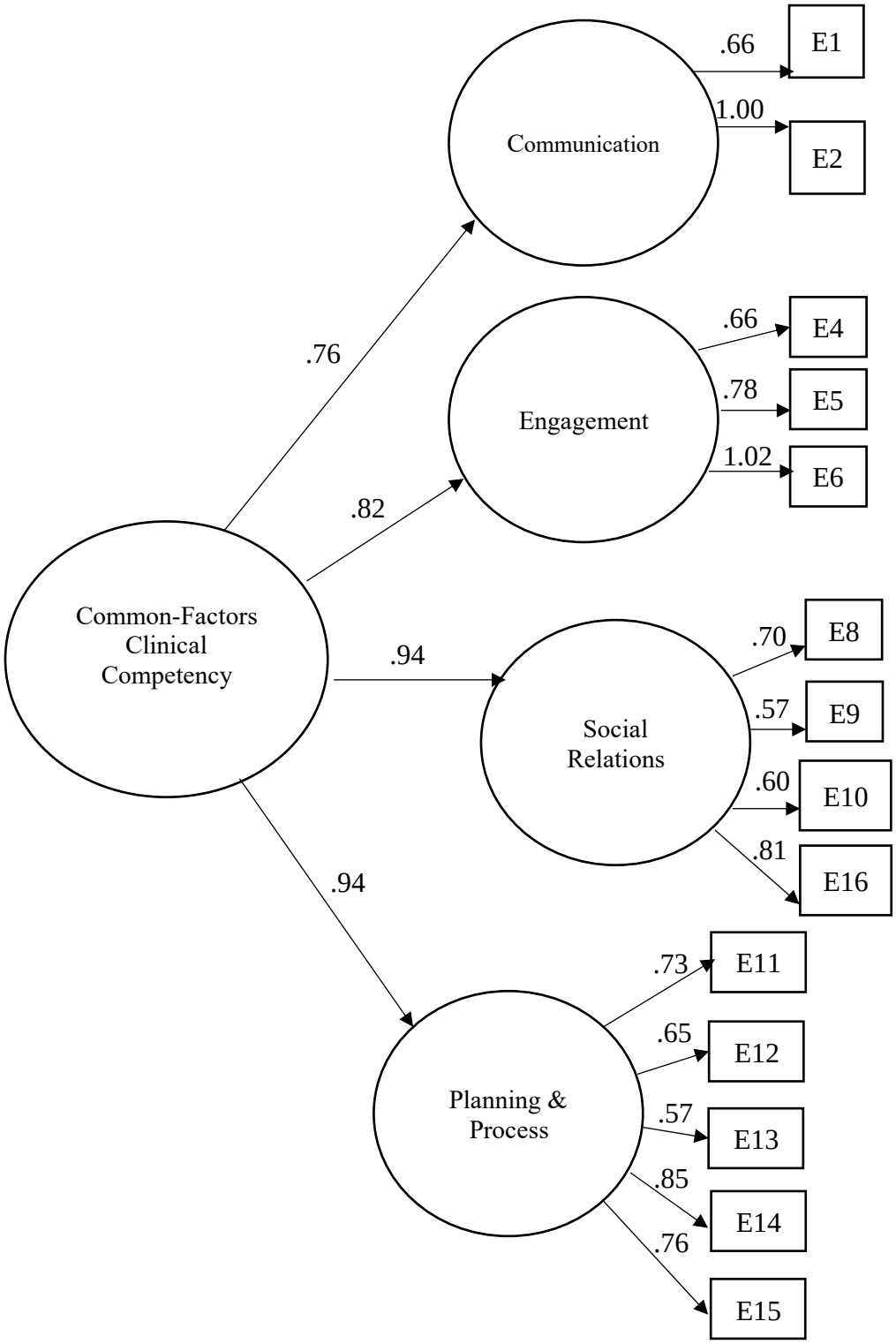

Figure 8. Higher-Order Model of Attribute Measure of Common Factors Competency Among 91 Lay Nepali Lay Health Workers

Note. Circles reflect latent variables and squares reflect measured variables. Straight arrows reflect factor loadings. Straight arrows reflect standardized factor loadings. All factor loadings are statistically significant at $p < .001$. For ease of presentation, error variances are not depicted.

Table 11
Comparative Fit Indices for Non-Attribute and Attribute Measures of Common Factors Competency Among Lay Nepali Health Workers (N = 91)

Model	$\chi 2$	df	CFI	TLI	RMSEA	AIC	BIC	90% CI	β (Std.)
Non-Attribute ENACT	380.37	99	0.84	0.85	0.18	5520.21	5588.36	0.04 – 0.07	.58**
Attribute-Based ENACT	142.00	100	0.97	0.97	0.07	4421.21	4108.61	0.03 – 0.06	.80***

Note. Standardized β indicates the standardized regression coefficient from ENACT to suicide clinical competency. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = the root mean square error of approximation; CI = confidence interval; AIC = Akaike information criterion; BIC = Bayesian information criterion.

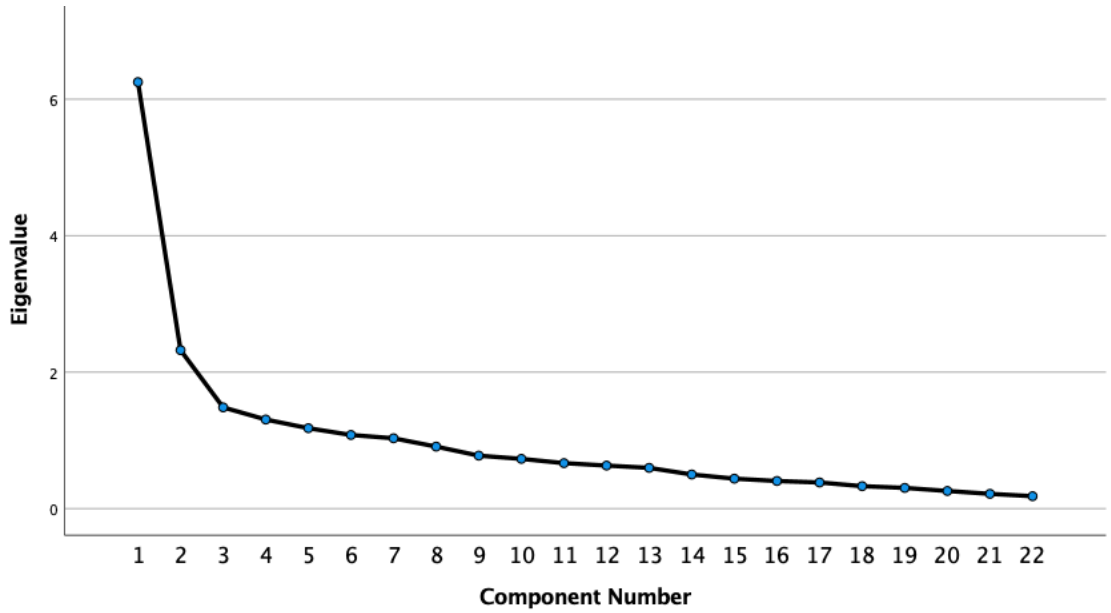

Figure 9. Scree Plot of Eigenvalues by Factors for Validation Items from Attribute-Level ENACT Tool (N = 91 Lay Nepali Health Workers)

Table 12
Validation Item Descriptive Statistics and Factor Loadings for Two-Factor Solution (N = 91 Lay Nepali Health Workers)

#	Item	Item Description	Mean (SD)	Factor 1 Loading	Factor 2 Loading
1	1.1 (Basic)	Allows for silences	0.76 (0.43)	*0.636*	*-0.368*
2	1.2 (Basic)	Eye contact	0.88 (0.33)	0.443	-0.158
3	1.3 (Basic)	Open posture	0.90 (0.30)	*0.625*	*-0.367*
4	1.4 (Basic)	Supportive body language	0.86 (0.35)	*0.700*	*-0.377*
5	1.1 (Adv)	Varies body language throughout session	0.13 (034)	0.236	0.104
6	2.1 (Basic)	Open-ended questions	0.87 (0.34)	*0.622*	*-0.349*
7	2.2 (Basic)	Summarizing & paraphrasing	0.80 (0.40)	0.557	-0.016
8	2.3 (Basic)	Allows complete client statements	0.82 (0.38)	*0.604*	*-0.446*
9	2.1 (Adv)	Encourages further explanation	0.14 (0.34)	0.295	0.009
10	2 (Adv)	Uses first-person clarifications	0.09 (0.29)	0.391	0.348
11	5.1 (Basic)	Encourages sharing of feelings	0.63 (0.49)	0.589	-0.032
12	5.2 (Basic)	Normalizing	0.27 (0.45)	0.289	0.216
13	5.3 (Basic)	Asks client to reflect on emotion expression	0.08 (0.27)	0.293	0.119
14	5.3 (Adv)	Validates emotions & reframes harm	0.16 (0.37)	*0.394*	*0.396*
15	6.1 (Basic)	Warm, friendly, & genuine	0.78 (0.42)	0.669	-0.171
16	6.2 (Basic)	Continuously shows concern & care	0.54 (0.50)	0.578	0.273
17	6.3 (Basic)	Asks client to identify emotions	0.26 (0.44)	*0.583*	*0.411*
18	17.1 (Basic)	Restates client emotions	0.43 (0.50)	0.595	0.300
19	17.2 (Basic)	Problem solves after validating	0.34 (0.48)	*0.609*	*0.355*
20	17.3 (Basic)	Simple validation of emotion statements	0.19 (0.39)	0.414	0.266
21	17.4 (Basic)	Validation based on learning history	0.08 (0.27)	0.282	0.258
22	17.1 (Adv)	Radical genuineness	0.10 (0.30)	0.263	0.129

Note. Factor loadings derived from common (exploratory) factor analysis with oblique (promax) rotation. “Basic” indicates a basic common factors competency skill. “Adv” indicates an advanced common factors skill. Items in orange were removed from path analysis due to low factor loadings.

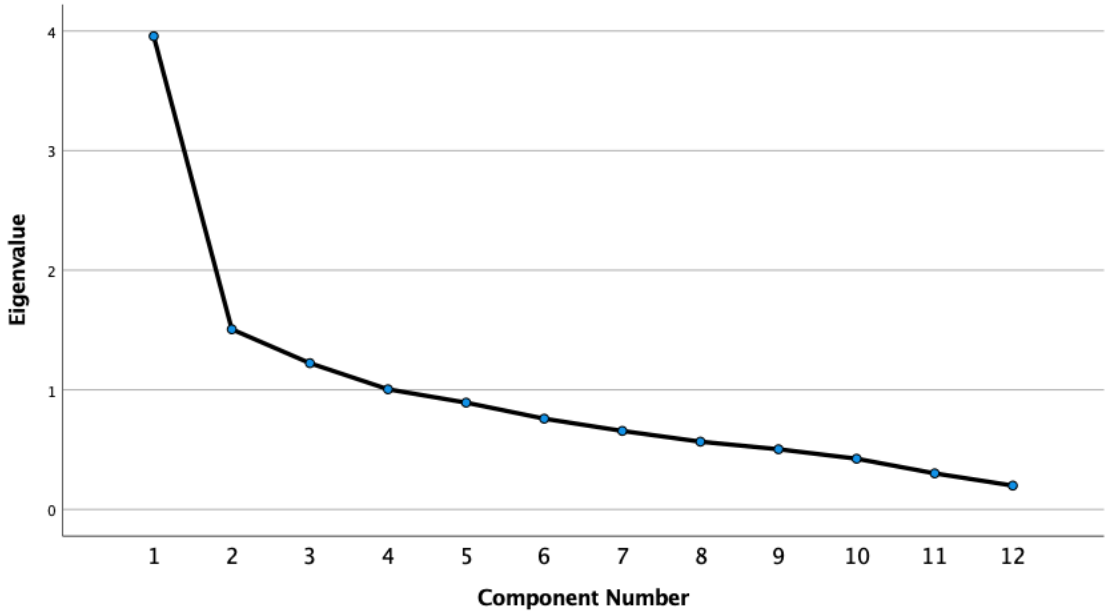

Figure 10. Scree Plot of Eigenvalues by Factors for Invalidation Validation Items from Attribute-Level ENACT Tool (N = 91 Lay Nepali Health Workers)

Table 13
Invalidation Item Descriptive Statistics and Factor Loadings for Two-Factor Solution (N = 91 Lay Nepali Health Workers)

#	Item	Item Description	Mean (SD)	Factor 1 Loading
1	2.3 (Harmful)	Corrects client	0.07 (0.25)	0.54
2	4.3 (Harmful)	Asks embarrassing personal questions	0.05 (0.23)	0.28
3	5.2 (Harmful)	Minimizes emotions or worry thoughts	0.20 (0.40)	0.65
4	6.1 (Harmful)	Critical of concerns	0.07 (0.25)	0.56
5	6.2 (Harmful)	Dismissive of concerns	0.11 (0.31)	0.61
6	8.3 (Harmful)	Criticizes client for impact of problems	0.10 (0.30)	0.50
7	8.4 (Harmful)	Makes client feel guilty for impact on others	0.10 (0.30)	0.18
8	9.2 (Harmful)	Endorses harmful beliefs of client's or social network's view of problem	0.05 (0.23)	0.14
9	11.3 (Harmful)	Dictates goal	0.14 (0.35)	0.60
10	15.1 (Harmful)	Lectures without asking for feedback	0.45 (0.50)	0.57
11	17.2 (Harmful)	Offers advice without validating first	0.33 (0.47)	0.72
12	17.3 (Harmful)	Blames client without validating	0.09 (0.29)	0.58

Note. Factor loadings derived from common (exploratory) factor analysis with oblique (promax) rotation. Items in orange were removed from path analysis due to low factor loadings.

Table 14
Bivariate Correlations Between Validation Items and Suicide Clinical Competency Among Lay Nepali Health Workers (N = 91)

Item	Item Description	Suicide Clinical Competency
1.1 (Basic)	Allows for silences	0.10
1.2 (Basic)	Eye contact	0.13
1.3 (Basic)	Open posture	0.11
1.4 (Basic)	Supportive body language	0.10
2.1 (Basic)	Open-ended questions	0.08
2.2 (Basic)	Summarizing & paraphrasing	0.28*
2.3 (Basic)	Allows complete client statements	0.13
5.1 (Basic)	Encourages sharing of feelings	0.19*
6.1 (Basic)	Warm, friendly, & genuine	0.13
6.2 (Basic)	Continuously shows concern & care	0.11
6.3 (Basic)	Asks client to identify emotions	0.50***
17.1 (Basic)	Restates client emotions	0.14
17.2 (Basic)	Problem solves after validating	0.25*
17.3 (Basic)	Simple validation of emotion statements	0.13

Note. *$p < .05$; **$p < 0.01$; *** $p < 0.001$

Table 15
Bivariate Correlations Between Invalidation Items and Suicide Clinical Competency Among Lay Nepali Health Workers (N = 91)

Item	Item Description	Suicide Clinical Competency
2.3 (Harmful)	Corrects client	-0.06
4.3 (Harmful)	Asks embarrassing personal questions	-0.16
5.2 (Harmful)	Minimizes emotions or worry thoughts	-0.03
6.1 (Harmful)	Critical of concerns	-0.14
6.2 (Harmful)	Dismissive of concerns	-0.12
8.3 (Harmful)	Criticizes client for impact of problems	-0.03
11.3 (Harmful)	Dictates goal	0.03
15.1 (Harmful)	Lectures without asking for feedback	-0.14
17.2 (Harmful)	Offers advice without validating first	-0.19
17.3 (Harmful)	Blames client without validating	-0.01

Note. $*p < .05$; $**p < 0.01$; $*** p < 0.001$

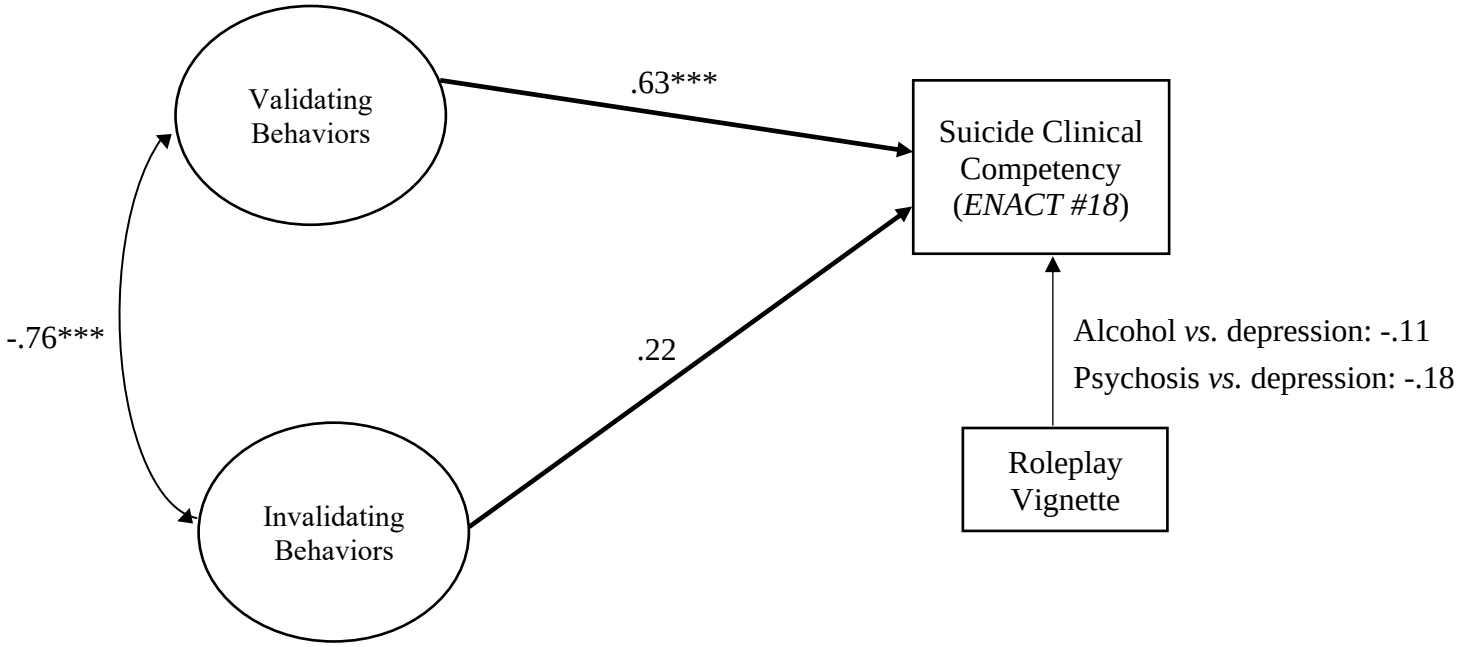

Figure 11. Standardized Path Analysis Regression Coefficients for Validation and Invalidation as Predictors of Suicide Clinical Competency Among Lay Nepali Health Workers (N = 91)
Note. *** $p < .001$. Circles reflect latent variables and squares reflect measured variables. Straight arrows reflect regressions. Both validating behaviors and invalidating behaviors were modeled as single-factor latent variables. For ease of presentation, error variances and individual item loadings for validation and invalidation are not depicted.

Chapter V

Impact of Nepali Lay Provider Suicide Clinical Competency on Patient Depression and Suicidal Ideation

Abstract

Therapist competence may be an important factor in determining clinical outcomes for suicidal patients, particularly in low- and middle-income countries (LMIC) with rising suicide rates and a scarcity of providers. However, there are virtually no published studies of therapist competence *vs*. patient outcome from randomized controlled trials in LMIC. We used generalized estimating equations to explore the effects of lay provider competency in delivering suicide prevention services on patient depressive symptoms and suicidal ideation (SI) (N = 25 providers and 96 patients) following delivery of mental health training using World Health Organization guidelines for task sharing.

There were mixed results on the relationship between lay provider competency and patient outcomes. An increase in post-training suicide clinical competency did not predict change in depressive symptoms (β = 3.14, robust Z = 1.86). However, there were significant products between pre- and post-training suicide clinical competency (β = -5.92, robust Z = -3.51), such that for providers with low pre-training suicide clinical competency, an increase in post-training suicide clinical competency predicted a worsening of depressive symptoms, relative to a reduction in depressive symptoms for providers with high pre-training suicide clinical competency. There was also a significant product between post-training common factors competency and suicide clinical competency (β = 3.49, robust Z = 3.79), such that for providers with higher suicide clinical competency, an increase in provider common factors competency predicted a reduction in depressive symptoms.

Provider post-training explicit bias predicted a greater odds of improving SI (OR = 8.15; robust Z = 4.98), and there was a significant product between post-training provider implicit bias and suicide clinical competency (OR = 2.77, robust Z = 2.97). At high provider suicide clinical

competency (vs. low provider suicide clinical competency), the odds of patient suicidality improving increased an additional 17.5%. Future replication focused on sub-group analyses are essential in further clarifying link between competency and patient outcomes in both low- and high-income settings.

Introduction

Suicide and suicidal behavior are rapidly rising, critical global public health issues (Bertolote & Fleischmann, 2002). Suicide is among the 10 leading causes of death in many countries, with every record of completed suicide accompanied by approximately twenty attempted acts (Gelder et al., 2001). In 2016 alone, 793,000 people died of suicide internationally, representing a global mortality rate of 10.5 people per 100,000, or approximately one death every 40 seconds (World Health Organization, 2016). Despite decades of research identifying risk and protective factors for suicide and suicidal behavior (e.g., suicidal ideation, suicide attempts, completed suicide, and non-suicidal self-injury), our ability to accurately predict—and ultimately, prevent—suicide has remained virtually unchanged over the past five decades (Franklin et al., 2017).

Regional and cross-national data on suicide and suicidal behavior vary considerably (WHO, 2014). Paralleling international population distribution trends, 79% of the world's suicides are in low- and middle-income countries (LMIC). In the past decade, in particular, the world witnessed a shift in rates of suicide rates to Asia, due to population growth within the region combined with declining suicide rates in many Western HIC. For instance, the 11 countries in the WHO's South-East Asia Region comprise nearly one-quarter of the global population, yet account for 39% of all suicides. Despite this concentrated burden of suicide, however, only 10% of studies of global studies on suicide and mental health are conducted in LMIC, with low-income countries in South-East Asia routinely excluded (Guzmán et al., 2019). Of the 10% of studies originating from LMIC, an even smaller percentage meet criteria for scientific rigor (i.e., involve more than one-off cross-sectional studies with a small sample sizes

and an exclusive focus on high-risk populations), concealing crucial data on suicide epidemiology in these high-risk regions.

In LMIC, chronic lack of service availability lies in stark contrast to population mental health needs (WHO, 2010). The WHO estimates that more than one million mental health workers are needed to reduce the treatment gap in LMIC (Fulton et al., 2011). Task-sharing, or the involvement of non-specialist (or lay) health providers to deliver mental health services, is a critical component of closing the treatment gap. In recent years, a number of studies have indicated that task sharing is acceptable and feasible (Mendenhall et al., 2014; Padmanathan & De Silva, 2013), and that task-shared interventions exert moderate-to-strong effects in reduction of symptoms of common mental disorders (Singla et al., 2017). However, lay providers' ability to provide competent suicide prevention services and ultimately reduce patient suicidality have received minimal attention in the global mental health arena (Aggarwal, Patton, Berk, & Patel, 2021). As a result, it is largely unclear to what extent task sharing trainings for lay providers impact patient suicidality, despite the tremendous economic, social, and global psychological strain of suicidal behavior.

In Chapters 1 & 2, I describe the theoretical and pragmatic value of leveraging the primary care health network to deliver brief suicide prevention services by non-specialist ("lay") healthcare workers (PCW) in LMIC. I also described and examined how two salient provider barriers (high provider stigma and low provider competency) may influence competent delivery of suicide prevention services.

In this Chapter, I take an exploratory approach to examining the effects of lay provider suicide clinical competency—as well as barriers to adequate provider suicide clinical competency— on patient depression and suicidality. Extensions of existing theory on the

generation and maintenance of suicidality behavior can link provider stigma and lack of provider competency to the development and maintenance of suicidal behavior in real-world patient populations. One contemporary theory on the etiology of suicide (Three-Step Theory) is rooted in an ideation-to-action framework, and argues that suicidality results from three 'hits' occurring in combination with one another (Klonsky & May, 2015). First, psychological hopelessness and pain lead to suicidality (suicidal ideation, planning, and intention to act). In Step 2, the level of social connectedness modulates the severity of suicidality, with greater social disconnection leading to increased suicidality. In Step 3, suicidality can translate to suicidal behavior (e.g., suicide attempts and completed suicide) when dispositional factors (e.g., biological pain sensitivity), acquired capability (e.g., histories of physical abuse, emotion dysregulation, impulsivity), and practical facilitators (e.g., access to means) are in place.

Figure 12 highlights how healthcare provider stigma and poor suicide competency intersect with Three-Step Theory (Klonsky & May, 2015). The left-hand side of the figure depicts each of the three steps in Three-Step Theory, and orange text in the middle represent clinical antidotes to specific steps (e.g., reducing distress, increasing hope, increasing positive therapeutic alliance, restricting access to means) to each of the three steps thought to generate and maintain suicidality. Poor PCW competency (i.e., inadequate assessment and management of suicidality) interferes with all antidotes to the three steps, due to lack of targeted knowledge and skill in addressing suicidality.

According to the model, healthcare provider stigma reduces PCW competency. A number of studies support this relationship. In high-income country (HIC) settings, qualitative data indicate that judgmental and dismissing statements from healthcare providers prevent them from asking about suicide (e.g., Richards et al., 2019). Students in HIC who have personally known

someone who died by suicide are over twice as likely to screen for suicide compared to students who did not personally know someone, and this difference is hypothesized to be due to stigma (Petgrave, 2018). In LMIC, providers will choose not to provide or train in mental healthcare due to stigma against mental illness, including severe mental illness (Adewuya & Ayotunde, 2007; Minas et al., 2011). Figure 2 also suggests that healthcare provider stigma can directly increase suicidality by activating Step 2 (i.e., level of social connectedness). In HIC and LMIC, stigmatizing attitudes and beliefs about suicidal patients by providers are associated with increase behavioral intentions to socially distance from the patient (Eskin et al., 2011). Providers with stigmatizing attitudes in Asian countries are also more likely to be dismissive of suicide attempters (e.g., Kishi et al., 2011; Tzeng et al., 2009), which can lead to poor therapeutic alliance.

Despite the theoretical linkages between high provider stigma, poor provider clinical competency, and patient suicidality, there are no studies in HIC or LMIC that examine the interconnectedness of provider competency, stigma, and suicidal behavior. An improved understanding of the impact of lay provider competency and stigma on patient outcomes in a LMIC context would provide a more nuanced picture of how these variables work together to impact patient suicidal behavior, and may also point to potential new avenues for lay healthworker training and suicide prevention intervention innovation.

Study Objective

The objective of the current study is to conduct a preliminary evaluation of the effects of suicide-specific competency, common factors competency, and lay provider stigma on patient depression and suicidal ideation (SI). Due to lack of empirically tested theory linking stigma, suicide competency, and patient outcomes in either HIC or LMIC, exploratory analysis will be

used to estimate the preliminary impact of suicide clinical competency, stigma, and common factors competency on patient outcomes over six months of treatment. Due to the exploratory nature of the study, no hypothesis-driven testing was conducted.

Methods

Study Setting

An overview of the study site (Chitwan, Nepal) is provided in Chapter 1.

Parent Study and Patient Flow

An overview of the parent study, collaborating partners, and ethical procedures are also described in Chapter 1. The parent study enrolled 205 lay PCW, who were randomized to either an "active" treatment condition (WHO Mental Health Gap Action Programme Intervention Guide (mhGAP-IG) combined with novel stigma reduction intervention rooted in social contact theory) (Kohrt et al., 2020; WHO, 2016) or a comparison condition (mhGAP-IG only) delivered through the Programme for Improving Mental healthcarE (PRIME) (Lund et al., 2012). Quantitative outcomes of interest were collected with the same lay PCW over three time points: baseline/pre-training (Wave 0), 4-months post-training (Wave 1), and 16-months post-training (Wave 2).

In addition to longitudinal follow-up of lay PCW, a cohort of patients ($N = 95$) were enrolled in the study after Wave 2 (16-months post-training) to explore secondary training effects on patient outcomes, including stigma-related barriers to care, daily functioning, and diagnostic-level symptoms. Figure 13 includes a timeline of provider and patient measurement. Baseline patient measurement took place within two months after Wave 2 (i.e., at Wave 3). Follow-up patient data was collected at Wave 4 (22-months post-training). Patient sample size was based on

calculations performed for a quality of care study for PRIME. All patient data were collected using Open Data Kit (Brunette et al., 2013) on Android tablets.

Patients were recruited to the study after voluntary initiation of services through PRIME. All patient participation was voluntary, and participation in treatment was not contingent upon research participation. After providing consent, patients were enrolled in the study at Wave 3 (16-months post-training) after having received a primary mental health diagnosis from the study team. Diagnoses were made in accordance with WHO mhGAP IG guidelines, and included categories PCW received training in across both study arms (depression, psychosis, alcohol use disorder, and epilepsy). Patients in both study arms were offered the same treatment options, consisting of mhGAP-IG for common mental disorders, the Healthy Activities Program (HAP) for depressive symptoms, and Counseling for Alcohol Program (CAP) for problematic alcohol use). Lay PCW were allowed to tailor any blend of treatment methods to the individual patient. All providers seeing patients were supervised by psychiatrists in Chitwan, who provided information on management and received referrals for patients with worsening symptoms or deemed high risk. Patients were compensated in transportation cost reimbursement, food and on-site lodging when required.

Patient Study Measure

See Chapter 1 for an overview of study measures. In addition to provider-level tools, an additional patient self-report tool was used to assess for symptoms for depression and suicidality.

Patient Health Questionnaire (PHQ-9): Patient Health Questionnaire (PHQ-9): The PHQ-9 is 9-item self-report assessment of depression symptoms and 1-item impact on functioning (Kroenke et al., 2001). Item 9 assesses suicidal behavior over the prior two weeks. The PHQ-9 has been validated for use in a primary care setting in Nepal (Kohrt et al., 2016). The scale of

items on the Nepali version is 0 (“Not at all”) to 3 (“Always”), for a total continuous score range of 0 to 27. Higher scores indicate greater depressive symptoms. The validated Nepali cutoff is 10 or greater. In Nepal, sensitivity = 94%, specificity = 80%, and Cronbach’s $\alpha = 0.84$.

To assess changes in patient suicidality, we ran item-specific analysis for PHQ-9 Item #9 (English backtranslation: “*During the past two weeks, how much have you had the feeling of hurting yourself, dying, or committing suicide? (For example, cutting your hands, taking poison, jumping from somewhere, hitting your head against the wall)”*).

Analytic Plan

Analyses for this exploratory study were conducted using the *gee* statistical package in R (Version 1.3). Normality, homoscedasticity, outliers, and homogeneity of variance for model variables was tested, and transformations were conducted for any violated assumptions. To examine the effects of key lay provider-level attitudes and behaviors on patient depression and suicidality, we used provider data from Wave 2 of the parent study (i.e., 16-months post-training). This was because Wave 2 provider assessments were most proximal to patient enrollment (which occurred within 2 months following Wave 2) and could theoretically exert the most influence on patient outcomes in Wave 4 (i.e., 6-months following patient enrollment). We examined two outcomes: change in patient depression (operationalized as a continuous difference score between the total PHQ-9 score at Wave 4 minus the total PHQ-9 score at Wave 3) and change in patient suicidality (operationalized as a difference score in PHQ item #9 rating from Wave 4 minus the PHQ item #9 rating from Wave 3). Change in suicidality were dichotomized, with 0 = no change or a worsening in suicidality and 1 = improvement in suicidality.

Due to low variability in provider ENACT #18 scores at Wave 2, we treated it as a dichotomous predictor variable, with a score of 0 representing no suicide clinical competency (i.e., the provider did not ask about suicide or conduct safety planning) and a score of 1 representing any suicide clinical competency (i.e., provider asked about suicide and may have conducted additional safety planning).

To examine the effects of suicide clinical competency on patient depression and suicidality, we used generalized estimating equations (GEE), a specialized extension of generalized linear models that account for repeated measures and nesting within datasets (Liang & Zeger, 1986). GEE is considered an alternative to individual-level regression that allows for clustering (Hayes & Moulton, 2017), which was apparent in the dataset since multiple patients were seen by single providers. This is done by estimating a structured correlated error matrix of residuals. A strength of GEE is that it provides unbiased estimates of fixed effects even if residual correlation is not correctly specified, which is an improvement over standard multi-level models. GEE accomplishes this through a "sandwich estimator" that utilizes robust standard error estimates to perform inference.

Seven GEE models were initially run, with PHQ-9 difference first entered as the outcome and Wave 3 suicide clinical competency (ENACT item #18) as the predictor. A Benjamini-Hochberg correction was used to reduce the false discovery rate, or Type I error. We also included separate product terms for key study variables (social distance, implicit bias, mental health knowledge & attitudes, common factors competency) to examine their moderated effect on the relationship between suicide clinical competency and depression change. Continuous predictor variables (i.e., SDS, IAT, mhGAP Knowledge, mhGAP Attitudes, total ENACT score) were standardized. Patient sex (male *vs.* female), treatment arm (active *vs.* control) and ENACT

vignette were included as covariates, since females are more likely to report suicidal ideation (WHO, 2014) and healthworkers are more likely to assess for suicidality in patients with depressive symptoms (Davidsen 2011). Vignette type was dummy coded into two categories (depression *vs*. psychosis, depression *vs*. AUD), with depression as the referent category.

Following these initial GEEs, we ran a parallel set of seven GEEs to explore the effect of provider suicide clinical competency on change in patient suicidality, with and without moderation by other study variables. Change in patient suicidality was treated as a dichotomous variable, with 0 = no change or worsening of suicidality, and 1 = improvement in suicidality). Because change in suicidality was dichotomized, logistic regression within a GEE framework was used. All other procedures were identical to those used in evaluating patient depression change, including use of a Benjamini-Hochberg correction. To plot moderation effects for patient depression and suicidality, we used open-source software (interactive data visualization tool) providing improved utilities for depiction of moderations (McCabe, King, & Kim, 2018).

Handling of missing data. The number of patients with non-missing data were 78 (82%). One provider (who saw 14 patients) lacked Time 3 ENACT measurement, as did another two providers who saw one patient each. The total missing value percentage was 18, which is below minimum thresholds recommended for replacement of missing values using approaches that yield small standard errors (e.g., those that attempt to estimate the value of some population parameter, including Full Imputation Maximum Likelihood) (Widaman, 2006). Rather than using alternative strategies for handling of missing data (e.g., multiple imputation) which result in high bias and low precision, we chose to use listwise delete missing data, a conservative approach that would reduce introduction of additional bias into the dataset. (See Newman (2003) for a review of strategies for handling missing data in longitudinal samples.

Results

Patient & Provider Demographics

Table 16 providers provider-level demographics (N = 25). The mean provider age was 34 years, with a range of 22 to 56 years. The majority of providers were male (84.6 percent), high caste (Brahman and Chettri; combined 69.2%), and had a Bachelor's degree or greater (53.8%). All providers had prescribing privileges. The average number of patients seen by provider was 4.5, with a range of one to 14.

A total of 95 patients were enrolled in the study at Wave 3 and followed over a six-month period. The average patient age was 40 years (SD = 13), with a range of 18 to 70. The majority of patients were female (61%). The average number of family members per household was 5.22 (SD = 2.33).

Regarding suicide clinical competency at, at Wave 2 (immediately before patient recruitment), eight providers did not ask about suicide (32%), 14 asked about suicide (54.8%), and two conducted safety planning (8%).

Patient Depression, Suicidality, and Correlates

At Wave 3 (before mental health services were delivered), 67 patients reported no suicidal ideation (SI) (69.8%), 22 reported mild SI (22.9%), and 6 reported frequent or daily SI (6.3%). At Wave 4 (follow-up), 85 patients reported no SI (92.4%), 6 reported mild SI (6.5%), and 1 reported frequent or daily SI (1.1%).

Provider mental health knowledge, attitudes, and common factors competency were significantly different in patients with remitting vs. worsening or static depressive symptoms (Table 17). Provider mental health knowledge was higher (indicating greater acquisition of mental health knowledge) in the group of patients with worsening or static depression. In the

remitting depressive symptom patient group, provider mental health attitudes were higher (indicating greater levels of stigma) and common factors competency was lower.

Table 18 presents bivariate correlations between all model variables. Mental health knowledge ($p < .05$) and attitudes ($p < .01$) were associated with patient depression change. No variables were associated with patient suicidality change, except for patient depression change ($p < .01$). There was no significant relationship between suicide clinical competency, patient depression change, or patient suicidality change.

Generalized Estimating Equations

Fourteen GEEs with Benjamini-Hochberg correction were run to examine the impact of lay provider suicide clinical competency on changes in patient depression. GEE results for patient depression change are provided in Table 19, and those for patient suicidality change are provided in Table 20. Key results are summarized below:

Model 1: Total PHQ-9 and Item #9 Change Predicted by Provider Suicide Clinical Competency. For patient depression (Table 19), an increase in suicide clinical competency did not significantly predict an increase in depressive symptoms (β = 3.14, robust Z = 1.86). For patient suicidality (Table 20), greater provider suicide clinical competency did not significantly predict a lower odds of patient suicidality improving (OR = 0.23; robust Z = 0.20).

Model 2: Total PHQ-9 and Item #9 Change Predicted by Provider Suicide Clinical Competency, Moderated by Baseline Provider Suicide Clinical Competency. For patient depression (Table 19), an increase in suicide clinical competency did not significantly predict an increase in depressive symptoms (β = 3.30, robust Z = 1.87). Baseline provider suicide clinical competency significantly predicted an increase in patient depressive symptoms (β = 5.94, robust Z = 5.71). The product between baseline and Time 3 provider suicide clinical competency

(visualized in Figure 14a) was statistically significant (β = -5.92, robust Z = -3.51). For providers with low pre-training suicide clinical competency, an increase in Time 2 provider suicide clinical competency predicted a worsening of depressive symptoms. For providers with high pre-training suicide clinical competency, an increase in Time 2 suicide clinical competency predicted improvement in depressive symptoms.

For patient suicidality (Table 20), greater Time 2 provider suicide clinical competency did not significantly predict a lower odds of patient suicidality improving (OR = 0.71, robust Z = 0.80). Greater baseline provider suicide clinical competency predicted a mildly greater odds of patient suicidality improving, but was not significant (OR = 1.02; robust Z = 1.01). The product between baseline and Time 3 provider suicide clinical competency was not statistically significant (OR = 0.34, robust Z = 0.53). The corresponding moderation plot is shown in Figure 15a.

Model 3: Total PHQ-9 and Item #9 Change Predicted by Provider Suicide Clinical Competency, Moderated by Provider Social Distance. For patient depression (Table 19), an increase in suicide clinical competency did not significantly predict a change in depressive symptoms (β = 1.90, robust Z = 0.92). Provider social distance also did not significantly predict change in patient depression (β = 1.70, robust Z = 0.93). The product between provider social distance and suicide clinical competency (Figure 14b) was not significant (β = -2.50, robust Z = -1.36).

For patient suicidality (Table 20), greater provider suicide clinical competency did not significantly predict a lower odds of patient suicidality improving (OR = 0.04, robust Z = 0.10). Greater provider social distance significantly predicted a greater odds of patient suicidality

improving (OR = 8.15; robust Z = 4.98). The product between provider suicide clinical competency and social distance (Figure 15b) was not significant (OR = 0.15, robust Z = 0.24).

Model 4: Total PHQ-9 and Item #9 Change Predicted by Provider Suicide Clinical Competency, Moderated by Provider Implicit Bias. For patient depression (Table 19), an increase in suicide clinical competency did not significantly predict a change in depressive symptoms (β = 1.90, robust Z = 1.15). Provider implicit bias also did not significantly predict patient depression change (β = 1.07, robust Z = 1.00). The product between provider implicit bias and suicide clinical competency (Figure 14c) was not significant (β = -1.76, robust Z = -1.42).

For patient suicidality (Table 20), greater provider suicide clinical competency did not significantly predict a lower odds of patient suicidality improving (OR = 0.20, robust Z = 0.24). Greater implicit bias did not significantly predict a change in suicidality (OR = 0.80; robust Z = 0.77). The product between provider suicide clinical competency and implicit bias was significant (OR = 2.77, robust Z = 2.97) (Figure 15c). At low provider suicide clinical competency, when provider implicit bias increases from -1 to 1, the odds of patient suicidality improving increased by roughly 5%. At high provider suicide clinical competency, when provider implicit bias increases from -1 to 1, the odds of patient suicidality improving increased by approximately 22.5%.

Model 5: Total PHQ-9 and Item #9 Change Predicted by Provider Suicide Clinical Competency, Moderated by Provider Mental Health Knowledge. For patient depression (Table 19), an increase in suicide clinical competency did not significantly predict a change in depressive symptoms (β = 1.46, robust Z = 1.16). Provider mental health knowledge also did not significantly predict a change in patient depression (β = -0.66, robust Z = -0.81). The product

between provider mental health knowledge and suicide clinical competency (Figure 14d) was not significant (β = 1.64, robust Z = -1.50).

For patient suicidality (Table 20), greater provider suicide clinical competency did not significantly predict a lower odds of patient suicidality improving (OR = 0.21; robust Z = 0.20). Provider mental health knowledge also did not significantly predict patient suicidality change (OR = 0.65; robust Z = 0.45). The product between provider suicide clinical competency and mental health knowledge (Figure 15d) was not significant (OR = 0.83, robust Z = 0.76).

Model 6: Total PHQ-9 and Item #9 Change Predicted by Provider Suicide Clinical Competency, Moderated by Provider Mental Health Attitudes. For patient depression (Table 19), an increase in suicide clinical competency did not significantly predict a change in depressive symptoms (β = 2.73, robust Z = 1.16). Provider mental health attitudes also did not significantly predict change in patient depression (β = -1.20, robust Z = -0.71). The product between provider mental health attitudes and suicide clinical competency (Figure 14e) was not significant (β = 0.28, robust Z = 0.16).

For patient suicidality (Table 20), greater provider suicide clinical competency significantly predicted a lower odds of patient suicidality improving (OR = 0.04). However, this association was insignificant (robust Z = 0.10). Provider mental health attitudes and patient depression were significantly related, such that an increase in stigmatizing attitudes was associated with a worsening in depressive symptoms (OR = 8.15, robust Z = 4.98). The product between provider suicide clinical competency and mental health attitudes (Figure 15e) was not significant (OR = 0.15, robust Z = 0.24).

Model 7: Total PHQ-9 and Item #9 Change Predicted by Provider Suicide Clinical Competency, Moderated by Provider Common Factors Clinical Competency. For patient

depression (Table 19), an increase in suicide clinical competency was significantly predicted worsening in depressive symptoms (β = 3.04, robust Z = 2.20). Greater common factors clinical competency significantly predicted a decrease in patient depressive symptoms (β = -1.75, robust Z = -2.44). The product between provider common factors and suicide clinical competency (visualized in Figure 14f) was significant (β = 3.49, robust Z = 3.79). For providers with higher suicide clinical competency, an increase in provider common factors competency predicted a reduction in depressive symptoms. This moderation effect was slightly reversed for the lower provider suicide clinical competency category.

For patient suicidality (Table 20), greater provider suicide clinical competency did not significantly predict a lower odds of patient suicidality improving (OR = 0.21, robust Z = 0.20). Provider common factors competency also did not significantly predict patient suicidality change (OR = 0.83; robust Z = 0.71). The product between provider suicide clinical competency and common factors competency (visualized in Figure 15f) was not significant (OR = 0.76, robust Z = 0.67).

Discussion

The current study sought to understand how lay provider competency in addressing suicidality (using a novel observational paradigm developed for use in global mental health settings) impacted patient depressive symptoms and suicidal ideation (SI). A total of 25 lay Nepali primary care workers (PCW) provided individualized treatment to patients in integrated primary care clinics over a duration of six months. We examined the relationship between lay provider suicide clinical competency at 16-months post-mental health training using the WHO mhGAP-IG (2016), and patient scores (24-months post-mental health training) on a widely used depression screener (Patient Health Questionnaire; PHQ-9). We also explored moderators of this

relationship (provider social distance, implicit bias, mental health knowledge and attitudes and common factors competency) to further understand how these theoretical barriers and facilitators influence suicide clinical competency.

Results from a series of generalized estimating equation (GEE) models indicated four significant findings. First, although suicide clinical competency 16-months post-training alone did not predict patient depression or SI in most models, there was a significant product between suicide clinical competency at pre-training and 16-months post-training ($\beta = 5.94$, robust $Z = 5.71$), such that for individuals with higher pre-training suicide clinical competency, an increase in post-training competency predicted reduced depression. Second, greater provider social distance (i.e., a form of explicit bias) predicted a greater likelihood of improved patient SI (OR = 8.15; robust $Z = 4.98$). Third, there was a significant product between provider suicide clinical competency and implicit bias (OR = 2.77, robust $Z = 2.97$), such that at higher provider suicide clinical competency, an increase in implicit bias predicted greater improvement in SI (roughly 23% compared to 5%). Fourth, when lay provider competency in delivering common factors treatment was included in the model, an increase in suicide clinical competency significantly predicted worsening depression ($\beta = 3.04$, robust $Z = 2.20$), and there was a significant product between common factors and suicide clinical competency ($\beta = 3.49$, robust $Z = 3.79$). For providers with higher suicide clinical competency, an increase in provider common factors competency was associated with reduced depression.

Our findings that higher baseline scores in suicide clinical competency and common factors competency are associated with salutary patient effects (i.e., reduction in depressive symptoms, including SI), especially relative to post-training scores, has implications on future task sharing initiatives for suicide prevention. This finding may indicate that measurement of

suicide clinical competency immediately before delivering services is not sufficient to ensuring positive patient outcomes for either depressive symptoms or SI. One interpretation of these findings is that individuals with higher pre-training competencies have other positive attributes (e.g., lower explicit and implicit stigma, less emotional avoidance, an associated openness to asking patients about suicide), all of which may independently or together impact patient outcomes. In contrast, individuals who increased in their suicide clinical competency rating (i.e., a score of 0 to 2 or 0 to 1) may still have high levels of certain variables, some of which may not be amenable to clinical intervention (e.g., implicit bias) and may lead to poorer patient outcomes. Our data support this hypothesis, in that baseline scores for stigma and common factors competency were lower and higher, respectively, in the group of providers with higher suicide clinical competency. See Chapter 1, Table 2. This knowledge could influence development of a stepped-care approach to lay provider trainings in global mental health settings, whereby individuals with higher pre-training scores on suicide clinical competency would be initially selected to deliver suicide prevention services or train or supervise other clinicians providing task-shared services. Those with lower scores may need additional suicide-specific anti-stigma training, which was not delivered in the WHO mhGAP-IG used to train lay PCW in this study. Findings also indicate that deeper analyses at the subgroup level (e.g., examining other moderators at baseline, or examining individual provider-patient dyadic profiles using additional idiographic statistical methods) may be justified in future investigations.

Contrary to clinical intuition and some theories (which remains underdeveloped in this area), higher post-training scores on provider implicit bias and social distance was associated with reductions in patient depression and SI. In analysis of individual provider scores, we did not find evidence of specific outliers that may explain these findings. One explanation is that mental

illness stigma exerts threshold effects on patient outcomes (that are not captured in GEE), whereby scores above a particular threshold are necessary to exert deleterious effects. For example, it may be the case that the score range on social distance and implicit bias were below the threshold for the majority of providers post-training, explaining the main significant effect at the overall group level (for social distance), as well as the relationship between IAT scores and suicide clinical competency. It is also possible that this finding is spurious and a consequence of measurement error, particularly for the IAT which requires the presence of a controlled environment to get unbiased estimates of response time. In global mental health primary care settings, which are fast-paced and harried, high distraction may have theoretically impacted response time scores and skewed results. Only one prior study, to the authors' knowledge, has examined the relationship between implicit bias and suicide clinical competency in primary care using hypothetical written patient vignettes (Obert, 2017). Although findings from the study indicated effects opposite to ours, significant methodological and measurement differences preclude us from making parallel comparisons. Use of IAT specific to provider suicide stigma may have revealed a different pattern of results.

Of note, provider mental health knowledge and attitudes did not significantly moderate the provider-patient relationship. This may indicate lack of utility of self-report knowledge and attitudes tests in exploring factors that influence lay provider competency and patient outcomes. Additional replication studies or extensions of our approach (e.g., only including specific knowledge and attitudinal questions) are warranted.

There are exceedingly few prior studies examining the relationship between suicide clinical competency and patient outcomes, either in HIC or LMIC, to guide a fine-grained contextualization of findings. In one recent scoping review, findings on the relationship between

therapist competency and client outcomes were mixed (Ottman, Kohrt, Pedersen & Schafer, 2020), and no studies operationalized therapist competency using an observational tool using structured role plays. In one study on therapist quality and self-harm behaviors, there was no relationship between therapy quality and number of self-harm episodes at follow-up (Davidson et al., 2004).

Limitations

Our study included a number of strengths (e.g., real patient data, use of a behavioral measure of therapist quality, multi-method measurement of stigma, high relevance to resource-constrained LMIC and HIC contexts with growing suicide rates). However, there are also limitations that should be considered when interpreting findings. First, our sample size was limited and may have been underpowered to examine patient outcomes. The number of patients reporting baseline or endline SI was also small, potentially hindering detection of true predictions. The small number of providers may also have led to study inferences that are not representative of lay Nepali providers at the population level. Second, our measure of SI was derived from a single item (#9) from the Nepali version of the PHQ-9 and did not include other relevant forms of suicidality such as planning, intent, or attempts. This information would be critical in further exploring the relationship between provider competency and suicide, as individuals with greater risk of death (e.g., attempters) may have different psychological profiles than ideators (Klonsky & May, 2011). Social desirability on the self-reported item and overall scale may also have been high (Furnham, 1986). Third, the 16-month follow-data used in the current study may also have included confounds (e.g., receiving of additional mental health training and/or supervision) that could not be controlled for in the current analysis. We also did not account for level of supervision received over the six months of treatment delivery. This may

be critical in future studies, as supervision is thought to be an essential component in helping trainees become skilled at assessing and managing suicidality (Wheeler, Bowl & Reeves, 2004). Fourth, due to restricted sample size, the current study was not able to examine effects at the level of treatment arm (e.g., mhGAP-IG alone or with the added RESHAPE anti-stigma component) or intervention type delivered by provider (e.g., mhGAP-IG *vs.* HAP *vs.* CAP *vs*. a combination of two or more). Examination of these differential training and treatment effects could be useful in developing or revising existing training curricula for providers.

Future Directions

There are a number of avenues for future investigation on the intersection of provider competency and suicidal patient outcomes. First, replication studies with a larger cohort of providers would be useful in confirming or disconfirming study findings. A larger sample would also permit examination of multiple simultaneous moderators of the competency-suicide linkage, in order to determine their relative effects. These data could be critical in guiding prioritization and allocation of tasks-sharing training resources and personnel (which are particularly scarce in LMIC) for suicide prevention. Second, future studies should include more rigorous and acceptable measurement of suicidality (e.g., via interviewer-administered questionnaires) with higher-risk demographics (e.g., in Nepal, reproductive-age women or youth under the age of 25) (Pradhan et al., 2011; Hagaman et al., 2017). Use of culturally-specific tools that may more accurately capture risk for suicide (e.g., assessment of heart-mind, or Nepali *dimaag*, problems) would also be beneficial (Kohrt et al., 2012). Third, competency ratings were derived from mock session role plays with lay PCW and mock patients using standardized vignettes. Competency ratings from live patient sessions may allow for more accurate measurement of provider suicide clinical competency. Finally, studies that evaluate specific training strategies for suicide

prevention with preliminary empirical support (e.g., one-on-one supervision) will be critical in determining optimum training approaches for lay providers delivering suicide prevention services in integrated care settings worldwide.

Conclusion

Competency in delivering mental health interventions is an essential component of providing evidence-based care and improving patient mental health. However, the association between provider competency and patient outcomes for suicidal behaviors in low- and middle-income countries (LMIC) with high suicide risk are both poorly understood and addressed. The goal of the current investigation was to explore how non-specialist (i.e., "lay') provider competency in addressing suicidality impacts patient depression and suicidal ideation (SI), as well as moderators of this relationship. We used a novel observational paradigm using mock therapy role plays between lay providers and standardized patients to assess for suicide clinical competency. There were mixed results on the relationship between lay provider competency and patient outcomes. Suicide clinical competency (N = 25 providers) after training did not significantly predict patient depressive change. However, for individuals with higher pre-training suicide clinical competency, an increase in post-training competency predicted reduced depression. Similar, an increase in post-training suicide clinical competency significantly predicted worsening depression. For providers with higher suicide clinical competency, however, an increase in provider common factors competency was associated with reduced depression. Explicit bias and implicit bias predicted with improving patient SI, with greater improvements in SI observed in providers with higher suicide clinical competency. These mixed findings point to the need to additional replication with larger sample sizes and greater attention to subgroup

differences, in order to further uncover how, when, and for which cluster of lay providers skill in managing suicide impacts patient outcomes.

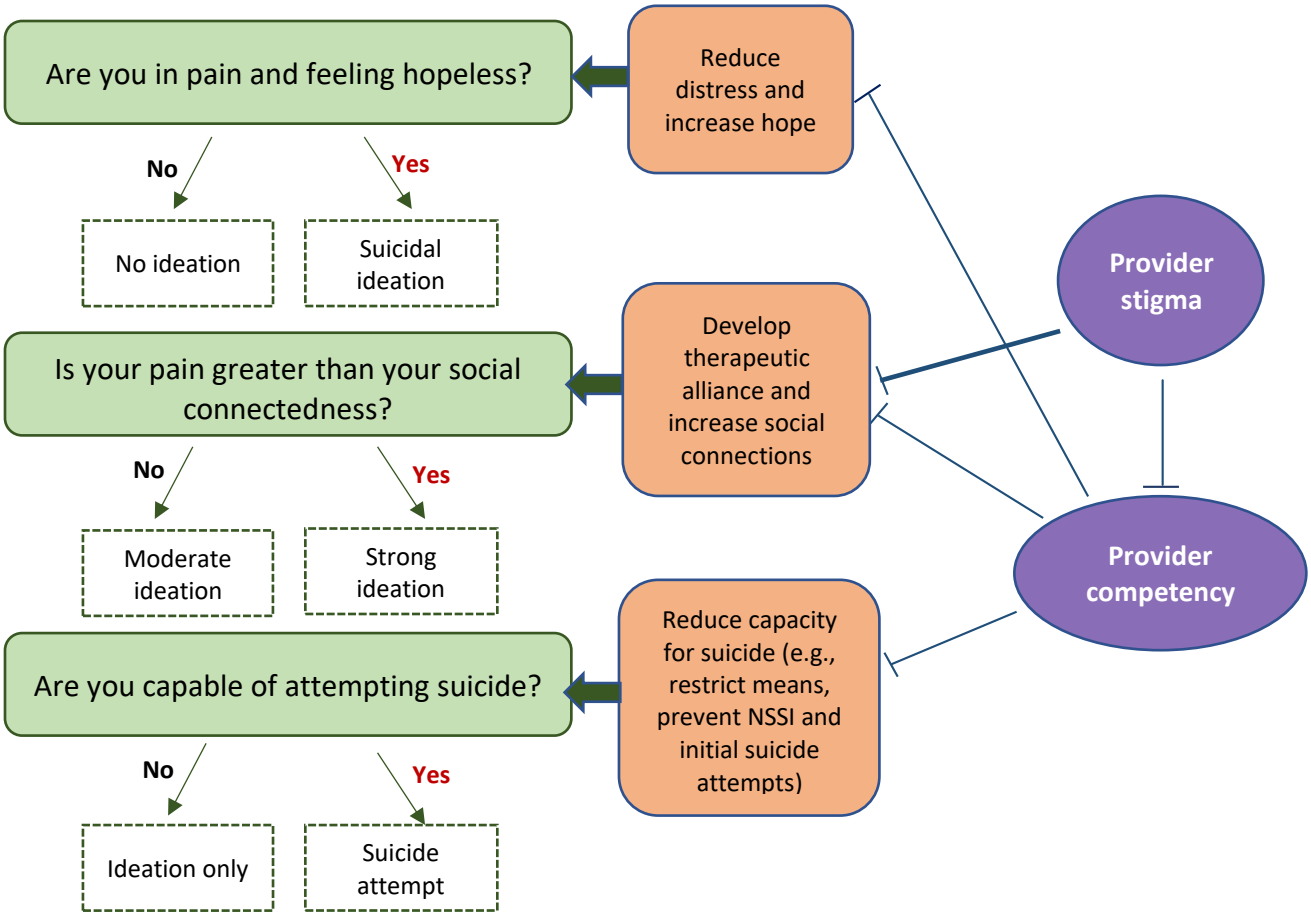

Figure 12. Linkages Between Three-Step Suicide Theory, Provider Stigma, Provider Competency in Addressing Suicidal Behavior, and Patient Suicidality (adapted from Klonsky & May, 2015)

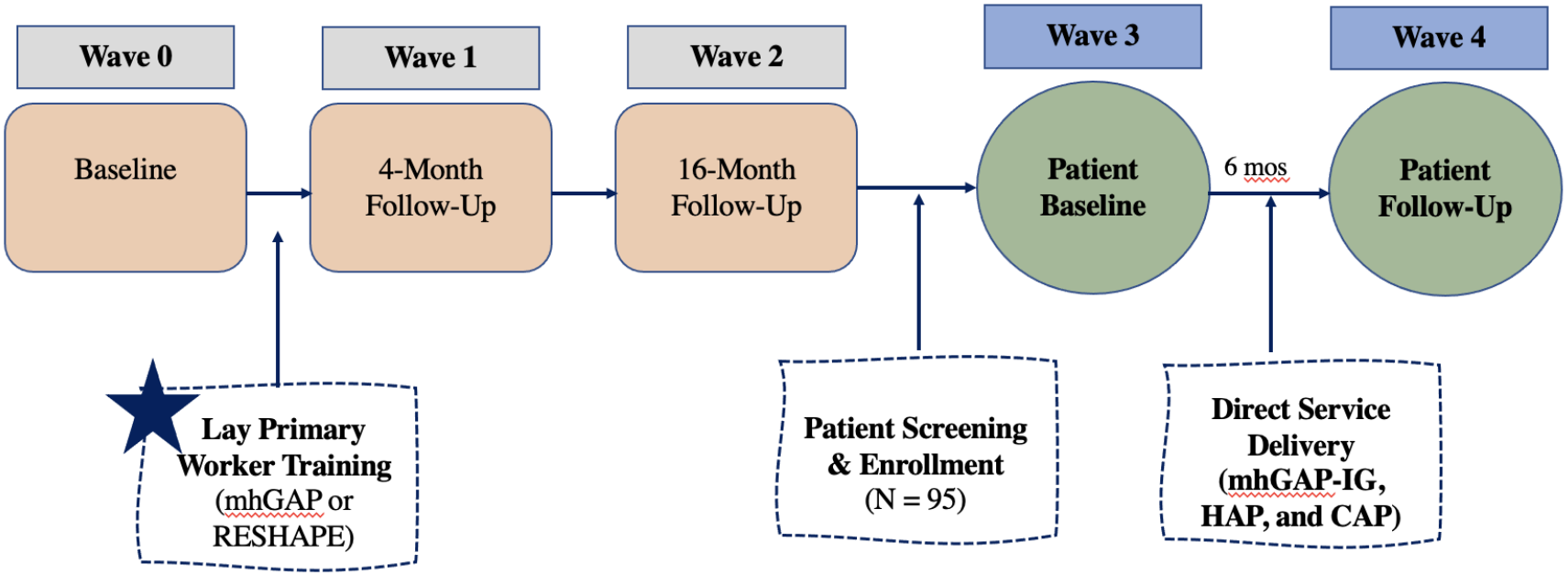

Figure 13. Participant Flow Chart for Lay Nepali Health Workers (N = 205) and Patients (N = 95).
Note. Waves illustrated in grey indicate flow of providers, and those in blue indicate patient flow. 205 providers were initially enrolled in the study (Wave 0). Twenty-five providers were then selected for follow-up patient care between Waves 2 & 3.

Table 16
Provider Demographics for Lay Nepali Health Workers (N = 25)

	Participants
Age, Mean (SD, Range)	33.7 (8.2, 22-56)
Female, No. (%)	4 (15.4)
Provider Type, No. (%)	
Prescriber	26 (100)
Non-Prescriber	0 (0)
Caste, No. (%)	
Adibasi janajati (indigenous ethnic groups)	2 (7.6)
Janajati (hill ethnic groups)	3 (11.5)
Dalit (lower caste)	3 (11.5)
Brahman (upper caste)	13 (50.0)
Chhetri (upper caste)	5 (19.2)
Education, No. (%)	
School Leaving Certificate not completed (not high school graduate)	0 (0.0)
School Leaving Certificate Completed (high school graduate)	5 (19.2)
Intermediate degree (2 years of higher education)	7 (26.9)
Bachelor's degree (3 years of higher education)	7 (26.9)
Medical degree (5 years of higher education)	3 (11.5)
Master's degree	4 (15.4)
Years Working in Healthcare, No. (%)	
<1 year	1 (3.8)
1-5 years	7 (26.9)
6-10 years	4 (15.4)
>10 years	14 (53.8)

Table 17
Provider Descriptive Statistics for Stigma, Competency, and Patient Depression Among Lay Nepali Lay Health Workers (N = 25 Providers and 95 Patients)

	Participants Mean (SD)	No Change or Worsening of Depression (N = 14)	Remitting Depression (N = 81)	Δ
Social Distance (*SDS*)	26.74 (13.69)	21.10	27.57	
Implicit Bias *(IAT)*	0.13 (0.32)	0.21	0.12	
Mental Health Knowledge (*mhGAP Knowledge*)	0.81 (0.07)	0.86	0.80	**
Mental Health Attitudes (*mhGAP Attitudes*)	1.48 (0.20)	1.35	1.50	**
Common Factors Competency (*ENACT*)	41.04 (6.17)	45.3	40.41	*
Item-Level Competency (*ENAC*T)				
Item 1 (*Nonverbal Communication)*	2.74 (0.44)	3.00	2.71	*
Item 2 (*Verbal Communication)*	2.59 (0.50)	2.90	2.54	*
Item 3 (*Confidentiality)*	2.01 (0.67)	2.30	1.97	
Item 4 (*Rapport Building)*	2.63 (0.49)	2.90	2.59	
Item 5 (*Normalization*	2.17 (0.38)	2.50	2.12	**
Item 6 (*Empathy)*	2.36 (0.56)	2.50	2.34	
Item 7 (*Life Events)*	2.13 (0.83)	2.50	2.07	
Item 8 (*Mental Health Problems)*	2.05 (0.68)	2.30	2.01	
Item 9 (*Social Functioning)*	2.08 (0.83)	2.50	2.01	
Item 10 (*Explanatory Models)*	2.36 (0.62)	2.80	2.29	*
Item 11 (*Family Involvement)*	2.69 (0.46)	2.70	2.69	
Item 12 (*Collaborative Goals*	2.33 (0.64)	2.50	2.31	
Item 13 (*Hope Generation)*	2.69 (0.46)	2.90	2.66	
Item 14 (*Coping)*	2.26 (0.57)	2.40	2.34	
Item 15 (*Psychoeducation)*	2.12 (0.58)	2.30	2.09	
Item 16 (*Problem Solving)*	2.59 (0.50)	2.90	2.54	*
Item 17 (*Feedback)*	1.46 (0.75)	1.60	1.44	
Item 18 (*Suicide)*	1.78 (0.60)	1.80	1.78	-

Note. * $p < .05$ ** $p < .01$ (via independent samples *t*-test or Spearman's Rank Order Correlation). SDS = Social Distance Scale; IAT = Implicit Association Test; mhGAP Knowledge = WHO Mental Health Gap Action Programme Knowledge Test; mhGAP Attitudes = WHO Mental Health Gap Action Programme Attitudes Test; ENACT = Enhancing Assessment of Common Therapeutic Factors; ENACT # 18 = Item 18 from ENACT Scale.

Table 18
Bivariate Correlations Between Patient Depression, Provider Competency, Provider Suicide Clinical Competency, and Provider Stigma (N = 78)

	A. Common Factors (*ENACT*)	B. Mental Health Knowledge (*mhGAP Knowledge*)	C. Mental Health Attitudes (*mhGAP Attitudes*)	D. Social Distance (*SDS*)	E. Implicit Bias (*IAT*)	F. Suicide Clinical Competency (ENACT #18)	G. Patient Depression Change (PHQ-9)	H. Patient Suicidal Ideation Change (PHQ-9 item #9)
B	0.45***							
C	-0.12	-0.44***						
D	0.12	-0.28**	0.77***					
E	0.12	0.32**	0.17	0.16				
F	0.36***	0.23*	0.24*	0.54***	0.50***			
G	0.14	0.25*	-0.30**	-0.18	-0.11	-0.10		
H	0.13	0.19	-0.19	-0.09	0.02	0.12	0.32**	

Note. *$p < .05$; **$p < 0.01$; *** $p < 0.001$
SDS = Social Distance Scale; IAT = Implicit Association Test; mhGAP Knowledge = WHO Mental Health Gap Action Programme Knowledge Test; mhGAP Attitudes = WHO Mental Health Gap Action Programme Attitudes Test; ENACT = Enhancing Assessment of Common Therapeutic Factors; ENACT # 18 = Item 18 from ENACT Scale; PHQ9 = Patient Health Questionnaire.

Table 19
Generalized Estimating Equations (GEE) of Patient Depression Change and Provider Competency, with Key Stigma and Competency Moderators (N = 78 Patients)

	Raw Estimate	Robust SE	Robust *Z* score	Lower 95% CI	Upper 95% CI
Model 1: PHQ9 change regressed on suicide clinical competency (ENACT 18), with covariates					
Intercept	-7.18	2.03	**-3.53**	-11.17	-3.20
ENACT 18	3.14	1.69	1.86	-0.18	6.46
ENACT Vignette (Psychosis vs. Depression)	3.35	1.87	1.79	-0.32	7.02
ENACT Vignette (AUD vs. Depression)	0.67	1.20	0.55	-1.69	3.03
Patient Sex (Referent = Male)	-3.71	1.07	**-3.47**	-5.80	-1.62
Model 2: PHQ9 change regressed on suicide clinical competency (ENACT 18), with moderation by baseline suicide clinical competency (ENACT 18)					
Intercept	-7.24	2.03	**-3.57**	-11.21	-3.27
Time 0 ENACT 18	5.94	1.04	**5.71**	3.90	7.97
Time 2 ENACT 18	3.30	1.76	1.87	-0.15	6.76
ENACT Vignette (Psychosis vs. Depression	3.20	1.89	1.69	-0.50	6.90
ENACT Vignette (AUD vs. Depression)	0.68	1.16	0.59	-1.58	2.95
Patient Sex (Referent = Male)	-3.90	1.10	**-3.55**	-6.04	-1.75
Time 0 * Time 2 ENACT 18	-5.92	1.69	**-3.51**	-9.23	-2.61
Model 3: PHQ9 change regressed on suicide clinical competency (ENACT 18), with moderation by social distance (SDS)					
Intercept	-5.82	2.25	**-2.59**	-10.22	-1.42
ENACT 18	1.90	2.06	0.92	-2.14	5.95
SDS	1.70	1.83	0.93	-1.87	5.28
ENACT Vignette (Psychosis vs. Depression	2.67	1.94	1.38	-1.13	6.46
ENACT Vignette (AUD vs. Depression)	0.50	1.03	0.49	-1.51	2.52
Patient Sex	-3.39	1.06	**-3.20**	-5.47	-1.32
SDS*ENACT18	-2.50	1.84	-1.36	-6.10	1.10
Model 4: PHQ9 change regressed on suicide clinical competency (ENACT 18), with moderation by implicit bias (IAT)					
Intercept	-5.17	2.06	**-2.50**	-9.21	-1.12
ENACT18	1.90	1.65	1.15	-1.34	5.12
IAT	1.07	1.07	1.00	-1.02	3.17

ENACT Vignette (Psychosis vs. Depression	4.01	1.34	**3.00**	1.39	6.63
ENACT Vignette (AUD vs. Depression)	0.45	1.09	0.41	-1.69	2.60
Patient Sex	-4.44	1.07	**-4.14**	-6.54	-2.34
IAT*ENACT18	-1.76	1.24	-1.42	-4.19	0.66
Model 5: PHQ9 change regressed on suicide clinical competency (ENACT 18), with moderation by mental health knowledge (mhGAP Knowledge)					
Intercept	-3.95	1.70	**-2.32**	-7.28	-0.61
ENACT18	1.46	1.26	1.16	-1.01	3.93
mhGAP Knowledge	-0.66	0.81	-0.81	-2.25	0.94
ENACT Vignette (Psychosis vs. Depression	-0.01	1.33	-0.01	-2.63	2.60
ENACT Vignette (AUD vs. Depression)	-1.49	1.72	-0.86	-4.86	1.89
Patient Sex	-3.73	1.28	**-2.91**	-6.24	-1.22
mhGAP Knowledge* ENACT18	1.64	1.09	1.50	-0.50	3.78
Model 6: PHQ9 change egressed on suicide clinical competency (ENACT 18), with moderation by mental health attitudes (mhGAP attitudes)					
Intercept	-6.75	1.66	**-4.07**	-10.00	-3.50
ENACT18	2.73	1.55	1.76	-0.31	5.78
mhGAP Attitudes	-1.20	1.68	-0.71	-4.50	2.10
ENACT Vignette (Psychosis vs. Depression	2.68	1.65	1.63	-0.55	5.92
ENACT Vignette (AUD vs. Depression)	0.15	1.06	0.15	-1.92	2.23
Patient Sex	-3.16	1.07	**-2.96**	-5.25	-1.07
mhGAP Attitudes*ENACT18	0.28	1.67	0.16	-3.01	3.56
Model 7: PHQ9 change regressed on suicide clinical competency (ENACT 18), with moderation by common factors competency (ENACT total)					
Intercept	-8.89	1.98	**-4.50**	-12.76	-5.02
ENACT18	3.04	1.8	**2.20**	0.34	5.75
ENACT total	-1.75	0.72	**-2.44**	-3.15	-0.34
ENACT Vignette (Psychosis vs. Depression	3.94	1.95	**2.02**	0.12	7.77
ENACT Vignette (AUD vs. Depression)	2.50	1.35	1.84	-0.16	5.15
Patient Sex	-3.17	1.02	**-3.11**	-5.16	-1.17
ENACT total*ENACT18	3.49	0.92	**3.79**	1.68	5.30

Note. A robust Z score above 1.96 indicates statistical significance at $p < .05$. These estimates are indicated in **bold** typeface. SDS = Social Distance Scale; IAT = Implicit Association Test; mhGAP Knowledge = WHO Mental Health Gap Action Programme Knowledge Test; mhGAP

Attitudes = WHO Mental Health Gap Action Programme Attitudes Test; ENACT = Enhancing Assessment of Common Therapeutic Factors; ENACT # 18 = Item 18 from ENACT Scale; PHQ9 = Patient Health Questionnaire.

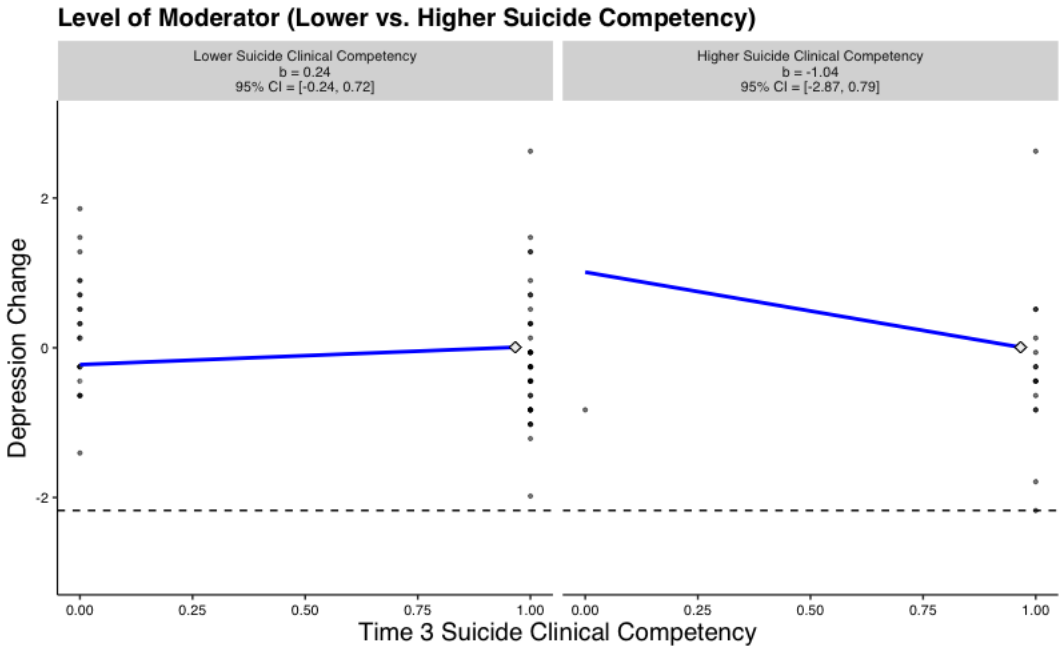

Figure 14a. Relationship between Patient Depression Change and Provider Suicide Clinical Competency, Moderated by Baseline Provider Suicide Clinical Competency (N= 78 patients and 25 providers)

Note. Patient depression measured using the Nepali version of the Patient Health Questionnaire (PHQ-9). Provider suicide clinical competency measured using Item #18 of the Enhancing Assessment of Common Therapeutic Factors (ENACT) tool.

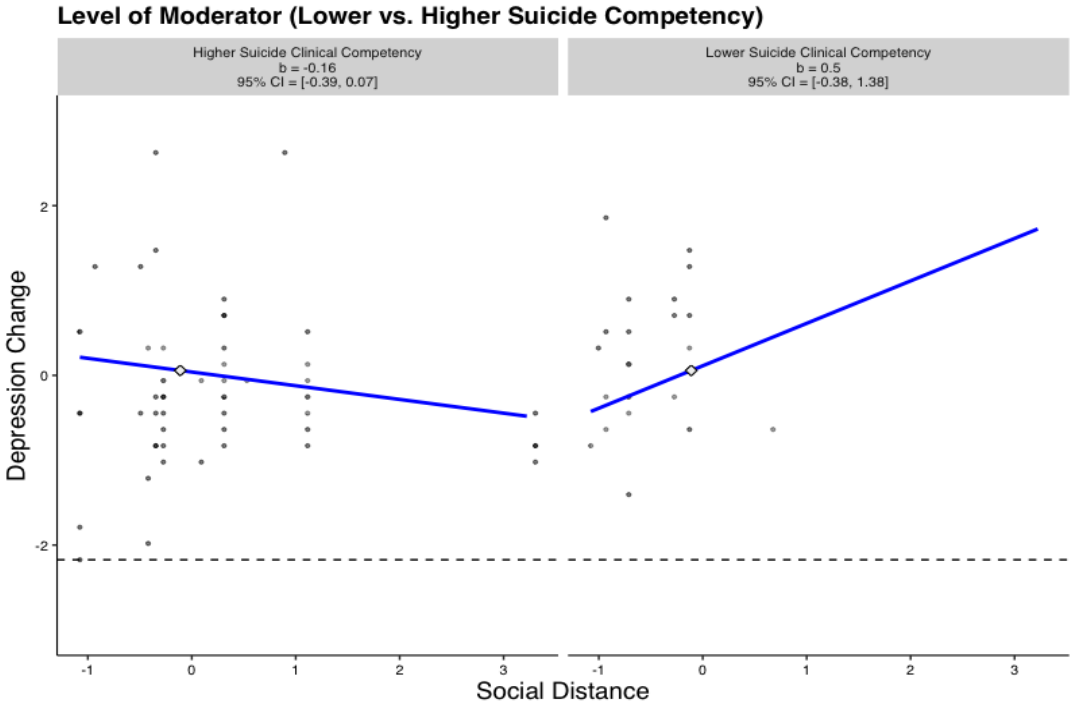

Figure 14b. Relationship between Patient Depression Change and Provider Suicide Clinical Competency, Moderated by Provider Social Distance (N= 78 patients and 25 providers)
Note. Patient depression measured using the Nepali version of the Patient Health Questionnaire (PHQ-9). Provider social distance measured using the Nepali version of the Social Distance Scale (SDS).

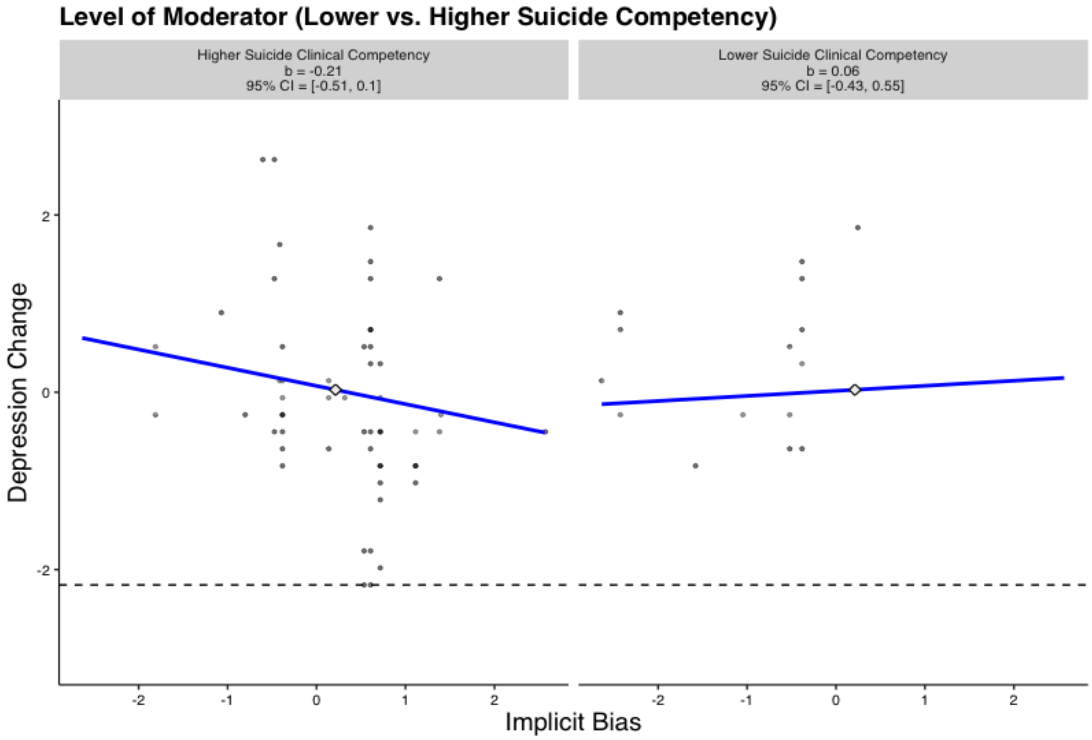

Figure 14c. Relationship between Patient Depression Change and Provider Suicide Clinical Competency, Moderated by Provider Implicit Bias (IAT) (N= 78 patients and 25 providers)
Note. Patient depression measured using the Nepali version of the Patient Health Questionnaire (PHQ-9). Provider implicit bias against individuals with mental illness measured using the Nepali version of the mental health implicit association test (IAT).

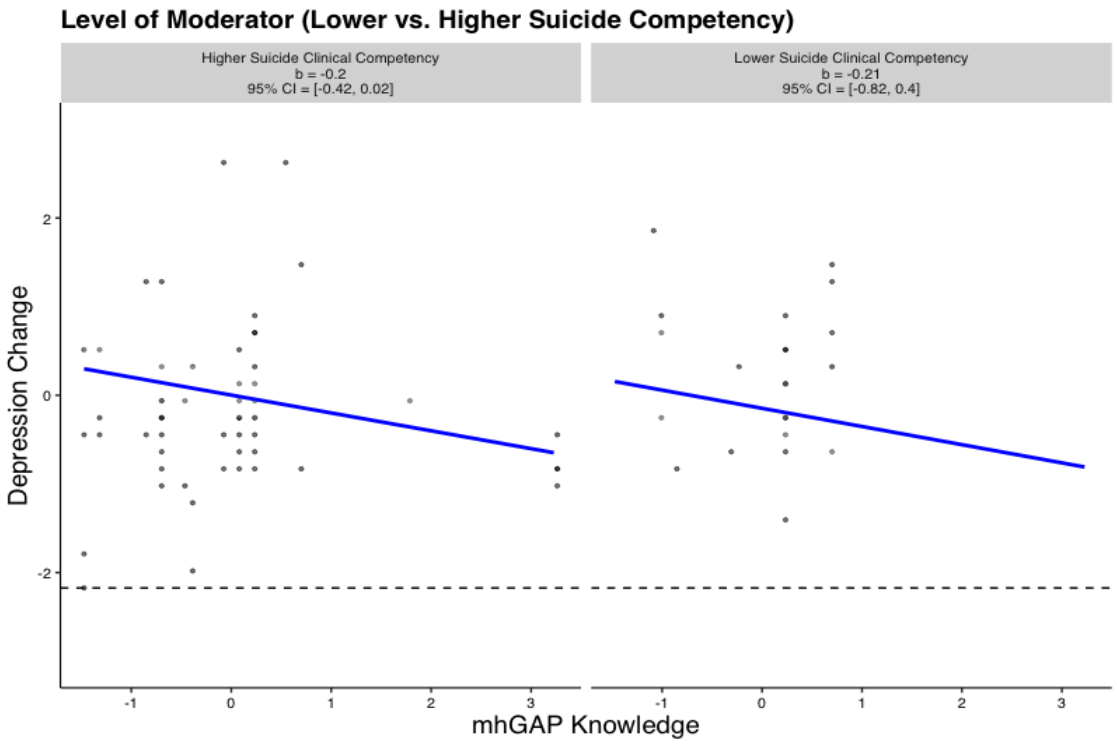

Figure 14d. Relationship between Patient Depression Change and Provider Suicide Clinical Competency, Moderated by Provider Mental Health Knowledge (N= 78 patients and 25 providers)
Note. Patient depression measured using the Nepali version of the Patient Health Questionnaire (PHQ-9). Provider knowledge measured using the WHO mhGAP Knowledge Test.

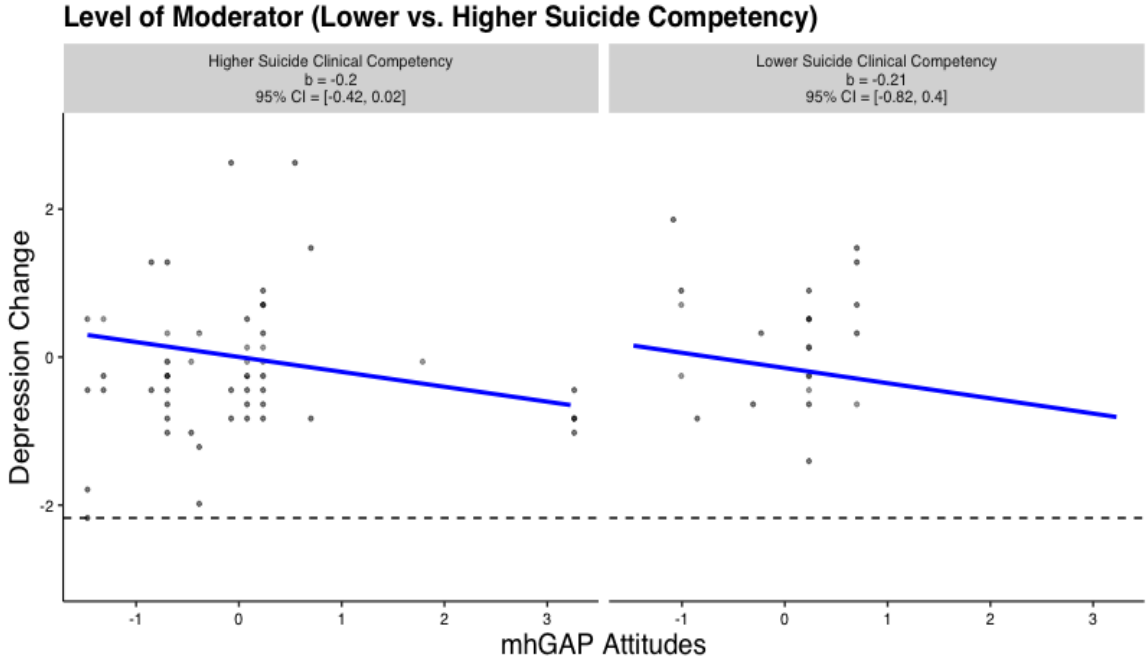

Figure 14e. Relationship between Patient Depression Change and Provider Suicide Clinical Competency, Moderated by Provider Mental Health Attitudes (N= 78 patients and 25 providers)
Note. Patient depression measured using the Nepali version of the Patient Health Questionnaire (PHQ-9). Provider knowledge measured using the WHO mhGAP Attitudes Test.

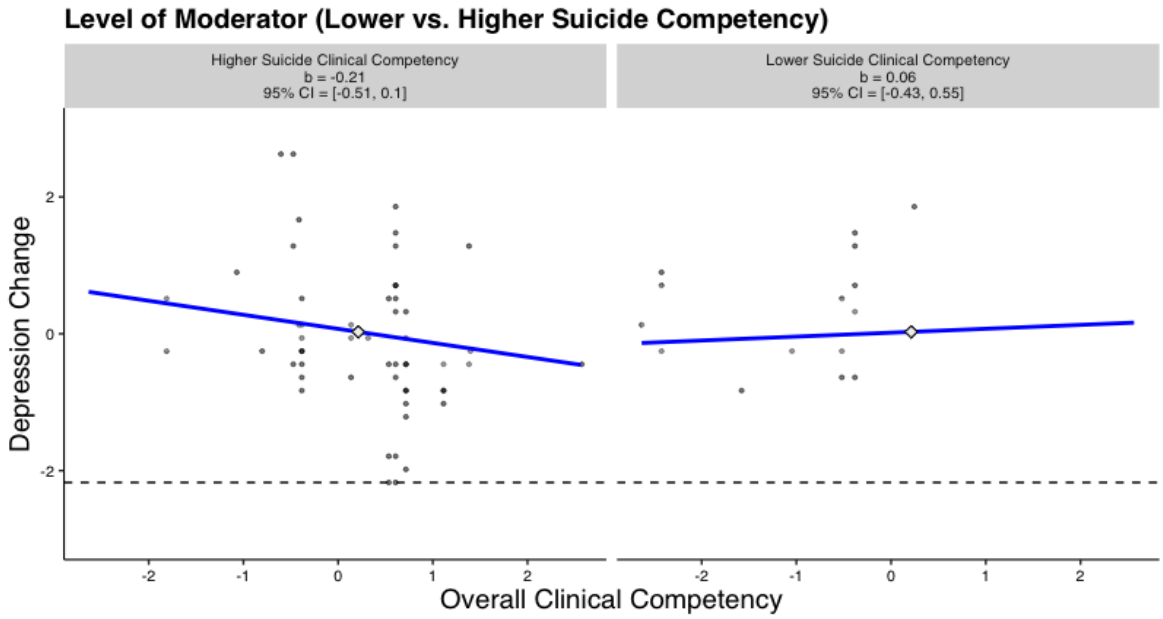

Figure 14f. Relationship between Patient Depression Change and Provider Suicide Clinical Competency, Moderated by Provider Common Factors Competency (N= 78 patients and 25 providers)

Note. Patient depression measured using the Nepali version of the Patient Health Questionnaire (PHQ-9). Provider common factors clinical competency measured using the Enhancing Assessment of Common Therapeutic Factors (ENACT) tool. Common factors competency on the X-axis represents a standardized sum score of all ENACT items.

Table 20
Generalized Estimating Equations (GEE) of Patient Suicidal Ideation Change and Provider Competency, with Key Stigma and Competency Moderators (N = 78 Patients)

	Odds Ratio	Robust SE	Robust *Z* score	Lower 95% CI	Upper 95% CI
Model 1: PHQ9 #9 change regressed on suicide clinical competency (ENACT 18), with covariates					
Intercept	0.26	3.37	0.33	-6.34	6.86
ENACT 18	0.23	2.52	0.20	-4.71	5.16
ENACT Vignette (Psychosis vs. Depression)	0.27	2.76	0.28	-5.14	5.68
ENACT Vignette (AUD vs. Depression)	0.84	1.84	0.75	-2.77	4.45
Patient Sex (Referent = Male)	3.00	1.77	**6.86**	-0.47	6.47
Model 2: PHQ9 #9 change regressed on suicide clinical competency (ENACT 18), with moderation by baseline suicide clinical competency (ENACT 18)					
Intercept	0.13	3.30	0.18	-6.35	6.61
Time 0 ENACT 18	1.02	3.63	1.01	-6.10	8.13
Time 2 ENACT 18	0.71	4.59	0.80	-8.29	9.70
ENACT Vignette (Psychosis vs. Depression	0.90	3.52	0.92	-5.99	7.80
ENACT Vignette (AUD vs. Depression)	0.50	4.83	0.64	-8.96	9.95
Patient Sex (Referent = Male)	2.44	1.95	**3.81**	-1.38	6.27
Time 0 * Time 1 ENACT 18	0.34	5.34	0.53	-10.12	10.81
Model 3: PHQ9 #9 change regressed on suicide clinical competency (ENACT 18), with moderation by social distance (SDS)					
Intercept	1.70	5.08	1.39	-8.26	11.67
ENACT 18	0.04	4.12	0.10	-8.04	8.12
SDS	8.15	3.70	**4.98**	0.90	15.39
ENACT Vignette (Psychosis vs. Depression	0.13	3.38	0.19	-6.48	6.75
ENACT Vignette (AUD vs. Depression)	0.98	1.91	0.96	-2.77	4.72
Patient Sex	2.50	1.82	**4.60**	-1.07	6.07
SDS*ENACT18	0.15	3.76	0.24	-7.22	7.52
Model 4: PHQ9 #9 change regressed on suicide clinical competency (ENACT 18), with moderation by implicit bias (IAT)					
Intercept	0.21	4.68	0.36	-8.95	9.37
ENACT18	0.20	3.16	0.24	-5.99	6.38
IAT	0.80	2.34	0.77	-3.79	5.40

ENACT Vignette (Psychosis vs. Depression	0.27	4.40	0.41	-8.36	8.90
ENACT Vignette (AUD vs. Depression)	0.91	1.84	0.86	-2.70	4.52
Patient Sex	2.87	1.88	**5.34**	-0.81	6.56
IAT*ENACT18	2.77	2.55	**2.97**	-2.22	7.77
Model 5: PHQ9 #9 change regressed on suicide clinical competency (ENACT 18), with moderation by mental health knowledge (mhGAP Knowledge)					
Intercept	0.33	3.85	0.44	-7.22	7.88
ENACT18	0.21	2.60	0.20	-4.88	5.31
mhGAP Knowledge	0.65	1.72	0.45	-2.72	4.01
ENACT Vignette (Psychosis vs. Depression	0.19	3.12	0.23	-5.92	6.29
ENACT Vignette (AUD vs. Depression)	0.74	1.81	0.61	-2.81	4.30
Patient Sex	2.84	1.83	**5.65**	-0.74	6.43
mhGAP Knowledge* ENACT18	0.83	2.01	0.76	-3.10	4.76
Model 6: PHQ9 #9 change egressed on suicide clinical competency (ENACT 18), with moderation by mental health attitudes (mhGAP attitudes)					
Intercept	1.70	5.08	1.39	-8.26	11.67
ENACT18	0.04	4.12	0.10	-8.04	8.12
mhGAP Attitudes	8.15	3.70	**4.98**	0.90	15.39
ENACT Vignette (Psychosis vs. Depression	0.13	3.38	0.19	-6.48	6.75
ENACT Vignette (AUD vs. Depression)	0.98	1.91	0.96	-2.77	4.72
Patient Sex	2.50	1.82	**4.60**	-1.07	6.07
mhGAP Attitudes*ENACT18	0.15	3.76	0.24	-7.22	7.52
Model 7: PHQ9 #9 change regressed on suicide clinical competency (ENACT 18), with moderation by common factors competency (ENACT total)					
Intercept	0.54	3.66	0.62	-6.63	7.71
ENACT18	0.21	2.64	0.20	-4.97	5.39
ENACT total	0.83	1.75	0.71	-2.60	4.25
ENACT Vignette (Psychosis vs. Depression	0.15	2.82	0.17	-5.37	5.68
ENACT Vignette (AUD vs. Depression)	0.51	1.96	0.37	-3.33	4.35
Patient Sex	2.50	1.80	**4.78**	-1.02	6.02
ENACT total*ENACT18	0.76	1.95	0.67	-3.05	4.58

Note. A robust Z score above 1.96 indicates statistical significance at $p < .05$. These estimates are indicated in bold typeface. SDS = Social Distance Scale; IAT = Implicit Association Test; mhGAP Knowledge = WHO Mental Health Gap Action Programme Knowledge Test; mhGAP

Attitudes = WHO Mental Health Gap Action Programme Attitudes Test; ENACT = Enhancing Assessment of Common Therapeutic Factors; ENACT # 18 = Item 18 from ENACT Scale; PHQ9 = Patient Health Questionnaire.

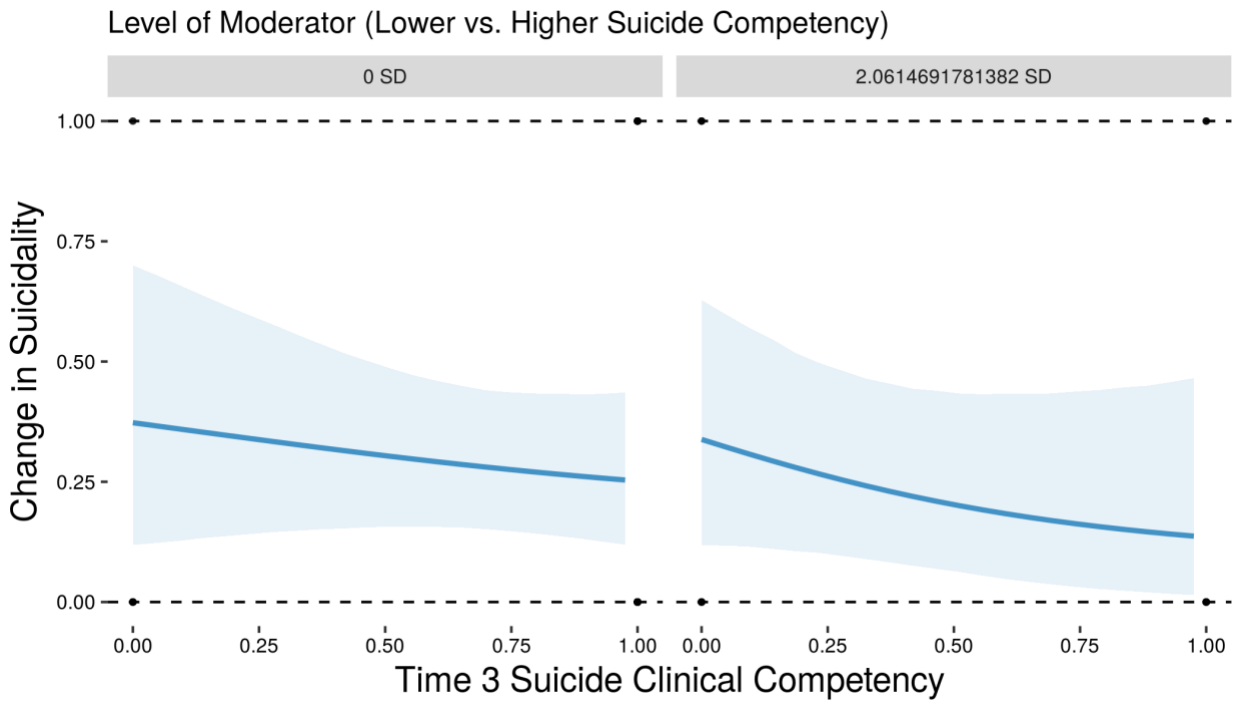

Figure 15a. Relationship between Patient Suicidal Ideation Change and Provider Suicide Clinical Competency (ENACT), Moderated by Baseline Provider Suicide Clinical Competency (ENACT18) (N= 78 patients and 25 providers)

Note. Patient SI measured using item #9 of the Nepali version of the Patient Health Questionnaire (PHQ-9). Provider suicide clinical competency measured using Item #18 of the Enhancing Assessment of Common Therapeutic Factors (ENACT) tool.

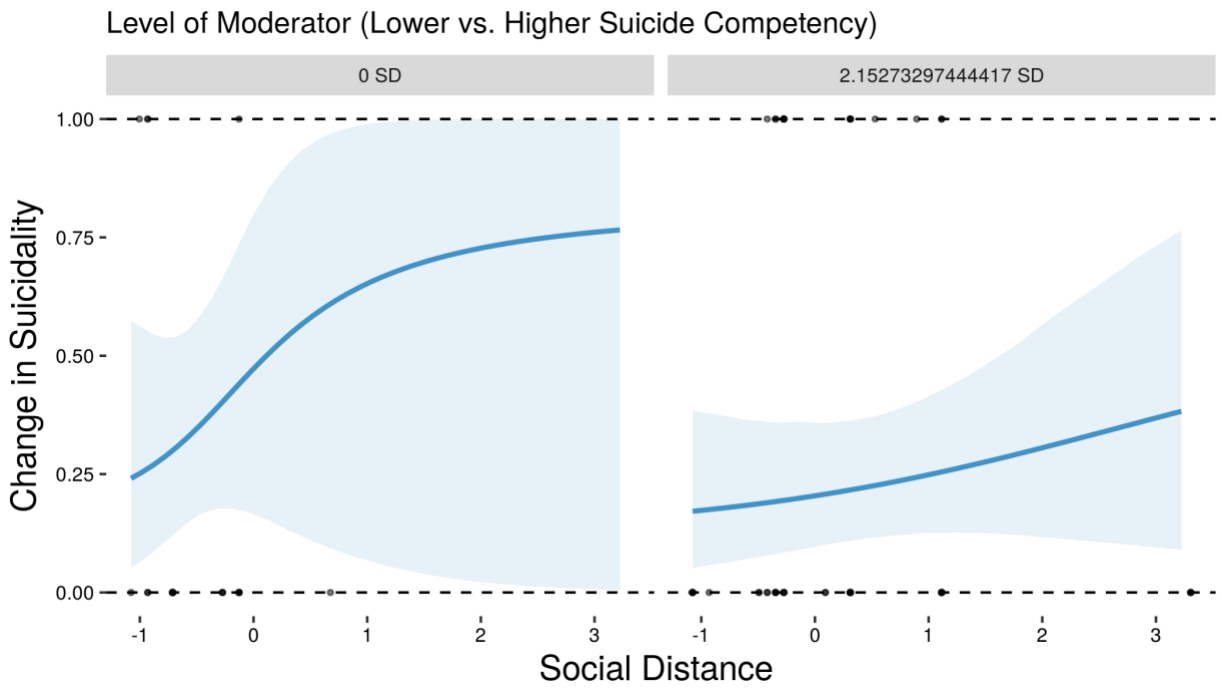

Figure 15b. Relationship between Patient Suicidal Ideation Change and Provider Suicide Clinical Competency, Moderated by Provider Social Distance (N= 78 patients and 25 providers)
Note. Patient SI measured using item #9 of the Nepali version of the Patient Health Questionnaire (PHQ-9). Provider social distance measured using the Nepali version of the Social Distance Scale (SDS).

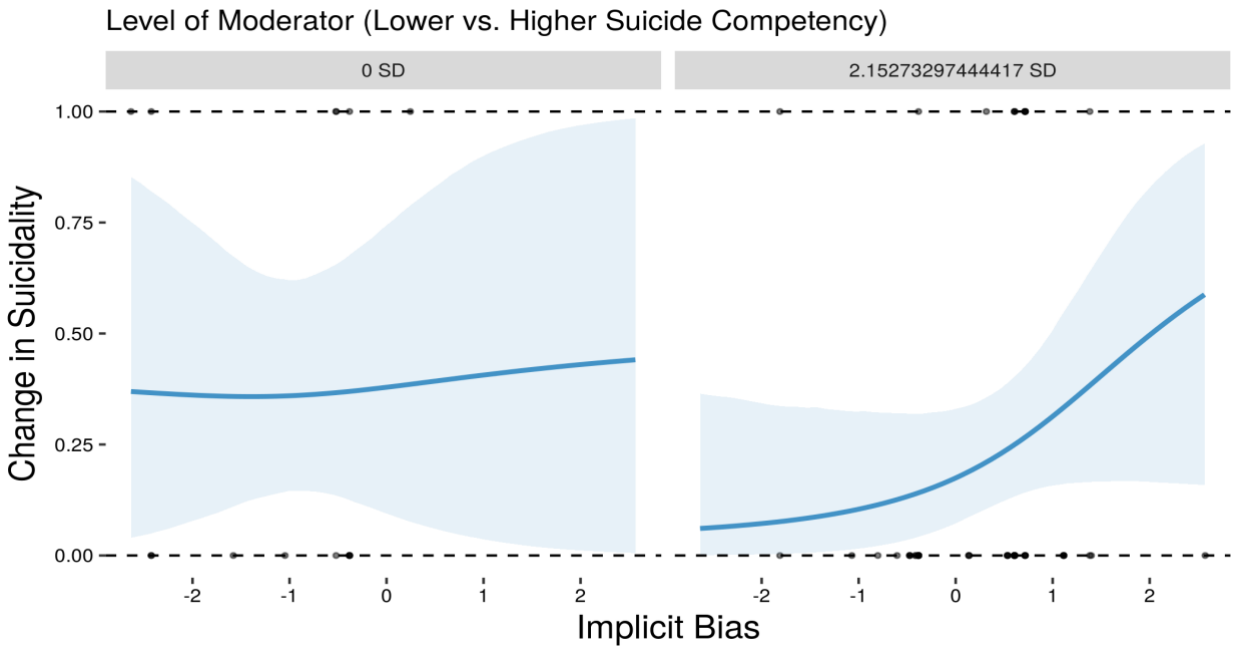

Figure 15c. Relationship between Patient Suicidal Ideation Change and Provider Suicide Clinical Competency, Moderated by Implicit Bias (N= 78 patients and 25 providers)
Note. Patient SI measured using item #9 of the Nepali version of the Patient Health Questionnaire (PHQ-9). Provider implicit bias against individuals with mental illness measured using the Nepali version of the mental health implicit association test (IAT**).**

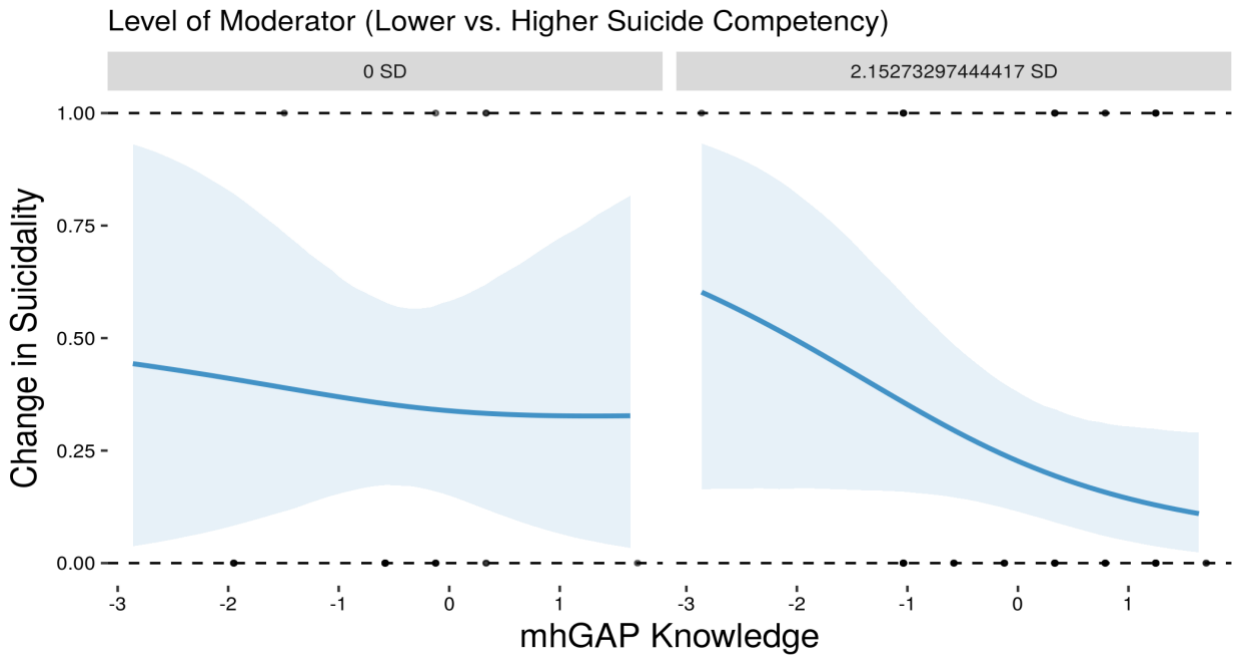

Figure 15d. Relationship between Patient Suicidal Ideation Change and Provider Suicide Clinical Competency, Moderated by Mental Health Knowledge (N= 78 patients and 25 providers
Note. Patient SI measured using item #9 of the Nepali version of the Patient Health Questionnaire (PHQ-9). Provider knowledge measured using the WHO mhGAP Knowledge Test.

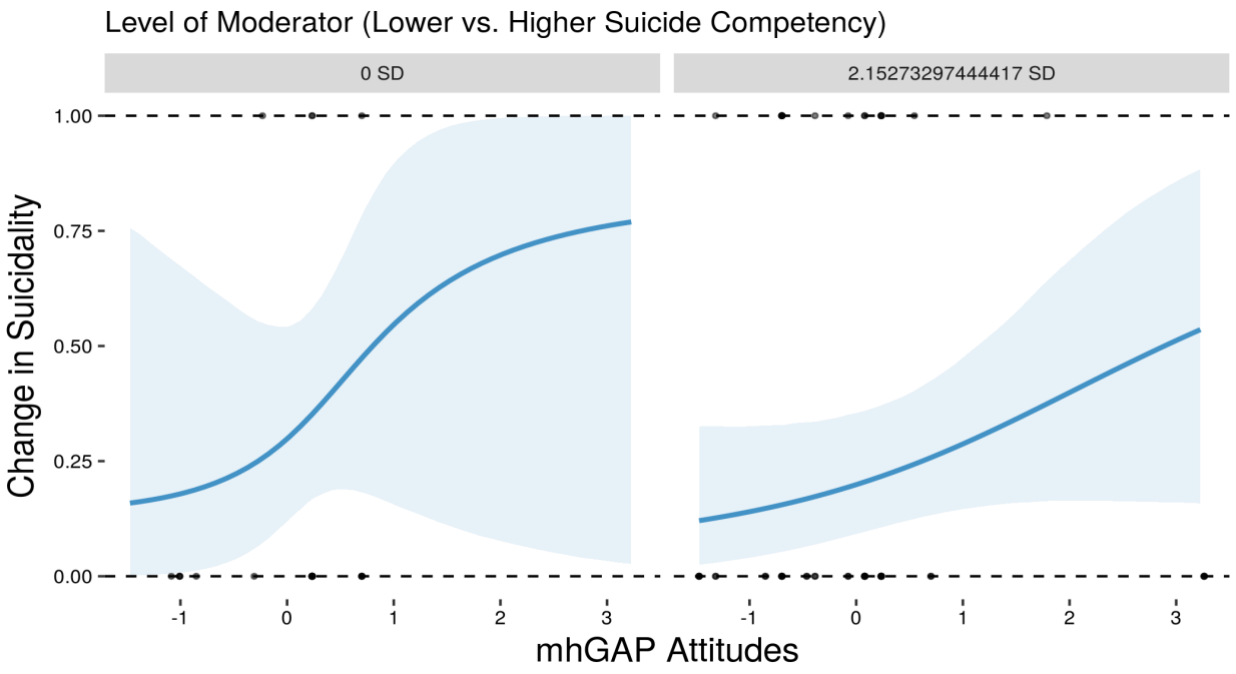

Figure 15e. Relationship between Patient Suicidal Ideation Change and Provider Suicide Clinical Competency, Moderated by Mental Health Attitudes (N= 78 patients and 25 providers)
Note. Patient SI measured using item #9 of the Nepali version of the Patient Health Questionnaire (PHQ-9). Provider knowledge measured using the WHO mhGAP Attitudes Test.

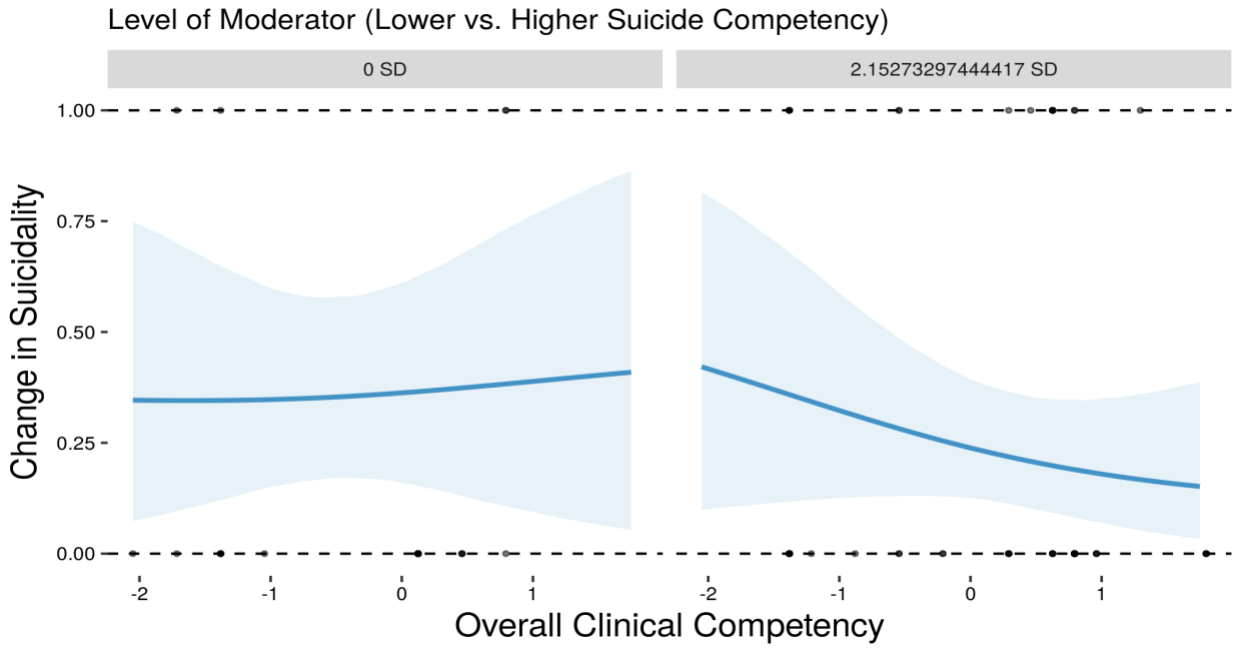

Figure 15f. Relationship between Patient Suicidal Ideation Change and Provider Suicide Clinical Competency, Moderated by Common Factors Competency (N= 78 patients and 25 providers)
Note. Patient SI measured using item #9 of the Nepali version of the Patient Health Questionnaire (PHQ-9). Common factors competency measured using the Enhancing Assessment of Common Therapeutic Factors (ENACT) tool. Common factors competency on the X-axis is equivalent to the standardized total ENACT score.

Chapter VI

Conclusion

This dissertation emphasized the role of lay providers in delivery of task-shifted suicide prevention services in LMIC settings, with a focus on barriers to training that may limit the reach and efficacy of evidence-based suicide prevention services. Specifically, I examined high provider mental illness stigma and low provider competency in delivery of common therapeutic factors as two theoretical and empirical barriers to effective task sharing by lay providers within the field of suicide prevention.

In Chapter II, I explored pre-training correlates of lay primary care worker (PCW) (N = 205) competency in asking about suicide and developing a safety plan during structured role-plays with standardized patients. Correlates included (1) mental health explicit and implicit bias; (2) knowledge and attitudes regarding mental illness; and (3) observational ratings of lay provider competency in delivering common factors treatment strategies. Results indicated that pre-training competency in delivering common therapeutic factors was significantly associated with suicide-specific clinical competency ($\beta = .48$, $p < .001$). And, prior to receiving assessment and intervention training using the World Health Organization's Mental Health Gap Action Programme (mhGAP-IG), 14.2% of lay PCW assessed for suicidality, and one developed a safety plan.

In Chapter III, I examined how the same stigma and competency barriers (mental health explicit and implicit bias, knowledge and attitudes regarding mental illness, and common factors competency) longitudinally associated with suicide clinical competency after delivery of mental health training. Pre-training common factors competency significantly predicted suicide clinical competency 4-months post-training (($\beta = .24$, $p < .05$). Contrary to hypotheses, pre-training provider implicit bias ($\beta = .30$, $p < .001$) and mental health knowledge ($\beta = .23$, $p < .05$) significantly predicted suicide clinical competency 16-months post-training. Additionally, 48.7%

of providers assessed for suicide and 4.9% conducted safety planning 4-months post-training. These percentages increased to 57.5% and 11.9% at 16-months post-training.

In Chapter IV, I adapted and conducted competency ratings from videorecorded sessions (N = 91 dyadic sessions) between lay providers and standardized patient "actors" to explore modifiable skills that may influence lay provider willingness to assess for suicide and conduct safety planning. I focused on lay provider validating and invalidating behaviors, since both have theoretical potential to influence provider assessment and management of suicidality through activation of stigma and interpersonal emotion dysregulation pathways. I found that lay provider validation ($\beta = 0.63$, $p < .001$), but not invalidation ($\beta = 0.22$, $p > .05$) was associated with suicide clinical competency.

In the final aim (Chapter V), I used generalized estimating equations and exploratory analysis examine how lay provider stigma, common factors competency, and suicide clinical competency predict patient depression and suicidal ideation over six months of outpatient treatment (N = 25 providers and 96 patients). An increase in post-training suicide clinical competency did not predict change in depressive symptoms ($\beta = 3.14$, robust Z = 1.86). However, there was a significant product between pre- and post-training suicide clinical competency ($\beta = -5.92$, robust Z = -3.51), such that for providers with low pre-training suicide clinical competency, an increase in post-training suicide clinical competency predicted a worsening of depressive symptoms, relative to a reduction in depressive symptoms for providers with high pre-training suicide clinical competency. There was also a significant product between post-training common factors competency and suicide clinical competency ($\beta = 3.49$, robust Z = 3.79), such that for providers with higher suicide clinical competency, an increase in provider common factors competency predicted a reduction in depressive symptoms. Provider post-

training explicit bias predicted a greater odds of improving SI (OR = 8.15; robust Z = 4.98), and there was a significant product between post-training provider implicit bias and suicide clinical competency (OR = 2.77, robust Z = 2.97). At high provider suicide clinical competency (vs. low provider suicide clinical competency), the odds of patient suicidality improving increased an additional 17.5%.

Avenues Forward for Lay Provider Training in Suicide Prevention

Based on collective study findings, I propose four recommendations for future research and training of non-specialist providers delivering suicide prevention services.

Recommendation #1: Adopt behavioral measures of suicide clinical competency over knowledge and attitude tests. In general, our study found that mental health knowledge and attitude tests did not significantly associate with or predict competency in assessing for and managing suicide risk. Greater mental health knowledge at baseline (pre-training) did, however, counterintuitively predict reduced suicide clinical competency at 16 months post-training. However, this finding may be a result of measurement error or unmeasured confounds, particularly given the long (12-month) gap between competency measurement at month 4 and 16. In the limited literature on suicide clinical competency, the majority of studies relied on knowledge and attitudinal tests, perceived competence and confidence in working with suicidal cases, and hypothetical written case vignettes. Our results provide preliminary yet cautious evidence that self-report measures may not sufficiently predict actual provider behavior. Future studies could develop and examine the predictive utility of observational suicide competency rating scales, with items covering unique aspects of suicide assessment and risk management.

Recommendation #2: Measure competency in suicide services delivery often.

Our results indicated that suicide clinical competency ratings did not associate over time. Rather, standardized scores from earlier to later suicide clinical competency were close to zero, suggesting virtually no relationship between suicide clinical competency over time. This finding suggests a need to continuously monitor suicide clinical competency over time, which in accordance with empirically supported guidelines for lay provider training and supervision in both HIC and LMIC. Continuous monitoring can be used as a quality improvement tool, and can also be used as a supplement to apprentice-based supervision frameworks that focus on individualized provider skill development and training needs.

Recommendation #3: Replicate findings and develop theory. Results illustrating that that common factors competency associated with or predicted suicide clinical competency warrant additional theory development on causal processes explaining this connection. These data could provide a preliminary framework for answering critical questions concerning mechanisms of action of suicide prevention interventions (e.g., are there core therapist behaviors across suicide prevention interventions (e.g., specific validating behaviors) that are essential for promoting effective suicide risk management by providers in HIC and LMIC?). Qualitative research (ethnographic observation of provider-patient interactions, focus group discussions with providers across different competency levels and developers of task-sharing trainings) could further augment theory development.

Recommendation #4: Reconsider one-off trainings and establish minimum competency requirements. Four months following mhGAP-IG training, over half of providers did no suicide assessment and 95% did no safety planning. At 12-month follow-up, over 40% of providers still did no suicide assessment and 88% did no safety planning. This finding points to inadequacies in current gold-standard task shifting approaches (like mhGAP-IG) that include

one-time suicide prevention training, and highlights a need to evaluate the efficacy and appropriateness of current task-shifting approaches to suicide prevention. The global mental health and suicide prevention fields would further benefit from establishment of minimum competency guidelines for practice (e.g., the highest score of "3" on the suicide ENACT item, which requires assessment and basic safety planning). Although it is empirically unclear whether low-competency management of suicide is worse than no management of suicide, establishment of these thresholds would emphasize the importance of key training domains (like suicide prevention) which are usually neglected in the task-sharing fields.

Recommendation #5: Continue to probe the connection between provider stigma and suicide clinical competency. Despite lack of significant SEM paths, we found significant bivariate correlations between provider social distance and suicide clinical competency over time. In our study, it is possible multicollinearity led to this discrepancy, thus masking a "true" relationship between stigma and suicide clinical competency. Our counterintuitive and statistically significant positive association between provider implicit bias and suicide clinical competency further highlight the need to continue to illuminate the relationship between stigma (in particular, suicide-specific provider stigma) and suicide clinical competency.

Conclusion

Reducing the global burden of suicide and suicidal behavior requires not only sufficient intervention and prevention development, but the presence of well-trained providers who are competent in addressing suicidality. A refined understanding of what hinders and enhances suicide clinical competency, as well as how suicide clinical competency interfaces with patient outcomes, is crucial to the prevention of suicide using novel, task-shifting approaches in global mental health settings.

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APPENDIX A: Non-Attribute ENACT Rating Tool

Enhancing Assessment of Common Therapeutic Factors

(TASC-R)

Date ___ ___ / ___ ___ / ___ ___ ___ ___ Check One: ___ Pre-Test ___ Post-Test ___ Supervision

Name: _____ Age: _____ Gender: M/F

Health profession: _____

Person completing form: _____ Location: _____

1. Non-Verbal Communication & Active Listening: Eye Contact, Expression, Body Language, & Gestures ___ Not applicable
   - ❍ 1 **Need Improvement** does not make any eye contact or stares; shows anger; laughs at/mocks patient; turned away from patient; repeatedly interrupts patient; ignores patient; answers mobile phone without permission
   - ❍ 2 **Done Partially** does not consistently use body language to express interest: rarely makes eye contact, shows limited emotion, appears artificial.
   - ❍ 3 **Done Well** makes appropriate eye contact throughout interaction; smiles when appropriate; sits at appropriate angle from patient and leans in to show interest; use of 'uh-huh', 'hmm' and other keys to signal interest

2. Verbal Communication Skills: Open-Ended Questions, Summarizing, Clarifying Statements ___ Not applicable
   - ❍ 1 **Need Improvement** Uses mostly 'yes/no' questions, e.g. "will you? Can you?"
   - ❍ 2 **Done Partially** Uses open-ended questions, but does not explore topics further or summarize for patient to reflect upon
   - ❍ 3 **Done Well** Open-ended questions, summarizes and clarifies statements, e.g., "What happened? Tell me more."

3. Rapport Building & Self-Disclosure ___ Not applicable
   - ❍ 1 **Need Improvement** clinician does not introduce him/herself or attempt to make the patient feel comfortable OR clinician dominates the experience talking about his/her own experiences
   - ❍ 2 **Done Partially** clinician introduces him/herself but does not attempt to help the patient feel comfortable through small talk/informal conversation OR clinician disclosure but it is not related to patient experience or needs
   - ❍ 3 **Done Well** clinician introduces self, tries to make patient feel comfortable AND disclosure focuses on patient needs

4. Exploration, Interpretation and Normalizing of Feelings ___ Not applicable
   - ❍ 1 **Need Improvement** Clinician does not ask about patient's feelings OR clinician is judgmental/critical about patient's emotions and feelings (e.g., "You shouldn't feel that way" "You should stop thinking or feeling that.")
   - ❍ 2 **Done Partially** clinician asks but does not normalize/validate OR does not explore feelings in detail with patient (Yes/No)
   - ❍ 3 **Done Well** clinician explains that the patient's feelings are common and expected for a person in his/her situation

5. Empathy, Warmth, & Genuineness ___ Not applicable
   - ❍ 1 **Need Improvement** is critical, hostile, or dismissive of patient's concerns or complaints
   - ❍ 2 **Done Partially** clinician is generally warm and friendly to patient, but does not demonstrate the ability to put him/herself in the experience of the patient
   - ❍ 3 **Done Well** clinician demonstrates that he/she understands the experience of patient in genuine, sincere manner

6. Assessing Functioning and Impact on Life ___ Not applicable
   - ❍ 1 **Need Improvement** clinician does not ask patient about the impact on functioning and daily life from feelings, thoughts, psychosocial problem, etc.
   - ❍ 2 **Done Partially** clinician asks functioning and daily life activities, but does NOT connect it to psychosocial/mental health concerns
   - ❍ 3 **Done Well** clinician explores the relationship between psychosocial problem and functioning

7. Explores Patient's and Social Support Network's Explanation for Problem (Casual Model) ___ Not applicable
   - ❍ 1 **Need Improvement** clinician does not ask patient about his/her own view of the cause OR is judgmental/critical about patient's explanation (e.g. "Witchcraft doesn't cause these problems, that is an ignorant/backwards idea!)
   - ❍ 2 **Done Partially** clinician asks patient about his/her own view of cause, but does not explore if this same as family
   - ❍ 3 **Done Well** clinician asks patient about cause and asks if family/support network have same or different explanations

8. Assessing Coping Mechanism and Prior Solutions ___ Not applicable
   - ❍ 1 **Need Improvement** clinician does not ask patient about how patient has coped OR clinician is judgmental about how patient has coped (e.g., "Why did you think that worked?" or "That isn't helpful.")
   - ❍ 2 **Done Partially** clinician asks about coping and prior solutions, but does not provide positive feedback
   - ❍ 3 **Done Well** clinician asks about coping and provides positive feedback in regard to agency or pathways thinking

(TASC-R)

9. Assessing Patient's Recent Life Events and Acknowledge Impact on Psychosocial Wellbeing ___ Not applicable

❍ 1 **Need Improvement** clinician does not ask about triggering life events
❍ 2 **Done Partially** clinician asks about life events but does not connect with current mental health issues
❍ 3 **Done Well** clinician asks about life events and discusses connection with current mental health

10. Other Mental Health, Alcohol/Drugs, Physical Health Issues ___ Not applicable

❍ 1 **Need Improvement** clinician does not ask about any related conditions, e.g., alcohol or drug use, physical health issues, injuries, head trauma, medications, etc.
❍ 2 **Done Partially** clinician takes partial history but does not explore positive responses
❍ 3 **Done Well** clinician assesses related health issues and explains relationship to patient's condition when appropriate

11. Appropriate Involement of Family Member, Significant Other, Caregiver ___ Not applicable

❍ 1 **Need Improvement** clinician does not involve family or ask about involvement of family in therapy OR clinician only talks to or about family members and ignores patient perspective, (e.g., "You should listen to your family more.)
❍ 2 **Done Partially** clinician ask about family involvement, but does not explore patient's reasons for involvement or non-involvement
❍ 3 **Done Well** clinician helps both patient and family participate and encourages interaction between the two

12. Collaborative Goals Setting and Expectations of the Patient ___ Not applicable

❍ 1 **Need Improvement** clinician does not ask patient about his/her goals and expectations for treatment OR clinician just tells patient what to do without asking his/her expectations
❍ 2 **Done Partially** clinician asks patient about goals but does not discuss if these are realistic or can be accomplished
❍ 3 **Done Well** clinician asks about goals and discusses with patient what is and is not achievable through treatment; collaboratively clinician and patient establish treatment plan

13. Clinician's Promotion of Realistic Hope for Change ___ Not applicable

❍ 1 **Need Improvement** clinician either gives no hope (e.g. you will never get better) or gives unrealistic expectations (e.g. you will be cured in a few weeks and never have problems again) for what to expect in treatment and recovery
❍ 2 **Done Partially** clinician vaguely tells patient what will happen during treatment
❍ 3 **Done Well** clinician helps patient feel positive about the future and creates realistic expectations about what can and cannot be achieved through treatment and explains treatment checking patient understanding

14. Psychoeducation & Explaining Treatment/Psychosocial Support in Local (Ethnopsychological) Terms ___ Not applicable

❍ 1 **Need Improvement** clinician uses technical jargon to explain mental health OR uses stigmatizing terms OR does not explain how treatment works
❍ 2 **Done Partially** clinician uses a limited amount of technical jargon but No stigmatizing terms
❍ 3 **Done Well** clinician conducts psychoeducation using local terminology and phrases to explain mental health and treatment in non-stigmatizing language, and checks to see if patient understands

15. Problem Solving: Problem Formulation & Prioritizing, Solution Generation, Action Planning ___ Not applicable

❍ 1 **Need Improvement** clinician does work with patient to formulate key problem requiring help, support, or treatment
❍ 2 **Done Partially** clinician helps patient formulate & prioritize key problem, but does not complete steps #2-4 (see below)
❍ 3 **Done Well** clinician helps patient (1) formulate and prioritize primary problem, (2) brainstorm solutions, (3) explores advantages and disadvantages, and (4) formulate action plan

16. Eliciting Feedback and Providing Advice, Suggestions and Recommendations ___ Not applicable

❍ 1 **Need Improvement** clinician lectures patient what to do without asking if this is acceptable and comfortable to patient, OR clinician does not give any suggestions at all
❍ 2 **Done Partially** clinician gives focused advice but does not ask for feedback from patient to see if the advice is helpful
❍ 3 **Done Well** clinician gives a few suggestions when asked by patient and asks for feedback about suggestions

17. Clinician Explains Confidentially ___ Not applicable

❍ 1 **Need Improvement** clinician does not address confidentiality OR does not adjust to setting
❍ 2 **Done Partially** clinician tells patient that everything is confidential with explaining harm to self or others
❍ 3 **Done Well** clinician explains that all clinician-patient discussions are confidential with the exception of harm to self and others AND adjust conversation to setting

18. Harm to Self, Harm to Others, and Harm From Others and Collaborative Response Plan ___ Not applicable

❍ 1 **Need Improvement** clinician does not ask about harm to self or others
❍ 2 **Done Partially** clinician asks about harm to self or others, but does not help patient develop a plan for safety
❍ 3 **Done Well** clinician asks about harm to self or others and facilitates appropriate actions to assure safety

For additional information on the use, scoring, and adaptation of the TASC-R, please contact Brandon Kohrt (brandon.kohrt@duke.edu). This tool was developed with the support of the South Asian Hub for Advocacy, Research, and Education for Mental Health (SHARE), PIs: Vikram Patel and Atif Rahman [NIMH #U19MH095687-01S1].

APPENDIX B: Attribute ENACT Rating Tool

ENhancing Assessment of Common Therapeutic factors (ENACT)

In-person ver. 2020-Nov 30

(#1) NON-VERBAL COMMUNICATION & ACTIVE LISTENING

Actor instructions: At appropriate times during the interview use culturally-appropriate body language for feelings of sadness or worry.

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Engages in other activities and distracted (e.g., answers mobile, completes paperwork, looking down and away, looking outside, not really listening to what client is saying) **(ONLY if answering a phone call/texting)** ❑ Laughs at client ❑ Uses inappropriate facial expressions ❑ Inappropriate physical contact **(e.g., touching by prescriber in context of AUD okay/don't code here)**	❑ Allows for silences/allow client to speak **(does this MORE than speaking/interrupting)** ❑ Maintains appropriate eye contact ❑ Maintains open posture (body turned toward client) (needs to be really bad/facing in other direction) ❑ Continuously uses supportive body language (head nod) and utterances (uh huh) ❑ *None of the above*	❑ *Completes all Basic Helping Skills* ❑ Varies body language during the session in relation to client's content and expressions **(need to be more than once)**

Check the level that best applies (only one level should be checked)

❑ Level 1	❑ Level 2	❑ Level 3	❑ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills*	*all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

(#2) VERBAL COMMUNICATION SKILLS

Actor instructions: When helper uses closed-ended questions "Do you, did you, can you…?", respond with short yes/no responses. When helper uses open-ended questions "Please tell me about, please share with me, how did that… etc.?", respond with more detailed answers.

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Interrupts client **(pattern of interrupting; more than once)** ❑ Asks many suggestive or leading closed-ended questions **(e.g., yes/no questions that imply blame or a "right answer"; you didn't really want to do that, right? it hasn't been hurting that long, right?); medical close-ended questions OK (pattern of close-ended questions; more than once; fine)** ❑ Corrects client **(e.g., what you really mean…)** or uses accusatory statements **(e.g., you shouldn't have said that to your husband) (even one correction is coded)**	❑ Open ended questions **(does this continuously/regularly)** ❑ Summarizing or paraphrasing statements **(be generous, even once is okay; this does NOT mind reading, must paraphrase what client said)** ❑ Allows client to complete statements before responding **(does this continuously/regularly)** ❑ *None of the above*	❑ *Completes all Basic Helping Skills* ❑ Encourages client to continue explaining (tell me more about…) **(once is coded)** ❑ Uses clarifying statements in first person (I heard you say, I understood…) **(once is coded)** ❑ Matches rhythm to clients, allowing longer or shorter pauses based on client **(more than once; throughout session)**

ENhancing Assessment of Common Therapeutic factors (ENACT)

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❑ Uses culturally and age inappropriate language and terms **(even once is coded)**		

Check the level that best applies (only one level should be checked)

☐ Level 1	☐ Level 2 / ☐ Level 3	☐ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills* / *all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

(#3) EXPLANATION AND PROMOTION OF CONFIDENTIALITY

Actor instructions: During the role play, ask the helper "Are you going to tell anyone these things that I tell you?" or "I am afraid you will tell other people the things I am telling you?"

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Forces client to disclose to helper or others **(once gets coded)** ❑ Describes confidentiality inaccurately (eg, I will only tell your family) **(once gets coded)** ❑ Promises all things will be kept confidential without exceptions **(once gets coded)** ❑ Minimizes client's concerns about confidentiality (eg, it doesn't matter if anyone else hears us) **(once gets coded)**	❑ Explains concept of confidentiality **(once gets coded)** ❑ Lists exceptions for breaking confidentiality for self-harm or harm to others **(once gets coded)** ❑ Explains why it can be important to break confidentiality **(once gets coded)** ❑ *None of the above*	❑ *Completes all Basic Helping Skills* ❑ Details the referral process related to confidentiality and exceptions **(once gets coded)** ❑ Asks questions to assess client's understanding of confidentiality **(once gets coded)** ❑ Topics of discussion are appropriate to confidentiality of setting **(once gets coded)**

Check the level that best applies (only one level should be checked)

☐ Level 1	☐ Level 2 / ☐ Level 3	☐ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills* / *all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

(#4) RAPPORT BUILDING AND SELF-DISCLOSURE

Actor instructions: Do not provide your name or personal information unless asked to do so by the helper.

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Dominates session describing a personal experience **(once is coded)** ❑ Minimizes client's problems by describing how the helper has dealt with this **(once is coded)** ❑ Asking unnecessary embarrassing personal questions **(once is coded)** ❑ Discusses confidential information of other clients **(once is coded)**	❑ Introduces self and explains role **(just giving name is coded)** ❑ Makes casual, informal conversation **(once is coded; minimal criteria – e.g. khanubhayo?)** ❑ Asks for client's introduction, eg, what client prefers to be called **(e.g., may I know your name, your name is ___,)** ❑ Shares general experience to relate to the client (eg, about one's community/region) **(once is coded)**	❑ *Completes all Basic Helping Skills* ❑ Asks for client's reflection related to helper's information that is shared **(e.g., was it helpful that I shared my experience? Once is coded)** ❑ Checks with client that they are comfortable (e.g., offer seat, preferred language) **(once is coded)**

ENhancing Assessment of Common Therapeutic factors (ENACT)

In-person ver. 2020-Nov 30

	❑ *None of the above*	

Check the level that best applies (only one level should be checked)

☐ Level 1	☐ Level 2 / ☐ Level 3	☐ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills* / *all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

(#5) EXPLORATION & NORMALISATION OF FEELINGS

Actor instructions: Do not share about feelings or emotions unless the helper asks, for example, "How are you feeling; please tell me about anything that has been bothering or worrying you lately; I notice that you seemed sad when you came in, please tell me if something has been upsetting you."

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Makes statements that client's response is unusual or atypical for others in similar situations **(eg, people don't usually react this way; once is coded)** ❑ Minimizes or dismisses client's feelings, worry thoughts (e.g., "don't think too much"), or emotions **(must be minimizing or dismissive of specific EMOTION or WORRY, e.g., "don't be so worried" or "why bother being angry, anger never helped anyone" or "it's not a big deal"; once is coded)** ❑ Forces client to describe emotions **(once is coded)**	❑ Appropriately encourages client to share feelings **(e.g., tapaailai kasto lagcha, probing, aru ke huncha; should be a pattern)** ❑ Explain that others may share similar symptoms, reactions, and concerns, given similar experiences (e.g., "anyone would feel that way" or "I would have felt scared too"; **once is coded)** ❑ Asks client to reflect on the experience of sharing emotions **(e.g., How does it feel to tell someone you're angry? Sounds like this is the first time you've talked about this, what's it like to share? Now that you've talked about how you're feeling, how are you now? Once is coded)** ❑ *None of the above*	❑ *Completes all Basic Helping Skills* ❑ Explores potential reasons for hesitance to share emotions **(once is coded)** ❑ Comments thoughtfully on client's facial expression to encourage emotional expression **(e.g., you're looking away, you look sad; once is coded)** ❑ Validates emotional responses while also reframing potential harmful emotional reactions **(needs to both to count; once is coded)**

Check the level that best applies (only one level should be checked)

☐ Level 1	☐ Level 2 / ☐ Level 3	☐ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills* / *all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

(#6) DEMONSTRATION OF EMPATHY, WARMTH & GENUINENESS

Author instructions: At appropriate times during the interview use culturally-appropriate body language for feelings of sadness or worry (same instruction for 1.1), and when asked describe sadness to see how helper responds (same instruction for 2.2).

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills

ENhancing Assessment of Common Therapeutic factors (ENACT)

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❑ Critical of client's concerns **(concerns include financial, relationship, employment, household; e.g., "there isn't a difference between government school and boarding school, stop trying to get your daughter into boarding school"; different from Item #5 Harmful #2 because not explicitly dismissive of emotions; once is coded)** ❑ Dismissive of client's concerns **(e.g., about medication, "getting a job is easy, you shouldn't worry about it"; "don't worry"; once is coded)** ❑ Helper's emotional response appears inappropriate, fake or acting **(pattern of this)**	❑ Is warm, friendly, and genuine throughout session **(pattern required low threshold ok)** ❑ Continuously shows concern or care for the client **(*means a verbal, emotionally reflective statement, e.g., that sounds like an experience that made you upset; that sounds like a really hard experience; it sounds like something that is really worrying; naming emotion for client; pattern required OR one powerful time can also count; low threshold ok)** ❑ Asks question to identify what emotions the client was feeling **(eg, I wonder if you felt sad or angry when this happened; pattern required)** ❑ *None of the above*	❑ *Completes all Basic Helping Skills* ❑ Asks client to reflect on empathic statements from helper **(e.g., What did you think when I said you sounded sad? Once is coded)**

Check the level that best applies (only one level should be checked)

☐ Level 1	☐ Level 2 / ☐ Level 3	☐ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills* / *all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

(#7) ASSESSMENT OF HARM TO SELF, HARM TO OTHERS, HARM FROM OTHERS & DEVELOPING COLLABORATIVE RESPONSE PLAN

Actor instructions: During the role play, express that "Sometimes when I go to sleep, I wish I wouldn't wake up in the morning." If asked if you would ever hurt or kill yourself, explain "Sometimes I think about dying, but I wouldn't hurt myself on purpose." If asked about reasons for leaving describe, "I want to stay alive to care for my family. If I died, who would take care of them." If asked about any prior attempts, reply, "No, I have never tried to kill myself."

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Does not ask about self-harm ❑ Lectures client with religious or legal reasons against self-harm (eg, this is sin, or this is against the law; **once is coded**) ❑ Expresses disbelief (eg, accuses client of discussing self-harm to get attention; states that others would not actually harm the client or client's children; **once is coded**) ❑ Encourages client not to tell anyone else about self-harm or harm to others **(once is coded)**	❑ Asks about self-harm or harm to others, or explores harm if raised by client **(once is coded)** ❑ Asks about current intent, means, or prior attempts **(once is coded; put specific questions (e.g., did they ask about planning, means, intent, all of the above? in *notes* section)** ❑ Asks about risk and/or protective factors **(e.g., once is coded)** ❑ *None of the above*	❑ *Completes all Basic Helping Skills* ❑ If current risk is high or low, helps client to develop safety plan (eg, coping strategies and help seeking; **once is coded; put specific safety plan components discussed in *notes* section**)

ENhancing Assessment of Common Therapeutic factors (ENACT)

In-person ver. 2020-Nov 30

Check the level that best applies (only one level should be checked)

☐ Level 1	☐ Level 2 / ☐ Level 3	☐ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills* / *all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

(#8) CONNECTION TO SOCIAL FUNCTIONING & IMPACT ON LIFE

Actor instructions: If helper asks about daily activities, share that your worries or sadness sometimes make it hard to do typical activities, like take care of oneself, take care of one's children, spouse, or other family members.

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Criticizes client for letting symptoms impact functioning **(e.g., you are weak, you have no willpower; once is coded)** ❑ Tells client there is no connection between mental health concerns and daily functioning or does not ask about how mental health is affecting daily functioning **(if they don't ask, gets an overall 1)** ❑ Criticizes client for impact of their problems on children, spouse, or family members **(once is coded)** ❑ Makes client feel guilty for impact on children, family, and others **(once is coded, because you are like this, your family suffering)**	❑ Asks about daily functioning **(e.g., sleep, eating, working, doing schoolwork, chores, socializing; once is coded)** ❑ Discusses the connection (the relationship) between daily functioning and mental health **(once is coded; must be explicitly related to functioning to be coded; link between physical and mental sx coded under psychoed)** ❑ *None of the above*	❑ *Completes all Basic Helping Skills* ❑ Clarifies and/or supports client's connections between functioning and mental health or reframes as needed **(once is coded)** ❑ Explores relationship in both directions **(daily life to symptoms; symptoms to daily life; once is coded)** ❑ Asks about history of daily functioning compared to current social context **(eg, COVID19; how long has this been going on?, etc., once is coded)**

Check the level that best applies (only one level should be checked)

☐ Level 1	☐ Level 2 / ☐ Level 3	☐ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills* / *all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

(#9) EXPLORATION OF CLIENT'S & SOCIAL SUPPORT NETWORK'S EXPLANATION FOR PROBLEM (CAUSAL & EXPLANATORY MODELS)

Actor instructions: If asked about perceived cause of problems, provide different types of answers to see how helper responds. For example, "I don't know if I have these problems because I lost my job and worry all the time now. Or maybe, I am just cursed." If asked about family's perception, provide a different perceived cause, e.g., "My family thinks I have these problems because I am weak and lazy."

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Criticizes client's view of problem as ignorant,	❑ Asks about client's view on cause of problem **(why do you think this happened,**	❑ *Completes all Basic Helping Skills*

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superstitious, etc. **(once is coded)** ❑ Endorses harmful beliefs of client or social network's view of the problem **(once is coded)**	**why are you feeling this way, e.g., because of a fight with family?; must be getting at underlying *cause* of problems; once is coded)** ❑ Asks about family's or social support network's view on cause of problem **(e.g., What does your family say caused this? Must be specific to underlying *cause* of problems; once is coded)** ❑ *None of the above*	❑ Incorporates client's perspective of cause in care planning in non-harmful manner **(once is coded)** ❑ Discusses alternative to harmful explanations **(eg, You said this was because you failed your family, I wonder if there is another way to think about this situation?; once is coded)** ❑ Addresses differences in client's view of cause and others' view of cause **(once is coded)**

Check the level that best applies (only one level should be checked)

❑ Level 1	❑ Level 2 / ❑ Level 3	❑ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills* / *all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

(#10) APPROPRIATE INVOLVEMENT OF FAMILY MEMBERS AND OTHER CLOSE PERSON(S)

Actor instructions: If asked about close persons in your life, describe immediate family members. But, if asked about who you would like involved in care, describe someone else, e.g., an aunt, uncle, neighbor, etc.

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Tells client not to involve family or close person in any way during treatment or recovery **(once is coded)** ❑ Forces client to involve family or close person in treatment process **(once is coded)** ❑ Demands to speak with family or close person without permission from client **(once is coded)** ❑ Allows an accompanying close person to disempower the client **(once is coded)**	❑ Asks about close person(s) in client's life **(eg, household members, family, or other; once is coded)** ❑ Asks client how they would like to involve close person(s) in the care process **(once is coded)** ❑ Asks client who they live with **(once is coded)** ❑ *None of the above*	❑ *Completes all Basic Helping Skills* ❑ Explores client's choices or reasons for involving or not involving close, familiar person **(once is coded)** ❑ Does role-play or discusses options for successful interaction with close person **(e.g., helper plays role of family member; once is coded)**

Check the level that best applies (only one level should be checked)

❑ Level 1	❑ Level 2 / ❑ Level 3	❑ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills* / *all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

(#11) COLLABORATIVE GOAL SETTING & ADDRESSING CLIENT'S EXPECTATIONS

Actor instructions: If asked about goals, first provide a goal such as "get a job", but then if aided by helper, provide a more psychosocial goal, e.g., "I would like to worry less so I can come up with a plan for looking for work…"

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Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Tells client that their goals (expectations) can't be met but does not give a reason **(once is coded)** ❑ Gives incorrect, misleading, or unrealistic information about treatment goals **(need to talk about goals explicitly for this to happen; if goal not established, don't code; once is coded)** ❑ Dictates goal for client **(must specifically frame as a goal, e.g., "now your goal must be to stop drinking" or "stopping your drinking is the highest priority; once is coded)**	❑ Asks client about goals & expectations **(once is coded)** ❑ Clearly explains how client's goals and expectations fit with treatment plan **(once is coded)** ❑ *None of the above*	❑ *Completes all Basic Helping Skills* ❑ Prioritizing and modification of treatment plan to fit client goals & expectations **(once is coded)** ❑ Works with client to reframe their goals within scope of the treatment plan **(e.g., Your goal is to get a job, could we work together on a goal that will help you do that?; once is coded)**

Check the level that best applies (only one level should be checked)

❑ Level 1	❑ Level 2 / ❑ Level 3	❑ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills* / *all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

(#12) PROMOTION OF REALISTIC HOPE FOR CHANGE

Actor instructions: During the role play, ask the helper questions such as "Will meeting with you make all of my problems better? Will meeting with you help me get a job?" Also, mention something that gives you hope (eg, I did it before, so I can do it again) and something that takes away hope (eg, Nothing that I am trying works)

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Makes negative statements about client's doubts **(how do you expect to get better if you have no hope...; once is coded)** ❑ Gives unrealistic expectations **(everything will be cured or solved...; once is coded)** ❑ Provides no hope for change **(this problem cannot be solved...; once is coded)**	❑ Explains how client can be hopeful about possibility of change **(eg it will take time, but get better slowly; once is coded)** ❑ Praises client for seeking care **(e.g., thank you for coming in today, you being here shows you want to get better; minimal criteria, once is coded)** ❑ *None of the above*	❑ *Completes all Basic Helping Skills* ❑ Solicits and explores client's doubts about the treatment **(once is coded)** ❑ Helper shares reasons for hope based on helper's prior experience or client's behaviors **(once is coded)** ❑ Discusses reasons for hope when client is doubtful or dissatisfied **(once is coded)**

Check the level that best applies (only one level should be checked)

❑ Level 1	❑ Level 2 / ❑ Level 3	❑ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills* / *all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

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(#13) INCORPORATION OF COPING MECHANISMS & PRIOR SOLUTIONS

Actor instructions: During the role play, provide examples of positive coping (e.g., working in the garden) and negative coping (yelling at others to go away, using alcohol).

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Makes negative statements about client's current or future coping mechanisms (**that would never work…; once is coded**) ❑ Encourages or shows acceptance of harmful coping mechanisms **(once is coded)**	❑ Asks client about current or past coping mechanisms **(e.g., how they kept going or managed after the problem started…; once is coded)** ❑ Praises client for positive or safe current or prior solutions (**once is coded)** ❑ *None of the above*	❑ *Completes all Basic Helping Skills* ❑ Encourages use of continued positive coping mechanisms **(*means therapist is reinforcing what client is ALREADY doing that's helpful; e.g., you've been getting out of bed even when you're sad, keep doing it; once si coded)** ❑ Reflection on prior unhealthy strategies and brainstorm positive alternatives **(*means therapist is focusing on new, helpful coping skills. Teaching new skills is included; once is coded)**

Check the level that best applies (only one level should be checked)

❑ Level 1	❑ Level 2 / ❑ Level 3	❑ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills* / *all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

(#14) PSYCHOEDUCATION AND USE OF LOCAL TERMINOLOGY

Actor instructions: If the helper uses technical terms, ask "what does that mean" to see if the helper can describe it in lay language.

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Uses technical terms without checking client's understanding **(once is coded)** ❑ Uses stigmatizing mental health terms **(once is coded)**	❑ Conducts accurate psychoeducation using simple terms **(e.g., mind-body connection, link between thoughts, feelings, behaviors, physical sensations; once is coded)** ❑ Includes local concepts and terminology into psychoeducation **(once is coded)** ❑ *None of the above*	❑ *Completes all Basic Helping Skills* ❑ Incorporates client's description of the problem **(once is coded)** ❑ Checks that client understands psychoeducation **(once is coded)**

Check the level that best applies (only one level should be checked)

❑ Level 1	❑ Level 2 / ❑ Level 3	❑ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills* / *all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

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(#15) ELICITATION OF FEEDBACK WHEN PROVIDING ADVICE, SUGGESTIONS & RECOMMENDATIONS

Author instructions: If the helper asks for feedback about suggestions, reply that some of the advice is helpful but some of it would be hard in your situation, then ask if there are other options or activities.

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Lectures client about what to do without asking for client feedback **(if gives ANY advice without feedback, code here; once is coded; can be double coded with #12 (gives unrealistic expectations)**	❑ Asks for feedback from client to see if any offered suggestions are helpful **(once is coded)**	❑ *Completes all Basic Helping Skills*
❑ Offers negative or harmful suggestions **(once is coded)**	❑ Provides clarifications, reframing, or alternative suggestions based on feedback **(once is coded)**	❑ Summarizes feedback provided by client and checks if interpretation is correct **(once is coded)**
	❑ *None of the above*	

Check the level that best applies (only one level should be checked)

❑ Level 1	❑ Level 2 / ❑ Level 3	❑ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills* / *all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

(#16) STRENGTHENING SOCIAL SUPPORT

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Discourages client to contact with other people, agencies, community **(even once is coded)**	❑ Identifies social support in client's life **(e.g., who do you talk to/who are you close to; can be double coded as #10 (asks about close person); just asking who client lives with not enough unless client reports being able to talk to them; once is coded**	❑ *Completes all Basic Helping Skills*
❑ Only suggests contact with emergency services **(even once is coded)**	❑ Encourages client to make contact with others **(can also include other mental health or health professionals. once is coded)**	❑ Schedules action plan with client including when and whom to reach out to for support **(once is coded)**
❑ Judges client for difficulties in communicating with family, friends, or community members **(even once is coded; can be double coded with #6 (critical or dismissive of client concerns; once is coded)**	❑ *None of the above*	❑ Discusses overcoming barriers and challenges related to social support **(e.g., asks client about barriers and challenges related to social support and helps problem-solve them)**
		❑ Recommends skills/techniques to support relationship goals **(can be double coded with #13 (brainstorm possible alternatives); once is coded)**

Check the level that best applies (only one level should be checked)

❑ Level 1	❑ Level 2 / ❑ Level 3	❑ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills* / *all basic skills*	*all basic helping skills plus any advanced skill*

Notes:

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(#17) VALIDATION & INVALIDATION

Check all behaviors that are demonstrated in each category.

Unhelpful or potentially harmful behaviors	Basic helping skills	Advanced helping skills
❑ Changes subject before responding to disclosure ❑ Offers advice or problem-solving WITHOUT validating first ❑ Blames client for event without validating (e.g. "You shouldn't have trusted him and told him. That was a bad decision") ❑ Criticizes or attacks client's character (e.g., "That was so selfish of you") ❑ Indifference to vulnerability (e.g., silent or punishing afterwards)	❑ Echoes back client's emotion (e.g., "so you were feeling sad" or "so you were feeling anxious") ❑ Offers problem-solving ideas AFTER validating OR if client asks for help (e.g., "I understand. What if you tried telling her how you feel?") ❑ Simply validates emotion (e.g., "I hear you" or "that makes sense") ❑ Validates emotions based on client's past or present history (e.g., "It makes sense that you feel lonely since your friends have been excluding you") ❑ Reframes emotion or negative thought AFTER validating (e.g., "it makes sense that that was challenging. And it sounds like you learned a lot from it" or "A lot of people think this way about mental health problems, but that's not true")	❑ Radical genuineness (e.g., "I'm here with you, we can get through this" and "we're here for you" or appropriate client touch) ❑ Therapist self-discloses after client does ("I think about you you too when we don't see each other")

Check the level that best applies (only one level should be checked)

❑ Level 1	❑ Level 2	❑ Level 3	❑ Level 4
any unhelpful behavior	*no basic skills, or some but not all basic skills*	*all basic skills*	*all basic helping skills plus any advanced skill*

Notes

APPENDIX C: Generals & Dissertation Proposal

Literature Review

Worldwide, suicide accounts for nearly one million deaths annually (World Health Organization, 2014). The majority of the world's suicides take place in low- and middle-income countries (LMIC), with a disproportionate burden in Asian LMIC. Despite rising LMIC suicide rates and decades of research identifying risk factors, the scientific field is no better at predicting and preventing suicide than it was 50 years ago (Franklin et al., 2017).

Global efforts to prevent suicide are stalled not only by a lack of sufficient intervention development, but also by a lack of trained providers well-equipped to manage suicidality when it appears in the therapy room. More research is needed to understand what factors inhibit and drive competency in addressing suicidality at the provider level, particularly in low-resource settings that carry the majority of the global suicide burden.

In this literature review, I present a narrative synthesis of the literature on global suicide and suicide prevention, with a focus on suicide prevention initiatives in primary care settings with high potential for dissemination and implementation in both high-income country (HIC) and LMIC contexts. I then review barriers to implementation of primary-care based suicide prevention interventions, with a focus on *provider competency* (i.e., knowledge of and skills in addressing suicidality during clinical interactions) and *healthcare provider stigma* (i.e., negative attitudes and prejudices, at both the explicit and implicit level, against individuals with mental illness) as two salient roadblocks to ethical and effective delivery of suicide prevention interventions in resource-constrained settings. Finally, I discuss limitations in the current literature base on global suicide prevention in integrated primary care settings, and identify potential research avenues forward.

Global Suicide Epidemiology

Suicide and suicidal behavior are rapidly rising, critical global public health issues (Bertolote & Fleischmann, 2002). Suicide is among the 10 leading causes of death in many countries, with every record of completed suicide accompanied by approximately twenty attempted acts (Gelder et al., 2001). In 2016 alone, 793,000 people died of suicide internationally, representing a global mortality rate of 10.5 people per 100,000, or approximately one death every 40 seconds (World Health Organization, 2016). Despite decades of research identifying risk and protective factors for suicide and suicidal behavior (e.g., suicidal ideation, suicide attempts, completed suicide, and non-suicidal self-injury), our ability to accurately predict—and ultimately, prevent—suicide has remain virtually unchanged over the past five decades (Franklin et al., 2017). These rising rates belie the slow but steady improvement across Millennium Development Goal-related health indicators in many countries, and indicate the presence of a growing crisis. The World Health Organization (WHO) has also highlighted the importance of addressing the burden of suicide through the Comprehensive Mental Health Action Plan, which calls for reducing mortality from suicide by 10% between 2012 and 2020 (WHO, 2013).

In an effort to identify populations most at risk for engaging in suicidal behaviors, a wealth of studies have identified characteristics associated with increased risk of suicide. Younger individuals are more likely to die by suicide, with 55% of deaths by suicide in the 15-44 age group, and suicide ranked as the second leading cause of death among youth aged 15-29 (Blum & Nelson-Mmari, 2004). Males are more likely to die by suicide relative to females, though this gap is attenuated in LMIC settings where female deaths by suicide are rapidly rising (WHO, 2019). Individuals experiencing conflict, disaster, loss, and loneliness are also more likely to die by suicide, as are other vulnerable groups (e.g., refugees and migrants, indigenous

populations, prisoners, lesbian, gay, bisexual, transgender, and queer (LGBTQ) populations, and those with a prior suicide attempt).

Despite overall rises in suicide and suicidal behavior globally, regional and cross-national vary considerably (WHO, 2014). Paralleling international population distribution trends, 79% of the world's suicides are in LMIC. In the past decade, in particular, the world witnessed a shift in rates of suicide rates to Asia, due to population growth within the region combined with declining suicide rates in many Western HIC. For instance, the 11 countries in the WHO's South-East Asia Region comprise nearly one-quarter of the global population, yet account for 39% of all suicides (WHO, 2014). Despite this concentrated burden of suicide, however, only 10% of studies of global studies on suicide and mental health are conducted in LMIC, with low-income countries in South-East Asia routinely excluded (Guzmán et al., 2019). Of the 10% of studies originating from LMIC, an even smaller percentage meet criteria for scientific rigor (i.e., involve more than one-off cross-sectional studies with a small sample sizes and an exclusive focus on high-risk populations), concealing crucial data on suicide epidemiology in these high-risk regions.

Suicide in Nepal

In Nepal, a South Asian low-income country landlocked between India and China, epidemiology on suicidal behavior is muddled yet concerning. The WHO (2014) estimates a national suicide rate of 24.9 deaths per 100,000 individuals, ranking it 7th globally. Another national report, based on a prospective epidemiological survey across eight districts, indicates that suicide is the leading cause of death among reproductive-age women between 15-49 years, accounting for 16% of deaths, with a mortality rate of 28/100,000 (compared to 5.5/100,000 in the United States; U.S.) (Pradhan et al., 2011). Published literature also indicates that the suicide

rate among youth (age 15-29 years) is the second highest in South Asia, with 85% of all suicides occurring before the age of 25 (Hagaman et al., 2017).

Despite these high estimates, suicide reporting and surveillance in Nepal and other LMIC is historically weak and may dramatically underestimate the extent of its burden (Hagaman et al., 2016; Hagaman et al., 2017). The reasons underlying this unreliability are manifold. First, Nepal lacks any coordinated and systematic surveillance system to track and communicate suicide-related deaths to national and international reporting bodies (Pradhan et al., 2011; Hagaman et al., 2016; Hagaman et al., 2017). This lack of a national surveillance protocol leads to uneven and inaccurate reporting of suicide deaths. Among the 75 districts in the country, for instance, a maximum of seven were included in epidemiological studies of suicide between 1998 and 2010 (Hagaman et al., 2017). An even smaller number are publicly unavailable. Second, there is no standardized or mandated within-country reporting system for suicidal behavior. In Nepal, confirmation and reporting of suicide-related deaths are under the formal jurisdiction of police, who are informally responsible for conducting post-mortem examinations and storing and managing "deaths due to unnatural causes" (Subba et al., 2009). However, post-mortem exams are not routinely conducted, in part due to lack of police awareness that they are legally responsible for suicide reporting (Hagaman et al., 2017). Reliance on paper-based reporting leads to even more inaccuracies compiling national reports, which require electronic data. Third, social stigma surrounding suicidal behavior and its perceived legal repercussions also contribute to intentional underreporting. Suicide attempts are inaccurately viewed as illegal by law enforcement, healthcare workers, and community members, despite lack of any national legal code criminalizing and/or punishing attempts. This misinformation can further mask attempts as well as deaths by suicide, due to family and community fears of imprisonment or fines. Last,

current surveillance policies prioritize reporting of suicide deaths relative to other suicidal behaviors (e.g., suicidal ideation, suicide attempts, non-suicidal self-injury (NSSI), leading to sparse estimates of heterogeneous forms of suicidal behavior. Due to these combined factors, the extent of suicidal behavior in Nepal may be graver than is presently suggested.

At a superficial level, high rates of suicide in Nepal may contradict national improvements in literacy and education access, health, and political representation (Pradhan et al., 2011). For instance, despite the high rate of suicide among reproductive-age Nepali women, female representation in politics has grown considerably, material mortality rates have decreased, and female workforce membership has increased in almost every economic sector (Government of Nepal, 2012; UNESCO, 2015). Increased rural-to-urban migration and access to education may also partially contradict rising rates of youth suicides. However, suicide stigma, interpersonal violence, paternalistic values, school examination-related-anxieties (among adolescents in particular), economic stress (particularly in rural areas, where a majority of Nepal's suicides take place), limited access to mental health services, and psychological fallout following a decade-long Nepalese Civil War may confer psychological vulnerability to suicide above and beyond the prior-described improvements (Kohrt et al., 2008; Lamichhane et al., 2011; Pradhan et al., 2011).

Although published findings underscore a need to relieve the national suicide burden in Nepal, suicide has historically been neglected as a government and public health priority (Vijayakumar et al., 2005), leading to minimal initiatives to accurately detect and prevent suicidal behavior. At present, fewer than one-third of individuals who demonstrate suicidal behavior receive any form of treatment in middle-income countries, and fewer than one-sixth

receive treatment in low-income countries (compared to over one-half in HIC), like Nepal (Bruffaerts et al., 2011).

Global Suicide Prevention Interventions

Suicide prevention strategies vary considerably in scope, as well as geography. A range of effective (i.e., empirically supported in one or more rigorously designed clinical trial) interventions exist at both the population and the group and individual level. In LMIC, interventions specifically for suicide prevention are rare.

Population-Level Suicide Prevention Interventions

Evidence-based practices (EBPs) targeting reduction in suicidal behavior at the population level can be grouped into the following three categories: 1) *education campaigns*; 2) *means restriction initiatives*; and 3) *media interventions*. Education campaigns target both providers and the overall public, and aim to increase help-seeking and detection of suicidal behavior by improving understanding of the etiology of suicide and mental illness more generally (Mann et al., 2005). Despite the relative ease of dissemination (e.g., via newspaper and media outlets, school or community-based programs) and frequent use of public education campaigns, systematic reviews of ecological studies did not show long-term impacts on suicide reductions, despite some improvements in help-seeking behaviors (e.g., via calls to suicide or mental health helplines) and knowledge about suicide (Guo & Harstall, 2002; Mann et al., 2005; Zalsman et al., 2016). At the provider level, education initiatives that increase primary care workers' (PCWs) ability to detect and treat depression are among the most effective interventions in reducing suicide rates, with an estimated reduction in annual suicide rates ranging from 22% to 73% (Mann et al., 2005; Zalsman et al., 2016). All studies evaluating education campaigns included in the above reviews originated from HIC (mostly from the

European continent), with no representation from LMIC. Conceptual models for education campaigns are either absent or underdeveloped in the literature, with multiple hypothesized mechanisms operating (e.g., reducing stigma towards suicide or mental illness, increasing access to anti-depressant medications, increasing disclosures of suicidal behaviors or help-seeking). However, none, to the author's knowledge, have been directly tested. The existence of multi-pronged interventions (e.g., where education initiatives are embedded within other interventions) further masks data on their potentially unique mechanism of action.

Means restriction comprise a second category of suicide prevention interventions. Suicide attempts using highly lethal means (e.g., pesticides in LMIC, firearms in the U.S.) consistently lead to higher death rates (Nock et al., 2008). One systematic review of published suicide prevention strategies (Zalsman et al., 2016) showed differential impacts of local or national efforts to (1) increase firearm control legislation; (2) detoxify domestic gas; (3) restrict sales or prescriptions of barbiturates; (4) erect physical barriers to prevent deaths by jumping; and (5) restrict pesticides. Detoxification of domestic gas, installment of physical barriers, and restrictions on barbiturates were generally associated with reduced suicide incidence. There were mixed effects for firearm control legislation, with some studies documenting a substitution effect (i.e., utilization of alternate methods to attempt suicide) of nearly 25%. In settings where pesticide ingestion is a common method, national restrictions to block imports and sales of pesticides, restrict local pesticide availability (particularly for highly toxic variants), and decrease absorption of toxic sub-component generally lead to reductions in pesticide-related deaths, as well as overall suicide mortality. Implementing safe-storage options (e.g., storage facilities with lockable boxes) may also be a promising strategy, though the number of studies is small, and benefits have not been replicated. Notably, the vast majority (80%) of studies

originated from HIC, with a smaller percentage focused on pesticide restriction in Asian LMIC (e.g., Sri Lanka, India, Taiwan, and China), possibly due to disproportionately high rates of pesticide-related suicides throughout the continent (Gunnell et al., 2007a). The mechanism of action for means restriction efforts is not readily apparent, though some data indicate that efforts that do not require individual cooperation or intrinsic motivation (e.g., national bans on suicide means) may be more efficacious (e.g., Gunnell et al., 2017).

Interventions based on altering media reporting of suicide have also been developed and tested. Media reports of suicide may increase suicidal behavior when language used to describe suicide-related deaths is glorified, sensationalized, romanticized, detailed, or repeated (Mann et al., 2005). Media interventions may provide an alternate pathway for reducing suicide risk by emphasizing use of descriptive language in reporting and provide information on available resources, which can theoretically decrease suicide-related contagion, increase detection of at-risk individuals, and increase help-seeking (Zalsman et al., 2016). Two systematic reviews (Bohanna & Wang, 2012; Sisask & Varnik, 2012; Wang, 2012) indicate contextual variability in efficacy: for vulnerable populations (e.g., those with a prior suicide attempt), media coverage may be iatrogenic, while for general populations, coverage may reduce suicidal behavior when positive coping is emphasized. In general, mass campaigns may be most effective when part of a multi-component intervention package, rather than implemented as standalone interventions (Torok et al., 2017). Though widely untested, media blackouts (i.e., blocking of any media reporting suicidal behavior) may also reduce suicide risk, though the mechanism of action is not clear. The only published study of a media blackout (in 1987) in Austria reported an 80% decrease in suicide attempts (Niederkrotenthaler & Sonneck, 2007). All published studies of media interventions from systematic reviews (67 in total) originated from HIC (of which 16 were

from Asia), with none from LMIC. Although there is evidence linking internet and social media use to increased suicidal behavior, both in HIC (e.g., Luxton et al., 2012; Sedgwick et al., 2019) and LMIC (Guo et al., 2018), there is a dearth of published literature regarding interventions that leverage these platforms for suicide prevention.

Group- and Individual-Level Suicide Prevention Interventions

Psychosocial interventions for suicide prevention also exist at group and individual levels. These interventions include (a) *psychotherapy*; (b) *social contact interventions*; and (c) *emergency inpatient interventions*. These interventions may be long-term (i.e., lasting beyond four contact points) or brief (i.e., lasting one to three sessions).

A range of empirically-supported psychotherapies for direct or indirect prevention of suicidal behavior show promising results. In one meta-analysis (Calati & Courtet, 2016) of 32 controlled psychotherapy trials targeting suicidal behavior in a combined 4,114 individuals, those who received psychotherapy were less likely to attempt suicide at follow-up compared to patients allocated to treatment as usual (TAU) conditions, with effects mostly found over medium-term follow-up (Zalsman et al., 2016). Psychotherapy was most effective in reducing suicide attempts for adults, outpatients, individuals with borderline personality disorder, and both previously and non-previously suicidal patients. Heterogeneity in interventions and populations is readily apparent: controlled psychotherapy trials included cognitive behavioral therapy (CBT), interpersonal therapy, problem-solving therapy, dialectical behavior therapy (DBT), mentalization-based therapy, and psychoanalytically oriented partial hospitalization, each with its own purported theoretical underpinnings and mechanisms of action that have not been systematically compared.

In another systematic review (Zalsman et al., 2016), family and group therapy showed mixed results, with some studies indicating that treatments incorporating components of CBT, DBT, and problem-solving therapy may reduce suicidal behavior in certain populations (e.g., adolescents). Group-based treatment at the school level have a weak evidence base, with some randomized control trials (RCTs) showing no reduction suicidal behavior despite improved knowledge and attitudes regarding suicide.

Contact interventions (i.e., personalized, regularly delivered mail letters expressing concern and warmth) to hospitalized patients in the U.S. and Australia following a suicide attempt have mixed effects in preventing additional suicidal behavior following admission (Comtois et al., 2019; Robinson et al., 2012). No studies of effective inpatient treatment (admission vs. non-admission) of any variety have been found. In one U.S. study examining the likelihood of potentially iatrogenic effects of hospital crisis services, visits to the emergency room predicted an increase in suicide attempts in the following year (Coyle et al., 2018).

Brief interventions delivered in a variety of healthcare settings also show promise in reducing a range of suicidal behavior. In one systematic review of brief psychological interventions for suicidal behavior following emergency room visits, four controlled trials in various settings (e.g., Switzerland, the U.S., and five LMIC) showed promise in reducing suicidal ideation and suicide attempts (McCabe et al., 2018). Although the interventions differentially drew upon psychological theory and techniques, all included efforts to increase treatment engagement, provide information, develop safety plans, and utilize follow-up contact. Two studies explicitly theorized (but did not directly test) positive therapeutic alliance as a mechanism of action (i.e., initial provider contact, coupled with repeated follow-up contact, was hypothesized to increase provider connectedness as a method for reducing suicidal behavior)

(Fleischmann et al., 2008; Gysin-Maillart et al., 2016). In one large-scale, multi-site RCT of the effect of a single, one-hour information session followed by nine telephone or in-person contacts in five LMIC settings, significantly fewer suicide deaths were found in the intervention relative to TAU (Fleischmann et al., 2008).

LMIC Suicide Prevention Interventions

Virtually all suicide prevention interventions are developed and tested in HIC, despite the disproportionate burden of suicide in LMIC (Fleischmann et al., 2016). Although a number of suicide prevention strategies have been effectively implemented in HIC — including those discussed in the prior section of this review — interventions are rarely translated to LMIC contexts, and startlingly few LMIC suicide prevention interventions have undergone rigorous evaluation. Significantly, of the 201 combined studies across two systematic reviews of group and individual psychotherapies for suicide prevention (Calati & Courtet, 2016; Zalsman et al., 2016; , only three were in LMIC settings (two in China and one in India).

The WHO (2015) has developed a series of 10 evidence-based recommendations for managing suicidal behavior in LMIC settings, which include strategies such as assessment of suicide and NSSI in individuals with mental, neurological, and substance use (MNS) disorders, activating social support, use of a problem-solving treatment approach, reducing access to means, and school-based interventions for youth. All of the suggested interventions received a "low" quality of evidence rating, due to lack of published studies on their effectiveness in LMIC. The lack of LMIC interventions parallels a lack of national commitment to suicide prevention. In the WHO's South-East Asia Region, only two of the 11 countries have a comprehensive national suicide prevention strategy adopted by the government, and none of the remaining nine say that development of national strategy is currently underway (WHO, 2014).

Evidence for two population-based suicide prevention interventions (e.g., means restriction and public education initiatives) exists in LMIC, though studies have small sample sizes and are not typically replicated (e.g., Ahmadi & Ytterstad, 2007; Gunnell et al., 2007b; Vijayakumar et al., 2013; Wilks et al., 2008;). In LMIC such as Nepal, suicide prevention efforts rarely targeted psychological change (Phillips & Cheng, 2012). For instance, the largest trial of a suicide prevention intervention in LMIC is the WHO Multisite Intervention Study on Suicidal Behaviors (SUPRE-MISS), which used suicide information and follow-up contact as the sole intervention component (Fleischmann et al., 2008). For acute individuals that may require targeted mental health services, EBPs options are rare, since the majority of developed psychotherapies primarily target post-traumatic stress disorder as well as common mood and anxiety disorders, rather than suicidal behaviors specifically (Fleischmann et al., 2016). Of note, it is unclear if and how existing suicide prevention efforts in LMIC incorporate cultural adaptation processes to account for unique group-level norms and values. Given growing consensus favoring the role of culture and context in influencing almost every aspect of the treatment process (Bernal et al., 2009; Katz et al., 2006; Summerfield, 1999), treatment development researchers are more inclined to be wary of interventions that fail to incorporate elements of patient's cultural background that have potential to impact treatment fidelity and efficacy. This is especially significant for suicide, where interventions must address a complex and entangled web of social, personal, political, and historical factors.

In LMIC, chronic lack of service availability lies in stark contrast to population mental health needs (WHO, 2010). The WHO estimates that more than one million mental health workers are needed to reduce the treatment gap in LMIC (Fulton et al., 2011). Task-sharing, or

the involvement of non-specialist (or lay) health providers to deliver mental health services, is a critical component of reducing this gap.

Primary Care as an Arena for Global Suicide Prevention Interventions

The healthcare systems of many LMIC are derived from colonial medical origins that emphasized high-cost, high-technology care intended to cure or eradicate specific diseases, mostly of the infectious variety (Magnussen et al., 2004). When LMIC began to gain mid-century independence, a number of countries began to develop alternative healthcare systems based on comprehensive coverage of basic health services. When evidence supporting health gains made by these approaches began to emerge in the 1970s, the benefits of a bottom-up approach emphasizing prevention (over specialized, or top-down treatment) and targeting underlying social, economic, and political causes of illness emerged as a promising strategy for reducing global health inequity. In response to this optimism, the WHO established a declaration promoting a "health for all" approach, characterized by "complete physical, mental, and social well-being, and not merely the absence of disease or infirmity" (1946). This declaration laid the foundation for primary care settings as a vehicle for mental health service delivery in LMIC, and influenced the establishment of five core primary care values: continuity, first-contact access, comprehensiveness, coordination, and person-centeredness.

In HIC, primary care settings are regarded as the "de facto mental health care system" (Kessler & Stafford, 2008, p. 9). In LMIC, they are also the default mental health delivery system due to lack of vital mental health service capacity. The *Lancet Series on Global Mental Health* has called for scale-up of services for mental disorders in LMIC with a strong emphasis on primary care and community-based delivery settings delivery (Beaglehole et al., 2008). The WHO's flagship mental health program for training lay providers, the Mental Health Gap Action

Programme (WHO mhGAP), explicitly assumes implementation and scale-up of integrated mental healthcare worldwide at the primary care level (WHO, 2008).

Primary care for mental health encompasses mental health services (prevention and treatment, both short- and long-term) that are integrated into general healthcare and delivered by primary healthcare workers (PCWs) (Beaglehole et al., 2008). PCWs provide the initial point of contact between an individual and the healthcare system, and may refer individuals to more specialized secondary (e.g., psychiatrists) or tertiary (e.g., hospitals) healthcare services. In LMIC, primary care services exist on a spectrum of comprehensiveness, with some rooted in selective delivery (i.e., targeting specific illnesses with high morbidity and mortality, and/or specific populations) and others advocating for increased coverage (i.e., targeting a broad spectrum of illnesses across age ranges and treatment modalities). Professionally, PCWs include a broad cadre of health workers, including general practitioners (GPs) with a medical degree, specialized medical practitioners (e.g., psychiatrists), non-physician health workers such as nurses and midwives, and community health workers with no prior formal training in healthcare, mental healthcare, or both).

Either by design or default, PCWs are routinely placed at the forefront of suicide prevention. Their existence as potential vanguards in global suicide prevention exists for a series of practical reasons. First, in both HIC and LMIC, access to specialized services (which, at present, include the majority of suicide prevention services) is limited, particularly in rural populations that account for a greater proportion of the global suicide rate (Weinmann & Koesters, 2016). In contrast, the majority of Americans have a PCW who they visit, on average, once per year; this is especially the case for populations at elevated risk for suicide (i.e., adolescents and older adults) (Gardner et al., 2010; Raue et al., 2014). There is also a gross,

overall, greater number of PCWs relative to mental health providers (Gilbody et al., 2003). Given the ubiquity of PCWs and clinics in which they are integrated, there are greater possibilities for global scale-up and dissemination of specialized mental health services (including those for suicide prevention). Second, primary care settings are often the first point of entry for individuals accessing the healthcare system, including those with suicidal behaviors. Primary care providers may, therefore, play salient roles in identifying individuals at-risk for suicide, referring patients with suicidal behavior to targeted or more intensive mental health services (depending on level of risk), and managing suicidal behavior directly. Third, PCWs play a significant role in treating common mental disorders (e.g., depression and anxiety), which are present in upwards of 80% of suicidal individuals (Nock et al., 2010). Thus, they are likely to have significant contact with suicidal individuals, and their potential to reduce common mental illness may also indirectly lead to reductions in suicidal behavior.

Rationale for Primary Care as an Arena for Global Suicide Prevention Interventions

The suicide literature consistently highlights strong pathways to care between suicidal individuals and PCWs. In one systematic review of psychological autopsy, registry-based, and record review studies published between 2000 and 2017, contact between suicide completers and PCWs was, on average, 80% in the year prior to suicide (Stene-Larsen & Reneflot, 2019). At one month prior to death by suicide, the average rate was 44%. Findings from individual studies of at-risk populations (which were excluding in the systematic review to enhance generalizability of findings) indicate that upwards of 75% of suicide completers saw a PCW in the previous 30 days (e.g., Arean et al., 2002; Luoma et al., 2002; Appleby et al., 1999). Suicidal individuals are also more likely to visit PCWs relative to mental health providers. In the one-month to one-year period preceding death, 45% of suicidal individuals made contact with a PCW, compared to 20%

who saw a mental health provider within the same time window (Vannoy et al., 2011; Schwartz-Lifshitz et al., 2012; O'Connor et al., 2013; Raue et al., 2014). This difference was especially pronounced for women and older adults. In one large-scale, population-based study, nearly one in three individuals who died by suicide contact health services in the week prior to their death (John et al., 2020). Primary care settings, therefore, may provide timely crucial windows to detect and manage suicide risk.

Studies in LMIC documenting rates of contact between suicidal individuals and PCWs are scarce and infrequently incorporated into systematic reviews, due to their small-scale nature or lack of population-representative samples. Existing reviews of suicide and PCW contact are based on suicide deaths, which are not routinely reported in published LMIC studies. In one study across five LMIC (Nepal, India, Ethiopia, South Africa, and Uganda), 10.1% of individuals presenting at a primary care clinic reported suicidal ideation within the past year, 2.5% reported making a suicide plan, and 2.2% reported an attempt (Jordans et al., 2018). In Nepal, specifically, 50% of suicide planners presenting at a primary clinic made a suicide attempt). Although these data do not specifically focus on populations at highest risk (i.e., those that eventually die by suicide), they indicate that (1) the primary care network does indeed capture individuals with suicidal behaviors; and (2) primary care may be an important venue for suicide assessment and risk reduction in LMIC.

Research on Primary Care-Based Global Suicide Prevention Interventions

Suicide prevention interventions nested within primary care settings are among the most effective interventions for reducing suicide risk across the life span (Mann et al., 2005; Zalsman et al., 2016), particularly in HIC where the vast majority data originate. In one recent systematic review of packaged interventions in primary care settings (i.e., those articulating specific

intervention strategies and/or practice guidelines), four packaged interventions with outcome data were identified (Dueweke & Bridges, 2018). A content analysis revealed four EBP components: (1) *education* of PCWs in managing suicidal behavior; (2) *management of depressive symptoms*; (3) direct *assessment and management of suicidal behavior*; and (4) *screening for suicide and/or depression*. A brief review of the evidence base supporting each of these practice elements, as well as their relevance in LMIC settings, is presented below.

Interventions Employing Education Initiatives. Educating PCWs in assessing and managing depression and/or suicidality is among the most effective interventions for suicide prevention (Mann et al., 2005; Zalsman et al., 2016). Education initiatives at the primary care level include practical and didactic instruction in suicide assessment, clinical management (e.g., safety planning), and documentation (Dueweke & Bridges, 2018). A seminal study (conducted between 1983-1984) in Sweden highlighted the utility of increasing PCW knowledge of mental illness as a means of decreasing suicidal behavior (Rihmer et al., 1995). After the education initiative, rates of suicide and inpatient admissions significantly decreased. Between 1966 and 2014, Following this initial intervention, ten ecological studies or RCTs have shown overwhelmingly positive effects of PCW education on depression etiology and treatment on suicidal behavior (Mann et al., 2005; Zalsman et al., 2016). A number of published PCW education initiatives exist as part of multi-component intervention packages (e.g., free phone consultations with medical doctors, access to reduced-cost antidepressants), obscuring the active mechanism within these interventions. Of the 10 published reports of PCW education initiatives, only one was in a LMIC setting (Brazil), and did not show an impact on suicidal behavior.

Interventions for Management of Depressive Symptoms. Since depression is a primary risk factor for suicidal behavior (Hawton et al., 2013), suicide prevention interventions that target modifiable depressive symptoms may offer a promising approach for reducing suicidal behaviors. In one systematic review of suicide prevention interventions delivered in primary care settings (Dueweke & Bridges, 2018), two controlled trials of depression management among adults and older adults in primary care settings (e.g., via medication management, interpersonal therapy, and/or collaborative care management by a depression care specialist) showed significant reductions in suicidal ideation relative to a control group, as well as maintenance of gains at 24 months. These effects have also been replicated in standalone publications (i.e., studies not included in systematic reviews) (e.g., Bruce et al., 2009; Unützer et al., 2006). Combined primary care interventions that include depression treatment alongside screening and education is common, however, and leads to difficulty isolating the pathway(s) through which depression treatment reduces suicidal behavior. Furthermore, although intervention studies in LMIC delivered by PCWs often successfully reduce depressive symptoms (e.g., Araya et al., 2003; Patel et al., 2008), participants with suicidal behaviors are either excluded from study enrollment or outcomes for suicidality are not reported.

Interventions Directly Targeting Suicide. Primary care interventions can also directly address suicidal behavior via a combined assessment and risk management approach (Dueweke & Bridges, 2018). The length of risk management can vary considerably (e.g., from one one-hour session in HIC to care at the level of months) depending on the extent of contact PCWs have with suicidal individuals. Single-session crisis safety planning is a common component of primary care interventions targeting suicidality directly (e.g., via safety planning) (Dueweke & Bridges, 2018). In emergency departments in HIC, there are mixed results regarding the efficacy

of brief safety planning (e.g., Brown et al., 2005; Knox et al., 2011). Although these interventions may readily translate to primary care settings, their impact has yet to be evaluated. To the author's knowledge, no studies in LMIC have examined the effects of suicide-specific strategies delivered by PCWs.

Interventions that Screen for Suicide and Depression. In the U.S., the Centers for Disease Control recommends PCWs screen all patients for depression and suicide risk. In alignment with this recommendation, a number of primary care-focused initiatives to increase screening for suicidal behaviors have been documented in HIC settings (Crawford et al., 2011; Wintersteen & Diamond, 2013; Etter et al., 2018). One key issue in evaluating the impact of screening is that it is often only one component of a packaged interventions (e.g., those that also include patient psychoeducation, mental health treatment, and/or mental health referrals), leading to difficulties isolating the unique effect of screening itself. In one systematic review of the effect of direct screening for suicide on suicidal behaviors, evidence did not point to a clear or consistent benefit of suicide screening in mitigating suicidal behavior in any population at the primary care level (O'Connor et al., 2013). Furthermore, conceptual models for how screening may exclusively reduce suicidality have not been developed. In one systematic review of trials assessing benefits and potential iatrogenic effects of direct suicide risk screening by PCWs, there was neither an apparent positive nor negative immediate effect (i.e., one to 14 days following screening) of screening on suicide-related outcomes. Although screening for depression by PCWs is commonly cited as an essential component of suicide prevention interventions, the specific effect of depression screening on suicidal behaviors has not, to the author's knowledge, been directly evaluated. Of note, among existing reviews of screening interventions, no studies were from LMIC.

One key question in primary care settings is the ability of suicide and depression screeners to increase accurate detection of suicidal behavior. Although a number of brief screening instruments have been developed for rapid assessment (O'Connor et al., 2013), the majority fail to provide reports of the accuracy of detection (e.g., via estimates of screening sensitivity, specificity, and positive and negative predictive values). Among studies providing information on accuracy of detection, only two studies (among adult and older-adult populations) showed increased sensitivity (i.e., at or above 80 percent). However, promising screening sensitivity was compromised by a high rate of false positives (indicated by a positive predictive value of less than 40% in both studies), diminishing confidence in screening utility. Screening accuracy data is especially limited for adolescent populations; there were only two studies deemed "high-quality" in one systematic review of primary care screening tools (O'Connor et al., 2013), neither of which were successful (e.g., average sensitivity of 69.5%, average specificity of 72.5%, and an average positive predictive value of 48% across both studies). Rigorous adolescent screening efforts were also limited to higher-risk populations (e.g., those with depression or other mental health difficulties), limiting their generalizability in universal primary care settings. In Nepal, a community-based tool to enhance detection of mental disorders (including suicidality) in primary care settings has been shown to increase mental health treatment (Jordans et al., 2017). However, its impact on detecting suicidal behavior has not yet been published.

Interventions in LMIC. In LMIC, large-scale efforts to expand access to mental healthcare have focused on integrating mental health services into primary care, with services delivered by lay PCWs (WHO, 2008). In 2008, the WHO disseminated the Mental Health Gap Action Programme (mhGAP), which outlines the implementation and scale up of integrated

mental healthcare worldwide within a primary care model. Two years following the introduction of mHGAP, the mHGAP intervention guide (mhGAP-IG) was released, and provides evidence-based tools and clear protocols for assessment and management of priority mental health disorders, with a focus on simplified language and guidance for training of lay providers with no prior mental health experience. Priority disorders were identified by consultation with international mental health experts, and include depression, psychosis, dementia, alcohol and drug use disorders, epilepsy, bipolar disorder, behavioral and developmental disorders, and suicidal behaviors. Since its release in 2010, mhGAP-IG has been used to scale up mental health services in over 90 countries worldwide, and translated into over 20 languages. Version 2.0 was published in 2016, and incorporated updated evidence and feedback from on-the-ground users (WHO, 2016).

The mhGAP-IG includes a suicide-specific module with education and direct suicide assessment and management practice elements, and lasts 3.5 hours over five days in its original field testing manual (WHO, 2010). The module provides direct clinical guidance on assessment and management of suicidal behavior, and includes didactic materials (including videos), role-play exercises, and a knowledge assessment. One trial in Mexico examined the effectiveness of mhGAP-IG training on PCW knowledge of and readiness for identifying and managing suicide risk (Robles et al., 2019). Findings showed increased knowledge of suicide risk management practices (measured via a written knowledge test), as well as increased willingness to treat patients with suicidal behaviors. However, no impact on patient outcomes was observed. To the author's knowledge, no studies have examined the effects of mhGAP-IG on suicidal behaviors in LMIC primary care settings.

In Nepal, there are concerted efforts to extend coverage of mhGAP-IG in primary care settings. Nepal is one of five members of a consortium of research institutions and health ministries (in collaboration with U.K. partners and the WHO) called the Programme for Improving Mental Health Care, or PRIME (Lund et al., 2012). PRIME is designed to study the implementation and scale-up of treatment programs for priority mental disorders in primary care contexts, and utilized mhGAP-IG as one its primary training modalities. In one study examining the indirect effects of PRIME-evaluated mhGAP services on suicidal ideation in Nepal, participants with a diagnosis of depression experienced a greater reduction in suicidal ideation relative to a comparison group, from baseline to three months (Aldridge et al., 2020). Among individuals with alcohol use disorder, there was no effect of mhGAP-IG on suicidal ideation, relative to a comparison group.

Beyond mhGAP-IG, there are have been additional efforts to integrate suicide prevention activities into LMIC primary care settings. In a hand review of studies included in three systematic reviews of mental health interventions in LMIC (Davaasaambuu et al., 2019; Patel et al., 2007; Singla et al., 2017), only two studies explicitly included treatment protocols for suicidal behavior in primary care settings. One study in Iran (of a multi-pronged intervention including depression screening and training, suicide assessment and management, and population-level initiatives) found a reduction in deaths by suicide post-intervention, but a paradoxical increase in suicide attempts (Malakouti et al., 2015). Another study utilizing a transdiagnostic psychological intervention included training in suicide assessment and risk management (with potential for delivery by PCWs), but no suicide-specific outcomes were reported (Murray et al., 2014).

Barriers to Suicide Prevention in Primary Care Settings

Despite the inevitable interfacing between suicidal individuals and PCWs, and unique and urgent opportunities for suicide prevention in primary care settings, the accessibility and availability of suicide prevention services are not sufficient unto themselves to reduce the burden of suicide. In primary care settings, a host of barriers to utilization of suicide prevention resources remain. At the patient level, qualitative findings from suicidal individuals in HIC indicate that low-quality patient-provider relationships in the primary care system lead to concealment of at-risk suicidal behavior (e.g., suicidal ideation, planning, and/or intent) and deter help-seeking (Dunster-Page et al., 2017). *Healthcare provider stigma* may account for these low-quality interactions and their impact on suicide. Additionally, despite the existence of EBPs to address suicidal behavior in primary care contexts, *lack of provider knowledge and skill in EBPs for suicide* may also be a substantial barrier to fidelity, efficacy, and implementation of primary care-based interventions. A discussion of these two barriers, as well as their relevance in LMIC contexts, is below.

Low Provider Competency in Addressing Suicidal Behavior as a Barrier to Suicide Prevention in Primary Care

Mental health interventions are successfully delivered by PCWs in LMIC, and there is a growing body of literature on training models assessing competency of PCWs' delivery of mental health services in LMIC (Keynejad et al., 2018). The WHO reports 12 core competencies that should be achieved by PCWs trained in mhGAP, grouped by domain (e.g., knowledge, attitude, and behavioral skill) (2017). However, this documentation does not specify what specific skills PCWs need to be trained in to be competent, and if and how competency affects suicidal behaviors at the patient level. Given this lack of explicit training guidance, lack of

adequate provider competency in assessing and managing suicidal behavior may be an emergent barrier to suicide prevention in LMIC, and can ultimately compromise fidelity and efficacy of suicide prevention strategies in global settings.

Conceptualizations of Competency. Provider competency can be defined as "the extent to which a therapist has the knowledge and skill required to deliver a treatment to the standard needed for it to achieve its expected effects," (Fairburn & Cooper, 2011, p. 373). Competency at the PCW level should also impact (1) quality of therapy, or "the extent to which a psychological treatment was delivered well enough for it to achieve its expected effects," (p. 373); as well as (2) patient outcomes.

Figure 1 provides a visual of a traditional hierarchy of tiers of clinical competency (Miller, 1990). At the base of hierarchy are factors such as attitudes toward patient populations (e.g. stigma among PCWs towards mental illness, including suicide). The next level is 'knows,' which refers to basic knowledge of target conditions, etiology, risk factors, and treatments. 'Knows' may be assessed with multiple choice assessments or true–false questions. The next level is 'knows how,' which refers to provider's ability to apply knowledge in theoretical scenarios. 'Knows hows' may be assessed with written clinical vignettes wherein providers provide provisional diagnoses and make treatment recommendations. 'Shows' refer to clinical skills implemented in real-world settings (i.e., between a PCW and a suicidal patient), and may be assessed through (1) live observations in clinical settings or (2) structured role-plays in which standardized 'mock' patients act out a condition and health workers interact with the standardized patient to make a diagnosis and treatment plan.

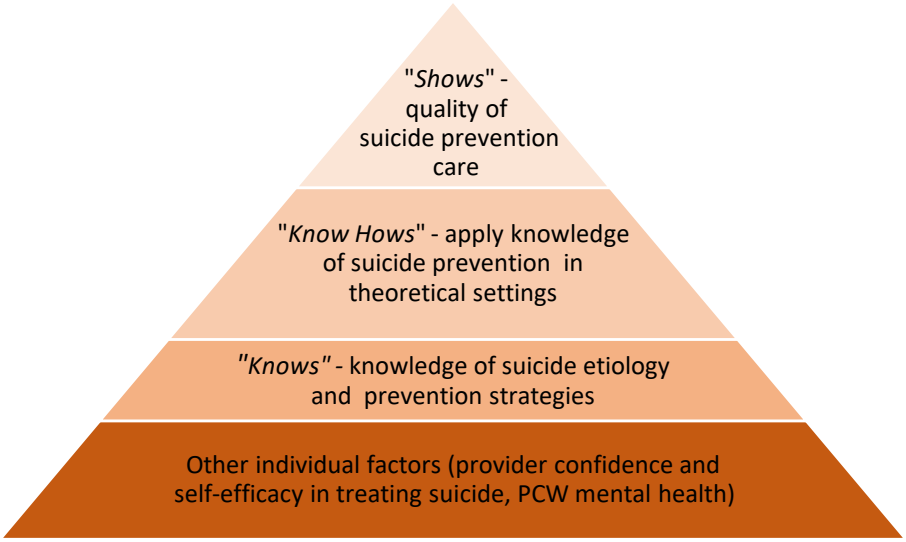

Figure 1. Hierarchy of suicide prevention clinical skills (adapted from Kohrt et al., 2018)

Research on Suicide Competency among PCWs. A number of competency deficits—at both the knowledge and skill level—can compromise suicide prevention fidelity and efficacy in LMIC primary care settings. Combined, identified areas may be a part of the reason that in only 3% of patients who completed suicide did the PCW note in their medical records there was suicide risk (Schulberg et al., 2004).

Research in both HIC and LMIC settings indicate significant knowledge gaps in managing suicidality at the primary care level. In one large-scale review of knowledge and skills among behavioral healthcare staff in the U.S., 52.9% had no prior training in suicide assessment or management, and this number was expected to be greater for primary healthcare staff (Silva et al., 2016). In LMIC, upwards of 80% of primary care healthcare staff have no suicide-specific training (Chow et al., 2007; Eynan et al., 2015). Across both HIC and LMIC contexts, PCWs endorse low willingness to treat suicidal patients, which is associated with low self-confidence in managing suicidality (Boukouvalas et al., 2019).

One specific gap in suicide competency in adequate assessment of suicidality. Qualitative and quantitative data indicate that PCWs are reluctant to ask about suicide (e.g., Boudreaux & Horowitz, 2014; LeCloux et al., 2020). In one meta-analysis, PCWs feared they would prompt suicide by asking patients about suicidal ideation, despite replicated data that suicide assessment does not increase short- or long-term risk for suicide (Dazzi et al., 2014). Primary care physicians also rely on the patient to initiate the conversation about suicidal ideation (Schulberg et al., 2004), which may, in part, be due to discomfort regarding suicidal inquiry. Lack of suicide assessment by PCWs is concerning, as only 19-54% of HIC patients who completed suicide directly informed their providers of their suicidal ideation and plan (Schulberg et al., 2004). Data on eliciting suicide disclosures from LMIC populations are weak, but indicate that PCWs, on average, ask about suicidal ideation less than 50% of the time (e.g., Eynan et al., 2015; Kohrt et al., 2018). In Nepal, less than half of PCWs assessed patients for suicidality even *after* receiving mhGAP-IG training in suicide assessment and management (Kohrt et al., 2018), raising the possibility that existing training programs may not be sufficient to reach competency in suicide assessment and management.

Lack of adequate assessment of suicidality among PCWs is compromised by indirect communication of suicidal ideation, planning, or intent. PCW providers may not have adequate training to assess for these indirect signs of suicide risk. In retrospective studies of suicide completers' last visit to PCWs, upwards of half of patients indicated gastrointestinal distress, headaches and migraines, back problems, pain, respiratory symptoms or cardiovascular symptoms as exclusive reasons for seeking a healthcare visit (Pan et al., 2009; Draper et al., 2008; Cho et al., 2013; Isometsa et al., 1995; Trivedi, 2004). Lack of direct (i.e., unprompted) communication around suicidal behaviors on the behalf of patients renders PCWs task of

diagnosing a mental illness or identifying suicidal ideation considerably more difficult. These concerns have been echoed in qualitative findings in Nepal (Ramaiya et al., 2017).

PCWs may also miss opportunities for detecting current or past suicidal behavior by only assessing for suicidality in patients diagnosed with depression. In one HIC study (Davidsen 2011), PCWs reported only assessing for suicidal ideation in patients who were diagnosed with depression, and even among those patients with a diagnosis of depression they were not assessing for suicidal ideation regularly. This is disconcerting for a number of reasons. First, although depression and suicide are strongly linked (depression is the most common mental disorder in individuals who die by suicide; Hawton et al., 2013), suicidal behavior also covaries with other psychopathology (e.g., anxiety disorders, alcohol use disorder, and psychosis) that may not necessarily coincide with depression (Nock et al., 2010). Second, research has shown that PCWs underestimate the percentage of patients who suffer from depression (Krupinski & Tiller, 2001). If PCWs underestimate the number of patients they have with depression and only assess for suicidal ideation in patients already diagnosed with depression, this may lead to many patients who experience suicidal ideation going unnoticed.

Stigma as a Barrier to Suicide Prevention in Primary Care

PCW competency deficits are, unto themselves, unlikely to account for all barriers to suicide prevention in primary care settings. In addition to research on provider competency in LMIC, there is a parallel and growing body of literature on the negative impacts of stigma, particularly at the healthcare provider level, on suicide prevention intervention efficacy.

Stigma, in its heterogenous forms, can independently and interactively (e.g., combined with other barriers to suicide prevention) lead to concealment of suicidal behavior, diminish help-seeking, and compromise fidelity and efficacy of existing mental health services (Sudak et

al., 2008). Sociological and social psychological theory conceptualizes stigma as "the situation of the individual who is disqualified from full social acceptance" (Goffman, 1963, pp. 140) due to "the dynamics of shameful differentness." According to stigma theorists, stigma is, at its essence, a social construction with two components that interact with one another. First, an individual possesses a physical or abstract "mark" representing their difference from others. On the basis of that mark, the individual is then devalued and discredited by their social environment, and ultimately rejected. This process of labeling an *other* as 'undesirable' or 'abnormal' "spoils normal identity." Given its relational quality, stigma thrives—or dies—in the way individuals treat one another.

Taxonomies of Stigma. Classification systems for stigma have developed rapidly in the past decade (Pescosolido & Martin, 2015), with one recent model distinguishing between taxonomies of "experiential" and "action" variants. The former ("experiential variants") refers to how stigma is experienced by an individual or group (e.g., individuals who are suicidal), and include the following overarching categories:

1. *Perceived stigma* refers to endorsement of a statement that prejudice and discrimination exist against a "marked" group. Stigma can be perceived by either the recipient (the 'stigmatized') or the do-er (the 'stigmatizer'), and may not necessarily reflect personal agreement a stigmatizing statement present in society. For example, perceived stigma produced by mental illness (or via identification with a stigmatized minority group) may be a significant risk factor for suicide (Carpinello & Pinna, 2017). Perceived stigma by suicidal individuals has also been shown to act as a barrier to disclosures of suicidal ideation, planning, or intent, as well as help-seeking behaviors (e.g., Downs & Eisenberg, 2012; Oexle et al., 2017).

2. *Anticipated stigma* refers to an individual's or group's expectation that prejudice and discrimination will occur because of their "mark." Anticipation of prejudice (e.g., being thought of as "weak") or discrimination (e.g., social rejection) by suicide attempt survivors has qualitatively (Sheehan et al., 2019) and quantitatively (Mayer et al., 2020) been linked to suicide non-disclosure and increased suicidality.
3. *Endorsed Stigma* includes expressions of agreement with existing stereotypes, and can be asked of either the stigmatizer or the stigmatized. Some studies indicate that approximately half of individuals endorse those with suicidal behavior as dangerous (Reavely & Jorm, 2011), weak (e.g., Sheehan et al., 2017), attention-seeking, arrogant, pathetic, and selfish (e.g., Batterham et al., 2013; Li et al., 2015). Studies conducted nearly three decades apart also found that individuals endorsed more stigmatizing attitudes towards suicide compared to ethnic and religious minority groups (Kalish, 1966; Lester, 2006).
4. *Received stigma* concerns the stigmatized specifically, and would include overt behaviors questions asking whether stigmatized individuals have directly been subject to experiences of prejudice or discrimination during an interaction. Endorsement of discrimination by minority populations (e.g., transgender adults and persons living with HIV/AIDS (PLWH), and Asian-Americans) is associated with an increase in suicide attempts (Cheng et al., 2010; Clements-Noelle et al., 2006; Preau et al., 2008).
5. *Enacted stigma* refers to stigmatizers' direct use of discriminatory behaviors and differential treatment against a stigmatized group. Qualitative and quantitative studies provide multiple examples of discriminatory behaviors against suicide attempt survivors in particular, including social and professional dismissal and avoidance,

> coercion, mistrust, and shaming (Calear et al., 2014; Lehmann et al., 2016; Rimkeviciene et al., 2015; Sheehan et al., 2017). For instance, nearly half of American college students state that they would not date an individual who had attempted suicide in the past year (Lester & Walker, 2006). In the vast majority of industrialized nations, insurance policies include exclusion clauses stating that those who are risk for or die by suicide will not be granted access to life insurance (Scocco et al., 2012).

The above examples may also indirectly allude to reciprocal relationships between stigma and suicidality, which are important to consider when designing and delivering suicide prevention strategies in global contexts. Suicidal individuals are often stigmatized and, therefore, subject to negative endorsements of their private (i.e., cognitive and affective) and public (i.e., overt) behaviors, as well as overt acts of discrimination. According to one systematic review, stigma experienced by suicidal individuals may also directly or indirectly activate increased suicidal behavior (Carpinello & Pinna, 2017), which may lead to further experiences of stigma through a negative feedback loop. Individuals experiencing stigma for reasons other than suicide (e.g., individuals with depression and other mental illnesses, as well as racial, ethnic, and/or sexual minorities) may also be at-risk for suicide due to their experiences as a stigmatized *other*. Qualitative research, for example, indicates that, among individuals with mental illness, experiences of discrimination can contribute to suicidality, which are related to increases in self-reported loneliness and hopelessness, reduced self-worth, and concealment of suicidal behavior (Farrelly et al., 2015; Oexle et al., 2017). Longitudinal studies have also found that greater perceived stigma among individuals with mental illness predicted increases in suicidality over time (Oexle et al., 2017; Xu et al., 2016). Thus, developing strategies to counter stigma against

vulnerable groups at-risk for suicide (who may not currently display suicidal behavior) may also be an important intervention target in suicide prevention initiatives.

Suicide and Stigma in LMIC. In LMIC, a small but growing number of studies has begun documenting links between stigma (predominantly perceived stigma) and poor mental health among individuals with mental illness (Thornicroft et al. 2009; Üçok et al. 2012; Lasalvia et al. 2013). However, few studies have quantitatively examined experiences of stigma among suicidal individuals or those at-risk.

In Nepal, the bulk of research on suicide has been qualitative in nature. Although studies have theorized that low help-seeking behaviors among suicidal individuals in Nepal may be generated and/or maintained by stigma (Jordans et al., 2018), none have quantitatively tested this hypothesis. Anthropological theory, however, has qualitatively delineated causal pathways between suicide and stigma in Nepal. According to Nepali ethnopsychology (defined as the study of "folk" models of psychological subjectivity), the "self" comprises multiple, interacting entities that include both the isolatable individual as well as its broader social context (Kohrt & Harper, 2008).

Nepali ethnopsychological models contend that suicide and suicidal behavior result from an imbalance between two components of the self: the *man* (heart-mind) and *dimaag* (brain-mind). The heart-mind, or *man,* is the site of a human's originality, and holds memory and emotions. It also holds individual capacities for concentration, motivation, intentionality, and subjective opinion. Normative (i.e., not dysregulated) affect is stored and experienced in the heart-mind (e.g., moderate sadness following a loss, moderate anxiety in response to a trigger for worry, adaptive fear in a justified context). In contrast, one's brain-mind, or *dimaag,* is responsible for an individual's cognition, and attention, and ability to emit behaviors that are in

accordance with appropriate public behaviors (governed by broader societal norms). When functioning optimally, the brain-mind will assess functioning (e.g., intensity of emotions, desires, memories) in the heart-mind, and inhibit socially inappropriate action as needed. However, according to ethnopsychological theory, inflamed or non-normative heart-mind problems (including suicidal ideation, conceptualized as psychological distress) that are unregulated by the brain-mind lead to socially unacceptable behavior (e.g., suicide attempts, suicidal gestures, and non-suicidal self-injury) that is highly stigmatized, and carries socio-economic consequences for both the individual and their family (Kohrt et al,. 2012). Thus, given that suicide is viewed as a predominantly brain-mind problem, and brain-mind problems are inextricably linked to stigma, an intrinsic theoretical relationship exists between stigma and suicidal behavior.

This imbalance between the heart-mind and brain-mind conceptually map onto existing theories of suicide that argue that psychological distress (i.e., intense emotions in the heart-mind) and social stress (i.e., social approval due to brain-mind dysfunction and resulting suicidal behavior) lead to suicide when combined (Klonsky & May, 2015). Although the link between suicide and ethnopsychology on stigma has not been quantitatively tested, qualitative data support the relationship (Kohrt & Harper, 2008). In one cross-sectional survey, a majority of family members of Nepali-speaking Bhutanese refugees who died by suicide believed that the suicide completer's behavior was due to a brain-mind problem. Long-term (i.e., 10-session) psychological interventions for suicide in Nepal have attempted to include anti-stigma components based on Nepali ethnopsychology into treatment manuals (Ramaiya et al., 2017; Ramaiya et al., 2018). However, the impact of these specific anti-stigma components has not been specifically evaluated.

Healthcare Provider Stigma in LMIC. Alongside "experiential variants" of stigma, contemporary taxonomies that are commonly used in the research literature also highlight "acted variants," which refer to who gives and/or receives stigma (Pescosolido & Martin, 2015). "Acted" stigma components include *self-stigma* (commonly referred to as internalized stigma, or the internalized acceptance of stigmatizing stereotypes), *courtesy stigma* (stigma given to those associated with "marked" individuals, such as the family of an individual who died by suicide), *public stigma* (stigma endorsed by the general social environment), and *structural stigma* (which may also be referred to as institutionalized stigma, or instantiations of stigma in an environment's policies, laws, and constitutional practices).

In addition to these four categories, "acted" stigma also includes *provider-based* stigma. Healthcare provider stigma is an example of provider-based stigma, defined as "prejudice and discrimination voiced or exercised, consciously or unconsciously, by occupational groups designated to provide assistance to stigmatized groups" (pp. 92). Although individuals with infectious diseases account for notable provider stigma, among non-communicable diseases, individuals with mental illness, specifically, account for the bulk of healthcare provider stigma in both HIC and LMIC (Semrau et al., 2015). One systematic review across HIC and LMIC (Henderson et al., 2014), stigmatizing beliefs, attitudes, and discrimination were common among primary health care professionals. This stigmatization has consequential and downstream impacts, including both inaccuracies in and missed opportunities for screening, diagnosis, and treatment of mental illness, which compromise healthcare delivery and lead to early mortality (Kane et al., 2019). These consequences render the right to adequate care more fragile in LMIC, since a lack of specialized mental health care places a greater burden on primary care providers to provide ethical and effective treatment.

The deleterious impacts of healthcare provider stigma, in particular, can have negative repercussions for suicidal individuals. In HIC (e.g., Australia and rural America), suicide attempt survivors report higher rates of received and enacted stigma by non-mental-health providers (including primary care providers) compared to mental health providers (Frey et al., 2016**;** Reavley et al., 2014), suggesting that suicidal individuals may be at greater risk for encountering stigma in primary care settings. Studies in HIC also indicate that suicidal attempters felt punished and invalidated (i.e., dismissed or judged) by their physician after disclosing their attempt (Cerel et al., 2006), and were more generally more hesitant to disclose suicidal ideation to their provider for fear of being stigmatized (Richard et al., 2018).

In LMIC, to the author's knowledge, no published data has synthesized literature on primary care provider stigma and suicide. Independent studies, however, document similar trends found in HIC. In India, for example, over 60% of resident physicians (not psychiatrists) and community health workers did not disagree with the statement that suicide was a sign of weakness (Almanzar et al., 2014). And, in Turkey, upwards of 80% of medical students displayed stigmatizing attitudes towards attempt survivors, in the form of desiring social distance (i.e., would not want suicide attempter supervising their children, and would not want to rent a room of their house to a suicide attempter) (Emul et al., 2011).

Stigma Reduction Interventions for Primary Care Providers. Empirical studies on "what works" to reduce stigma among specific populations (e.g., primary care providers) are rare, given that the bulk of studies assess stigma rather than evaluate interventions designed to target and reduce it (Evans-Lacko et al., 2014). However, published research on stigma reduction interventions (in LMIC particularly) has expanded in the last five years.

In one systematic review of 56 stigma reduction intervention components in LMIC, the following core components of interventions emerged: (1) *educational methods* (i.e., those addressing myths and misconceptions); (2) *communication* (i.e., those incorporating live discussion, reflection, and sharing of personal experiences); (3) *social contact methods* (i.e., direct or indirect interactions with people with the stigmatised "mark"); (4) *creative* (i.e., utilizing role-plays, theater, or other art forms); (5) *technology* (i.e., assisted via videos, websites, and/or web conferencing; and (6) *therapeutic* (i.e., use of CBT methods to directly counter stigmatizing stereotypes) (Clay et al., 2020). Educational initiatives were the most common (as is also the case in HIC), with a reported 94% utilization percentage. Education initiatives are the most traditional among stigma reduction interventions, and are typically ground in knowledge-attitude-practice (KAP) frameworks that argue that improved knowledge of mental illness will directly translate to improved attitudes and behaviors towards individuals with mental illness. Despite their heightened use, the majority of educational initiatives do not independently lead to attitudinal and behavioral change (Henderson et al., 2014; Thornicroft et al., 2016; Unger et al., 2016), with some even showing iatrogenic effects (Stuart et al., 2012), including those conducted in primary care settings.

Social contact, typically in the form of live or recorded testimonies from individuals with lived experience of mental illness who are living in recovery, may be a global mechanism of action in anti-stigma interventions, including at the primary care level. Theoretically, social contact is thought to dismantle in-group vs. out-group differences that maintain stigma against particular individuals and groups (Pettigrew et al., 2011). Social contact interventions may facilitate this breakdown via a four-pronged approach, whose unique elements have yet to be evaluated in a component analysis: (1) providing education about the stigmatized individual or

group member; (2) reducing anxiety and increasing empathy; and (3) facilitating cognitive reappraisal by the stigmatizer; and (4) changing behaviors of the stigmatizer. Over 500 studies (the vast majority taking place in HIC) of social contact interventions have been published since 1952, with most reporting reductions in prejudice and discrimination (Pettigrew et al., 2011; Henderson et al., 2014; Nyblade et al., 2019). In multi-component stigma reduction interventions, social contact has been qualitatively identified as a key active ingredient (Knaak et al., 2014).

Despite growing interest in social contact within the stigma field, a number of studies document either no change, of even a negative impact, on stigma (Thornicroft et al., 2016). Positive findings on social contact are also not consistently translated to healthcare professionals, including primary care providers (Henderson et al., 2014). Evidence from LMIC is notably limited (Henderson et al., 2014; Mehta et al., 2015), particularly regarding efficacy of interventions, best practices for targeted key groups (e.g., primary care providers), and theoretical frameworks and practical guidance regarding cultural adaptation of interventions to the local context (Semrau et al., 2015). In Asia, in particular, social contact interventions are rarely utilized. In a systematic review of LMIC stigma reduction interventions, nearly half (44%) of all experimental trials took place in East and South Asia. However, only one of the interventions utilized social contact as an intervention approach (Kohrt et al., 2018).

Data on stigma reduction interventions among healthcare providers in LMIC are quite rare. One study in Brazil indicates that a brief (18-hour) suicide prevention training incorporating an anti-stigma component may be effective in reducing prejudiced knowledge and attitudes among primary care staff (Da Silva Cais et al., 2011). In Nepal, although multi-pronged stigma reduction interventions have been developed and implemented in primary care settings (e.g.,

Kohrt et al., 2020; Semrau et al., 2015), their impact on suicide-related knowledge, attitudes, and behaviors have yet to be evaluated.

Theory on the Intersections between PCW Stigma, Competency, and Suicidal Behavior

Extensions of existing theory can link provider stigma and lack of provider competency to the development and maintenance of suicidal behavior. One contemporary theory on the etiology of suicide (Three-Step Theory) is rooted in an ideation-to-action framework, and argues that suicidality results from three 'hits' occurring in combination with one another (Klonsky & May, 2015). First, psychological hopelessness and pain lead to suicidality (here, defined as suicidal ideation, planning, and intention to act). In Step 2, the level of social connectedness modulates the severity of suicidality, with greater social disconnection leading to increased suicidality. In Step 3, suicidality can translate to suicidal behavior (e.g., suicide attempts and completed suicide) when dispositional factors (e.g., biological pain sensitivity), acquired capability (e.g., histories of physical abuse, emotion dysregulation, impulsivity), and practical facilitators (e.g., access to means) are in place.

Figure 2 highlights how healthcare provider stigma and poor suicide competency intersect with Three-Step Theory (Klonsky & May, 2015). The left-hand side of the figure depicts each of the three steps in Three-Step Theory, and orange text in the middle represent clinical antidotes to specific steps (e.g., reducing distress, increasing hope, increasing positive therapeutic alliance, restricting access to means) to each of the three steps thought to generate and maintain suicidality. Poor PCW competency (i.e., inadequate assessment and management of suicidality) interferes with all antidotes due to lack of targeted knowledge and skill in addressing suicidality.

According to the model, healthcare provider stigma reduces PCW competency. A number of studies support this relationship. In HIC, qualitative data indicate that judgmental and dismissing statements from healthcare providers prevent them from asking about suicide (e.g., Richards et al., 2018). Students in HIC who have personally known someone who died by suicide are over twice as likely to screen for suicide compared to students who did not personally know someone, and this difference is hypothesized to be due to stigma (Petgrave, 2018). In LMIC, providers will choose not to provide or train in mental healthcare due to stigma against mental illness, including severe mental illness (e.g., Adewuya & Ayotunde, 2007; Minas et al., 2011). Figure 2 also suggests that healthcare provider stigma can directly increase suicidality by activating Step 2 (i.e., level of social connectedness). In HIC and LMIC, stigmatizing attitudes and beliefs about suicidal patients by providers are associated with increase behavioral intentions to socially distance (Eskin et al., 2011). Providers with stigmatizing attitudes in Asian countries are also more likely to be dismissive of suicide attempters (e.g., Kishi et al., 2011; Tzeng et al., 2009), which can lead to poor therapeutic alliance.

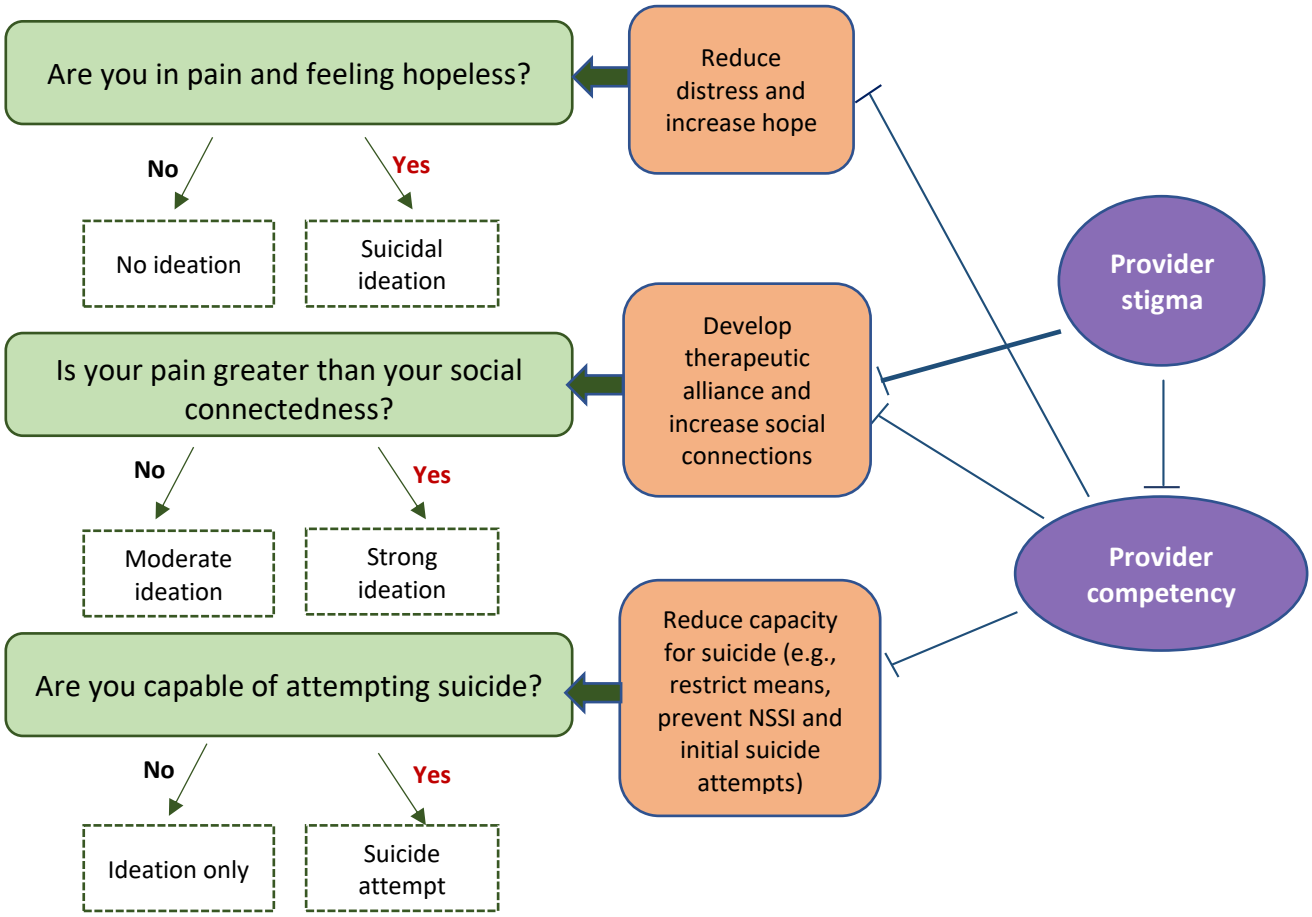

Figure 2. Ties Between Three-Step Suicide Theory, Provider Stigma, and Provider Competency in Addressing Suicidal Behavior (adapted from Klonsky & May, 2015)

Limitations and Future Steps

A growing body of literature suggests that low provider competency and provider stigma can negatively impact interactions with suicidal patients in primary care settings, leading to compromised treatment fidelity and efficacy. There are, however, several significant holes in the literature that could improve our understanding of predictors that influence assessment and management of suicidal behaviors by PCWs in LMIC.

First, despite the existence EBPs and associated training packages for suicide prevention exist at the primary care level, it is grossly unclear to what extent these packages generalize to lay PCWs in LMIC. Lay PCWs in LMIC can face special stressors separate from those in HIC (e.g., extreme shortages of time with patients due to high need and extremely low supply of available personnel, high provider burnout, competing clinical priorities, unique educational backgrounds, and an obligation to reduce suicide risk factors unique to LMIC), which may cast doubt on the generalizability of existing suicide prevention EBPs to unique LMIC contexts. More research is needed to test the uptake of existing EBPs for suicide prevention by PCWs in LMICs, with clear and rigorous and standards for measuring uptake.

A related gap in the literature on training of LMIC PCWs is a lack of knowledge on what is happening—at a granular level— during clinical interactions lay providers and suicidal patients. For example, one study in a HIC found that use of more positive-valence questions (e.g., "Do you feel life is worth living?") compared to negative-valence questions (e.g., "No thoughts of suicide?" was associated with greater disclosure of suicidal ideation (McCabe et al., 2017). Knowledge of specific, modifiable provider behaviors that facilitate (as well as hinder) effective assessment of suicidality and development of safety plans are essential to development of effective training and supervision packages for PCWs invested in addressing suicide in LMIC. In LMIC, however, this variety of data is essentially absent.

Third, although there are documented links between stigma and suicide, the overwhelming majority of studies in both HIC and LMIC examine associations between experiential stigma variants (particularly perceived stigma) and suicide. Few studies have understood the unique impact of *healthcare provider stigma* on suicide. These studies are especially critical in LMIC since a high suicide burden falls on the shoulder of a small number of

providers, creating pressure for PCWs to “get it right” in the comparatively fewer moments they have to address and manage suicidality. Of equal importance, there are no studies examining the extent to which interventions for reducing healthcare provider stigma can improve the ability of PCWs to address suicidality. Knowledge that reduced healthcare provider stigma can (1) increase PCW competency in assessing and managing suicidal behavior; and (2) decrease patient suicidality could drive novel intervention innovation in the global suicide prevention sphere.

Fourth, the majority of data on provider stigma are the level of attitudes towards suicidal individuals, with even fewer studies examining explicit stigma variants (e.g., social distance) that capture discriminatory behaviors providers may engage in during clinical interactions. To the author’s knowledge, there is only one study examining the impact of unconscious or implicit provider bias on clinical decision-making behaviors with suicidal individuals (Obert, 2017). Such measures may circumvent issues of accuracy and social desirability associated with self-report measures of stigma. Ultimately, a multi-method approach with heterogeneous measures of stigma (e.g., attitudes, explicit bias, implicit bias) may provide the most comprehensive and contextual description of how provider stigma impacts clinical care and in LMIC by PCWs.

Fifth, there are no studies in HIC or LMIC that examine provider competency, stigma, and suicidal behavior together. Practical extensions of Three-Step Theory illustrate that competency and stigma may both independently and interactively influence the onset and maintenance of suicidal behavior. An improved understanding of the impact of PCW competency and stigma on patient outcomes in a LMIC context would provide a more nuanced picture of how these variables interactively impact patient suicidal behavior, and may also point to potential new avenues for intervention.

Lastly, there are a series of methodological issues in the current literature base on suicide, stigma, and provider competency in primary care settings. Most studies examining stigma or PCW competency are cross-sectional in nature, and fail to capture temporal relationships between these variables and suicidality. The majority are also involve small sample sizes with high-risk populations, thus limiting their statistical power as well as generalizability across suicidal populations. Finally, these variables, either separately or together, are rarely examined in LMIC, despite the fact that the majority of the world's suicides occur in these settings. A rigorous understanding of modifiable factors that contribute to suicidal behavior in LMIC primary care settings is essential to improving the weak evidence base in these regions of the world.

Dissertation Proposal

Revisions to Original Research Proposal

My original dissertation study (funded by an F31 National Research Service Award by the National Institute of Mental Health; 1F31MH122043) involved primary collection of data intending to examine the relationship between interpersonal emotion regulation mechanisms and suicidality in a sample of Nepali youth. Because of the COVID-19 pandemic, research-related international travel at the University of Washington has been prohibited for the foreseeable future. Due to the potential for lengthening of travel restrictions, as well as safety concerns in Nepal (where the COVID-19 pandemic is expected to peak at a later date), I proposed an alternative dissertation research study based on secondary data analysis to fulfill the research aims of the original F31 award. This revised plan was approved by NIMH in July of 2020. The revised research proposal is outlined below.

Dissertation Study Overview

I propose study aims utilizing data previously collected in Nepal through NIMH-funded research to evaluate the relationship between interpersonal factors and suicidal behaviors. The focus is on assessing interpersonal factors that influence clinical discussion of suicidal behaviors during interactions between health workers (who are not mental health specialists) and standardized patients (actors) demonstrating suicidal thoughts in primary care settings.

In Nepal and other LMIC, a host of barriers (e.g., healthcare provider stigma, non-disclosure of suicidal behaviors, lack of providers with specialized suicide training, lack of engagement in mental health services) prevent individuals at risk of suicide from accessing and engaging in evidence-based care. Suicide screening and risk management in primary settings is a crucial first-level intervention for suicidal behaviors and one of few evidence-based risk-

reduction strategies. However, it is unclear what factors foster and hinder competent screening and discussion of suicidal behaviors in LMIC by health workers who are not mental health specialists. Knowledge of these factors can be used to improve training of health workers, systematic detection of suicidal behavior within healthcare settings, and, ultimately, suicidal patient outcomes.

The proposed study uses behavioral, self-report, explicit bias, and implicit bias data to explore factors that influence lay (i.e., non-specialist) health workers' clinical response to suicidal behaviors in primary care settings in Nepal. Secondary data will be leveraged from a pilot cluster-randomized trial (K01MH104310 and R21MH111280; PI: Brandon Kohrt) and longitudinal examination of a stigma reduction training (*Re*ducing *S*tigma among *H*ealthc*A*re *P*roviders to improv*E* mental health services; RESHAPE) for lay health workers integrating mental health services into primary healthcare settings in Nepal.

Dissertation Specific Aims

Specific Aim #1: Explore longitudinal predictors of lay providers' (*N*=200) competency in responding to suicidal behaviors (i.e., asking about suicide and developing a safety plan) in primary care-based structured role-plays with standardized patients (See Figure 1). Predictors, collected in three waves over 16 months, include (1) explicit and implicit bias against individuals with mental illness; (2) knowledge and attitudes regarding mental illness; (3) and behavioral assessment of lay provider competency.

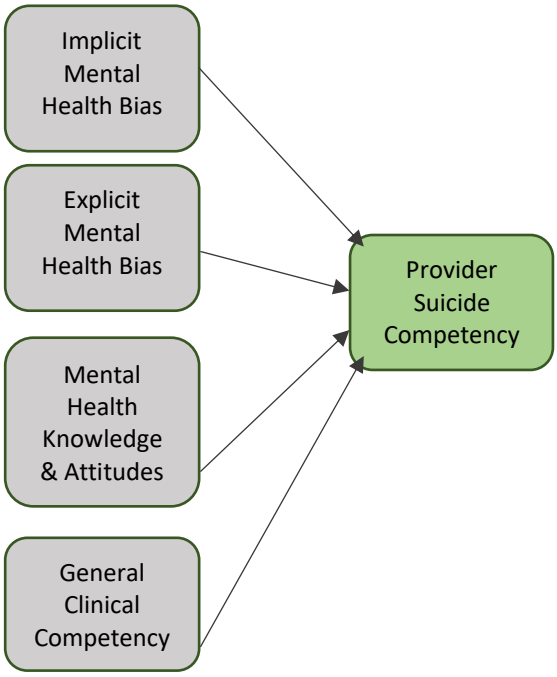

Figure 1. Conceptual model for Specific Aim #1

Hypothesis 1a (Baseline). At baseline, (pre-training, or Time 0) poorer mental health knowledge and attitudes, higher explicit and implicit bias, and poorer behavioral competency ratings will predict lower lay provider competency in assessing and managing suicidal behavior.

Hypothesis 1b (Longitudinal Anti-Stigma Training Effects). *Improvements* in levels of mental health knowledge and attitudes, explicit and implicit bias, and behavioral competency after the RESHAPE training will predict gains in suicide competency at both four months (Time 1) and twelve months following the RESHAPE training (Time 2).

Specific Aim #2: Use video-taped structured role play observations (*N*=30 across three waves of data) to behaviorally examine associations between lay provider use of interpersonal validation (i.e., behaviors communicating patient empathy and understanding) and (b) suicide competency

in 30 dyads consisting of one lay health worker and one standardized suicidal patient (actor) (See Figure 2).

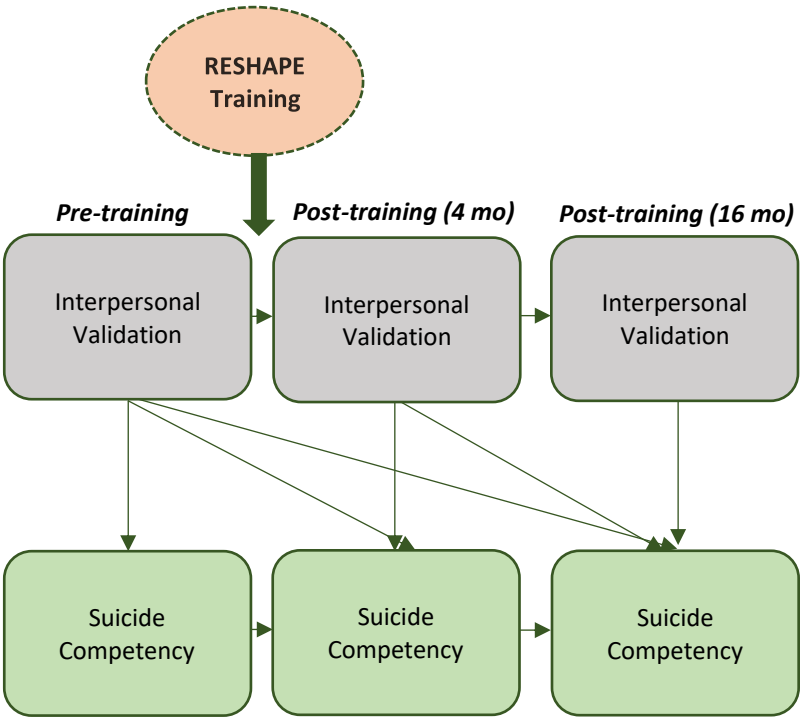

Figure 2. Conceptual model for Specific Aim #2

Hypothesis 2a (Baseline). At baseline (Time 0), greater use of higher-level validations strategies by lay providers will predict greater suicide competency.

Hypothesis 2b (Longitudinal Anti-Stigma Training Effects). Greater use of higher-level validation strategies following the RESHAPE training will predict improvements in provider suicide competency four months (Time 1) and sixteen months (Time 2) following the RESHAPE training.

Specific Aim #3: Explore the impact of Aim 1 and Aim 2 predictors on suicidal and depressive behaviors in patients (*N*=96) over 6 months of treatment (See Figure 3).

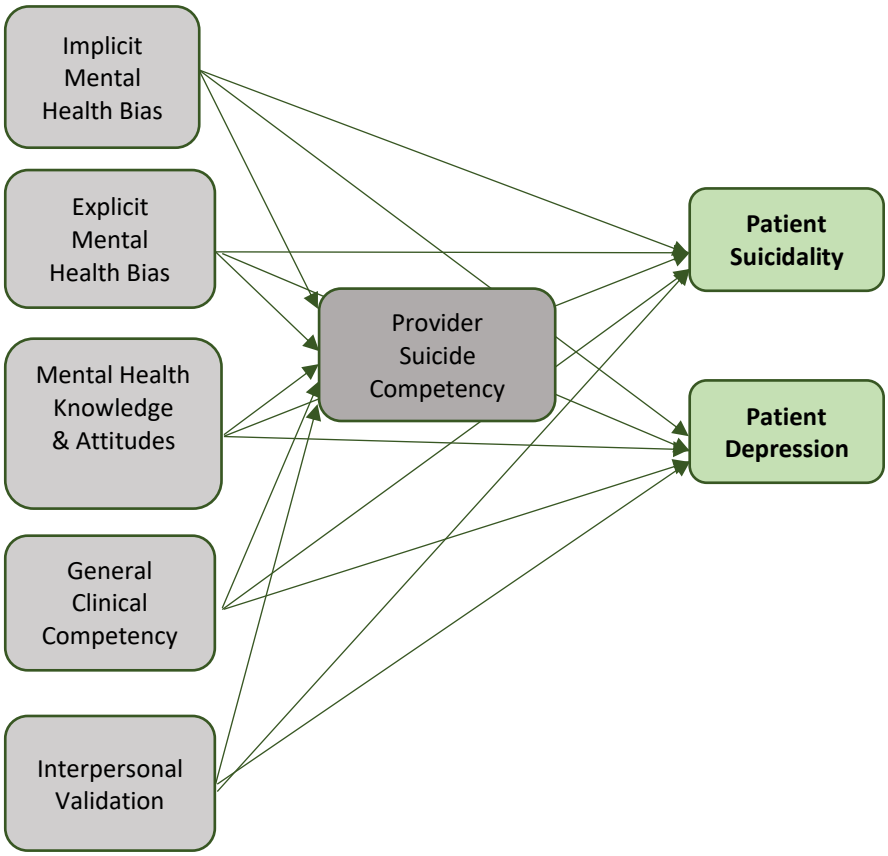

Figure 3. Conceptual model for Specific Aim #3

Exploratory Testing (Longitudinal Anti-Stigma Training Effects). Due to lack of developed, rigorous theory linking stigma, suicide competency, and patient outcomes in both HIC and LMIC, exploratory analysis will be used to estimate the direct and indirect impact of post-training changes in explicit and implicit bias, behavioral competency, and interpersonal validation on suicide competency and patient outcomes (i.e., suicidal behavior and depressive symptoms) over six months of treatment.

Study Setting

The parent study took place in Chitwan, a rural district in Southern Nepal (See Figure 4). Nepal is a low-income country and one of the poorest countries in Asia. Multiple studies have documented the negative impacts of humanitarian emergencies, including a decade-long civil war and two recent major earthquakes, on psychological distress (including suicide) and access to mental health services (Kane et al., 2018; Kohrt et al., 2002; Luitel et al., 2016; Tol et al., 2010). The government is the main provider of healthcare within-country. Among primary care patients, 11% reported suicidal ideation and 1.2% attempted suicide in the year prior (Jordans et al., 2018).

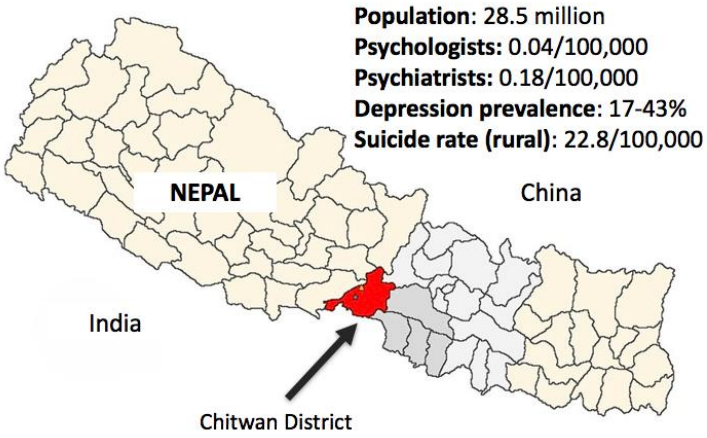

Figure 4. Map of Nepal and Chitwan District, site of parent study data collection

Chitwan is an ideal context to understand factors that influence suicide prevention in primary care settings. The collaborating non-governmental organization (Transcultural Psychosocial Organization, or TPO-Nepal) operated a main office in Chitwan district, where several large-scale, federally-funded research projects were implemented. A primary research project included UK-funded Programme for Improving Mental Health Care (PRIME), an international collaboration of five countries generating world-class evidence on implementation and scale-up of psychosocial treatment programs into primary care settings in LMIC (Lund et al.,

2012). Through PRIME, TPO-Nepal trains and supervises primary care workers in primary care clinics, as well as providers throughout Chitwan's 46 health facilities.

Parent Study Procedures

Secondary data for this proposal is leveraged from a pilot and feasibility cluster-randomized trial of RESHAPE, a stigma reduction intervention for lay primary care health workers operating in integrated care settings (Kohrt et al., 2018). The RESHAPE training is theoretically driven and leverages social contact with mental health services users (i.e., individuals who recovered from mental illness after engaging in treatment) to reduce a host of lay provider biases and behaviors that interfere with effective treatment delivery in LMIC. The RESHAPE implementation strategy includes multiple forms of social contact with mental service providers, as well as mental health myth-busting, targeted communication skills to address stigma, and use of enthusiastic training facilitators. Sociological theory underlying the training supports the hypothesis that RESHAPE, by reducing stigmatizing attitudes, has downstream positive effects on clinical competency, quality of care, and patient outcomes. (See Figure 5 for a conceptual model for the training intervention). In the parent trial, RESHAPE was added as a supplement to an existing lay provider training package in Nepal, based on the World Health Organization's Mental Health Gap Action Programme Intervention Guide (WHO mhGAP-IG). It was compared to training as usual (TAU, or the standard lay provider training package). Both RESHAPE and TAU lasted ten days.

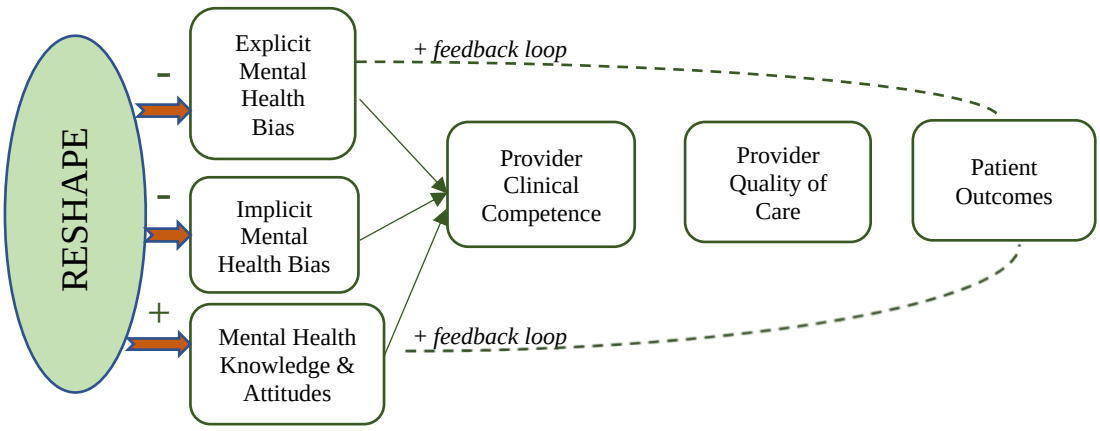

Figure 5. Conceptual model for RESHAPE stigma reduction training for lay providers in Nepal

The parent study enrolled 200 lay providers (comprised of auxiliary nurse midwives, health assistants, and community medical assistants) across 34 healthcare facilities in southern Nepal. Patients ($N = 96$) included individuals with diagnoses of depression, psychosis, alcohol use disorder, or epilepsy, which were diagnosed using WHO mhGAP guidelines. The suicide and self-harm mhGAP-IG module was included in both intervention and TAU training conditions.

Table 1 provides a summary of data collection instruments as well as assessment time points. Data was collected over four waves (for providers) and two waves (for patients), over a total of 16 months. Instruments used include separate pre-post measures for both providers and patients.

Table 1. *Parent Study Outcome Measures*

Construct	**Instrument**	**Type**	**Assessment time periods**					
			Pre-training	Immediate post-training	Post-training (4 months)	Post-training (16 months)	Patient baseline	Patient follow-up (6 months)
Lay Provider Outcomes								
Stigma (Explicit)	Social Distance Scale	Self-report	●	●	●	●		
Stigma (Implicit)	Implicit Association Test (IAT)	Implicit measure	●		●	●		
Stigma	mhGAP Attitudes	Self-report	●	●	●	●		
Mental Health Knowledge	mhGAP Knowledge	Self-report	●	●	●	●		
Clinical Competency	Enhancing Assessment of Common Therapeutic Factors (ENACT)	Behavioral	●		●	●		
Patient Outcomes								
Functioning	WHO Disability Assessment Scale (WHODAS)	Self-report					●	●
Depression Symptoms	Patient Health Questionnaire (PHQ-9)	Self-report					●	●
Alcohol Use Disorder symptoms	Alcohol Use Disorders Identification Test (AUDIT)	Self-report					●	●

Dissertation Measures

For the current proposal, quantitative outcome measures are used to evaluate changes on a range of five provider and one patient indicators, ranging from mental health stigma (operationalized as explicit bias, implicit bias, and negative mental health attitudes), clinical competency, and mental health. All self-report measures were culturally and clinically validated using a five-step validation process frequently used in LMIC research studies (Van Ommeren et al., 1999).

Health Worker Measures

Enhancing Assessment of Common Therapeutic factors (ENACT): The ENACT tool is used by raters observing standardized role-plays (approximately 10 minutes in length) of clinical trainees (Kohrt et al., 2015; Kohrt et al., 2015). The ENACT tool was developed in Nepal, and includes 18 items measuring competency in common factors in psychological treatments (e.g., non-verbal communication and active listening, rapport-building and self-disclosure, assessment of functioning and impact on life). Each of the 18 items is scored at one of three levels. Level 1 refers to not performing the skill or doing it in a potentially harmful manner. Level 2 refers to executing partial elements of the skill. Level 3 refers to completing of the elements in a manner consistent with therapeutic benefit. Any items not completed in the 10-minute role play were scored as a 1 (the lowest score), since the standardized role-plays were designed to encompass all 18 items. Item #18 is a measure of suicide-specific competency (Level 1 = "Clinician does not ask about harm to self or others;" Level 2 = "Clinician asks about harm to self or others, but does not help patient develop a plan for safety;" Level 3 = "Clinician asks about harm to self or others and facilitates appropriate actions to assure safety"). The tool was originally developed in Nepal, with over 800 ENACT assessments taken in-country. The reliability of the Nepali version is $\alpha = 0.89$.

Mental Health Gap Action Programme (mhGAP) Knowledge: True–false and multiple-choice questions assess diagnostic and treatment knowledge based on mhGAP-IG trainings (Hanlon et al., 2018). It is used as a global supplement to mhGAP-IG trainings. Questions address general mental health, neurological, and substance use (MNS) disorders, psychosis, depression, and epilepsy, as well as three additional questions about mania, bipolar disorder, and suicide (e.g., "True or false: Asking people about suicidal thoughts increases the likelihood of suicide"). The full battery of 26 questions were administered to health workers with prescribing rights. For non-prescribing health staff and community health workers, 19 of the questions were administered (i.e. medication-related questions were removed). The reliability of the Nepali version is $\alpha = 0.91$.

Mental Health Gap Action Programme (mhGAP) Attitudes: Likert-scale questions based on mhGAP-IG trainings for assessing general attitudes about MNS disorders, psychosis, depression, epilepsy, and bipolar disorder (Hanlon et al., 2018). One of the 25 questions is suicide-specific ("A police officer is the best person to contact to help people with suicidal thoughts or a life-threatening suicide attempt"). The scale of items on the Nepali version is 1 to 4, with higher scores indicating greater endorsement of stigmatizing attitudes. The reliability of the Nepali version is $\alpha = 0.89$.

Social Distance Scale (SDS): Widely used self-report measure of explicit stigma (Bogardus, 1925; Link et al., 2004; Pescosolido et al., 2013). The adapted SDS assesses willingness to interact with persons from a stigmatized group (Kohrt et al., 2020). The SDS was adapted for use in Nepal and is a 12-item tool comprised of sections from the Stigma in Global Context – Mental Health Study (Olafsdottir & Pescosolido, 2011; Pescosolido, 2009; Pescosolido, Medina, Martin, & Long, 2013). The scale of items on the Nepali version is 1 to 6,

for a total continuous score range of 12 to 72. Higher scores indicate greater social distance. The reliability of the Nepali version is $\alpha = 0.90$.

Implicit Association Test (IAT): The IAT is a computer-administered, response-latency test examining implicit bias against mental illness (Greenwald et al., 1998). The mental health version has been used in numerous high-resource settings (Greenwald et al., 2009). In Nepal, the IAT was adapted for use with culturally appropriate stimuli for healthcare workers (Kohrt, 2017), and test administration lasts approximately 7.5 minutes. A participant receives a continuous score for each IAT. Scores farther from zero (either in the positive or negative direction) indicate greater implicit preference for (for: scores in the positive direction) or against (against: scores in the negative direction) a group.

Validating & Invalidating Behaviors Coding System (VIBCS): The VIBCS is an observational rating scale measuring levels of validating and invalidating behaviors within families (Fruzzetti, 2001). The VIBCS uses an ordinal rating scale ranging from 1 to 7 where family members are given a global rating on validating and invalidating behaviors observed in each interaction. Higher scores indicate greater use of higher-level validation strategies. The VIBCS has demonstrated good interrater reliability when rating couples' interactions in previous research, with an intraclass correlation coefficient (ICC) of .77. A Nepali version is currently being developed using qualitative focus group discussions to assess levels of validation and invalidation among patient-provider dyads participating in ENACT assessments.

Patient Measure

Patient Health Questionnaire (PHQ-9): 9-item self-report assessment of depression symptoms and 1-item impact on functioning (Kroenke et al., 2001). Item 9 assesses suicidal behavior over the prior two weeks. The PHQ-9 has been validated for use in a primary care

setting in Nepal (Kohrt et al., 2016). The scale of items on the Nepali version is 0 to 3, for a total continuous score range of 0 to 27. Higher scores indicate greater depressive symptoms. The validated Nepali cutoff is 10 or greater. In Nepal, sensitivity = 94%, specificity = 80%, and Crohnbach's $\alpha = 0.84$.

Proposed Dissertation Analyses

Analyses will be conducted using statistical package in R. First, analyses will be used to evaluate if missing data are associated with all model outcome variables. Missing data may come from item non-response or study dropout. For all study analyses, full information maximum likelihood (FIML) will be used to estimate models for all participants regardless of missing data points, under the assumption that data are missing at random (Raudenbush & Bryk, 2002). Normality, homoscedasticity, outliers, and homogeneity of variance will also be tested, and transformations will be conducted for any violated assumptions. For all analyses, continuous variables will be mean-centered.

Specific Aim #1: Explore longitudinal predictors of lay providers' (N=200) competency in responding to suicidal behaviors (i.e., asking about suicide and developing a safety plan) in primary care-based structured role-plays with standardized patients (See Figure 3). Predictors, collected in three waves over 16 months, include (1) explicit and implicit bias against individuals with mental illness; (2) knowledge and attitudes regarding mental illness; (3) and behavioral assessment of lay provider competency.

To test the conceptual model in Figure 1, a common two-step procedure for structural equation modeling (SEM) will be used, involving a confirmatory factor analysis (CFA) of latent variables followed by a path analysis with model specification (Schumacker & Lomax, 2004). For Hypothesis 1a (examining predictor and outcome variables at baseline), parceling (i.e.,

aggregating items and using those aggregates as indicators of latent constructs) will be used with latent variables with more than five indicators (i.e., explicit mental health bias, knowledge and attitudes, and behavioral competency). When feasible based on literature, parcels will be theoretically determined. CFA will rely on the following statistics and criteria: comparative fit index (CFI>0.95), root mean square error of approximation (RMSEA<0.08), Tucker-Lewis index (TLI>0.90), normed fit index (NFI>0.90), and Akaike's information criterion (AIC, relatively lower values indicating better fit). As well, the chi-square statistic (χ^2) to degrees of freedom (df) ratio (i.e., normed chi-square) will be used. Following CFA, one path model will be specified (i.e., measuring the direct of effects of all predictor variables on suicide competency at baseline). For Hypothesis 1b, stability in suicide competency (ENACT item #18) over the three data waves (pre-training, 4-months post-training (Time 1), 16-months post-training (Time 2)) will first be examined. Two path models will then be specified to examine longitudinal training effects on suicide competency (i.e., one measuring the effects of (Time 2) –(Time 1) mean difference scores for predictor variables on Time 2 suicide competency, and another measuring the effects of (Time 3) – (Time 2) mean difference scores for predictor variables on Time 3 suicide competency. For any model, when poor fit is encountered, the model will be respecified using modification indices.

Specific Aim #2: Use video-taped structured role play observations (*N*=30 across three waves of data) to behaviorally examine associations between lay provider use of interpersonal validation (i.e., behaviors communicating patient empathy and understanding) and (b) suicide competency in 30 dyads consisting of one lay health worker and one standardized suicidal patient (actor).

The cross-lagged model in Figure 2 will be tested using a modification of the two-step SEM procedure with parceling outlined in Specific Aim #1. First, all model variables will be

treated as latent and a CFA of the full longitudinal model will be conducted. Two path models will then be specified. The first model will exclude all cross-lagged structural paths to explore the stability of provider interpersonal validation and provider suicide competency over time. The second model will include all cross-lagged paths, and will test Hypothesis 2a (relationship between baseline interpersonal validation and baseline suicide competency) and Hypothesis 2b (extent to which interpersonal validation predicts changes in provider suicide competency over time).

Specific Aim #3: Explore the impact of Aim 1 and Aim 2 predictors on suicidal and depressive behaviors in patients (N=96) over 6 months of treatment.

To test the conceptual model in Figure 3, an identical two-step SEM procedure with parceling outlined in Specific Aim #1 will be implemented. After CFA of the one specified latent variable (depression ratings), one model will be specified to examine the direct and indirect effects of (Time 2) – (Time 1) mean changes in predictor variables (due to participation in RESHAPE) on Time 2 provider suicide competency and Time 3 patient depression and suicidality. In the instance of poor fit, the model will be respecified using modification indices. Both the Sobel statistic and Bias-corrected Boostrap method will be used to test mediation of indirect effects (i.e., indirect paths through suicide competency): the Sobel statistic and the Bias-corrected Bootstrap method.

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VITA

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Her research interests broadly span the intersections between global mental health and clinical psychology, and focus primarily on improving assessment and prevention of suicidal behaviors in resource-constrained global mental health settings. Prior to coming to the Simoni Lab at UW, she worked in Nepal to culturally adapt and test components of dialectical behavior therapy across a range of populations, including suicidal and self-harming women with low literacy levels as well as adolescent earthquake survivors. She also worked on developing a clinical competence tool for lay global mental health practitioners, as well as a program evaluation and needs assessment for HIV-positive minority groups in the U.S. and Tanzania. In 2019, she received an F31 National Research Service Award from the National Institute of Mental Health to explore how interpersonal and implementation factors lay providers' ability to provide competent suicide prevention services in Nepal. She has also received extramural research and training support from the American Psychological Association Minority Fellowship Program and the U.S. Department of Education.

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