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Reduction in stigma drivers partially mediates the effect of a stigma reduction intervention among nursing students in India: The DriSti cluster randomized controlled trial.

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Abstract

Background: HIV stigma in health care settings acts as a significant barrier to health care. Stigma drivers among health professionals include transmission fears and misconceptions and pre-existing negative attitudes towards marginalized groups vulnerable to HIV. The DriSti intervention, consisted of two sessions with videos and interactive exercises on a computer tablet and one interactive skills-based face-to-face group session, mostly tablet administered, was designed to target key stigma drivers that included instrumental stigma, symbolic stigma, transmission misconceptions and blame to reduce HIV stigma and discrimination among nursing students and ward staff and tested in a cluster randomized trial.

Setting: This report focuses on second and third year nursing students (NS) recruited from a range of nursing schools that included private, non-profit, and government- run nursing schools from south India.

Results: Six hundred seventy nine NS received intervention and 813 NS were in the wait-list control group. Twelve months outcome analyses showed significant reduction among intervention participants in endorsement of coercive policies ($p<.001$) and in the number of situations in which NS intended to discriminate against PLWH ($p<.001$). Mediation analysis revealed that the effects of intervention on endorsement of coercive policies and intent to discriminate against PLWH were partially mediated by reductions in key stigma drivers that included instrumental stigma, blame, symbolic stigma and transmission misconceptions.

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Conflicts of Interest: No conflicts of interest are declared by the authors.

Conclusion: This brief scalable stigma reduction intervention targeting key stigma drivers fills a critical gap in identifying the mechanistic pathways that aid in stigma reduction among health professionals.

Keywords

HIV stigma; stigma reduction intervention; mHealth; stigma drivers; nursing students; India

Introduction

UNAIDS set a target for all countries to scale up testing and treatment by 2020; 90% of people living with HIV will know their status, 90% of those diagnosed will be on antiretroviral medications, and 90% of those on treatment will be virally suppressed.[1] While India has made significant progress towards achieving the target[2], HIV stigma continues to be a significant barrier to reaching the target of 90-90-90.[3] Several studies including from India have shown that stigma is associated with delays in care seeking and testing[4,5], refusal to treat and being referred to other health centres[6], and results in poor treatment adherence and prevention[7–13].

Of particular concern is the presence of HIV stigma in health care settings that has been highlighted by the joint United Nations Programme on AIDS and the World Health Organization.[14] Studies from India and around the world have shown that health care professionals are an important source of HIV stigma.[15–22] Previous studies from India and elsewhere report that HIV stigma among health professionals is driven by fears and misconceptions regarding HIV transmission during casual contact (Instrumental stigma) and pre-existing negative attitudes towards marginalized groups vulnerable to HIV (Symbolic stigma). [19,23,24] The DriSti intervention trial was designed to target these previously identified stigma drivers to reduce HIV stigma and discrimination among Indian nursing students (NS) and ward staff who, in previous research, were found to score highly on various HIV stigma measures. [19,24,25] In an earlier report, we demonstrated a significantly greater reduction in endorsement of coercive policies and intent to discriminate against people living with HIV (PLWH) among intervention participants compared to wait-list controls at the 6 months follow-up visit and in several of the targeted stigma drivers as well. [26] In the present report, we examine the mediating effects of changes in stigma drivers (instrumental stigma, symbolic stigma, transmission misconceptions, blame), immediately post-intervention, on the relationship between participation in the stigma reduction intervention and outcomes (intent to discriminate against PLWH and endorsement of coercive policies) at 12 months follow-up among NS from south India. We hypothesize that the effects of the intervention on reduction in the number of professional situations in which NS intend to discriminate against PLWH and endorsement of coercive policies are mediated by reductions in stigma drivers.

Methods

The DriSti cluster randomized controlled trial, delivered its HIV stigma reduction intervention through a combination of tablet computer-administered and in-person sessions.

Mobile and wireless communication technologies (cell phones, tablets etc.,) often referred to as mHealth, are increasingly being used to improve health outcomes, health care and services research. The study methods and development of the intervention are described in earlier publications.[27,28]

Settings and participants

Between September 2014 and March 2018, we enrolled 1,625 NS from 28 nursing schools that included private, non-profit, and government- run nursing schools in the state of Karnataka, India (figure 1). We randomly assigned 15 nursing colleges to the intervention and 13 nursing colleges to the wait-list control, resulting in enrolment of 737 NS in the intervention group and 888 NS in the wait-list control group. Seventy one NS were lost to follow-up at 12 months due to leaving nursing school, being on leave during the assessment window or due to scheduling conflicts. Of 1554 NS available at 12 months, 62 NS missed the assessment at 1 month follow-up. Data from 1492 (92%) NS were available for analysis. Overall, attrition was only 4.4% (n=71), and it was significantly higher in the intervention (6.5%, n= 48) than in the control arm (2.6%, n=23, $p < 0.001$) (figure 1).

Eligible participants were 18 years of age or older and willing to participate. The NS were in the second or third year of the training program and would have had clinical rotations with patient contact and been trained in standard precautions. We obtained permission from the respective heads of the collaborating nursing schools and distributed study details to NS during the class hours. Interested NS attended a study information session in groups of 10–15. Subsequently study staff contacted the potential participants, answered questions about the study, and obtained written informed consent in English or Kannada. The consent form was co-signed and witnessed by a nursing college faculty member not linked to the study. The baseline interview was conducted within a week of signed informed consent.

Trained study interviewers blinded to intervention assignment administered the questionnaires face-to-face, using tablet computers to record the responses at baseline, post-intervention (one month), six months, and 12 months. Each interview lasted approximately 40 minutes and was administered in a private space at the nursing school. Participants were compensated $3 per interview.

Intervention Content

The intervention content was described more fully in a previous publication.[26] The intervention was guided by our India- specific HIV stigma model driven by principles derived from Social Cognitive Theory for the promotion of behaviour change.[11] Briefly, the intervention targeted the stigma drivers relevant to health care settings identified in our previous research.[24] The specific components were selected from stigma reduction toolkits relevant to an Indian setting (ICRW and UNDP, 2013) and adapted for computer tablet administration.[27,28] The intervention comprised of two self-guided sessions administered on a computer tablet and one skills-based group session co-led by study staff and a PLWH from the local network. There were four modules in each tablet session and a study member was available to guide the participants through the sessions and answer questions. The intervention used videos and interactive exercises to increase awareness of stigma in health

care settings, improve HIV transmission knowledge, develop empathy for PLWH, address casual transmission fears and teach the correct use of standard precautions with all patients. The group session with PLWH included a discussion on PLWH's experiences with health providers, review of key lessons learned, role playing exercises using common stigma situations encountered in hospital settings, and the session concluded with participants making stigma reduction commitments. NS in the wait list control group were offered the intervention on completion of the 12-month assessment.

Ethics approval

This study was approved by the Institutional review Boards of the University of California, San Francisco and St John's Medical College Hospital. Clearances were obtained from the Indian Health Ministry Screening Committee and the US State Department.

Measures

The survey measures included in this study were from our own previously validated questionnaires used with health care providers in the same local context.[4,10,11,24,26]

Demographic information

Participants were asked about their gender, age, and marital status, type of nursing program, household income and religion.

Stigma Drivers

Instrumental stigma[24]: Participants reported how worried they were (1 "not at all" to 4 "very worried") about acquiring HIV while performing tasks with low (e.g. transporting a patient) vs. high (e.g. dress a wound) risk of fluid exposure. The five low risk and four high risk items were tailored to situations encountered by NS. Scores were averaged into two separate scales, one for low risk and one for high risk tasks. Cronbach's alpha in the baseline sample was 0.76 for low and 0.75 for high risk tasks. An additional single item assessed instrumental stigma outside of work (how worried they were about getting HIV outside of work) on the same 4-point scale. We included this additional item to measure fear or worries of acquiring HIV from others in the community, as this could be a source of stigmatization of PLWH as well.

Blame[29]: Four items measured the extent to which participants agreed that people who acquired HIV through sex, drugs, a blood transfusion, or their spouse "got what they deserved." The items were measured on a scale from 1 ("strongly disagree") to 4 ("strongly agree"), with higher numbers indicating more blame, and were averaged. Cronbach's alpha = 0.57.

Symbolic stigma: The symbolic stigma scale was based on our previous descriptive work, but made adaptations in terms of the response options. The revised scale was pilot tested and found acceptable and feasible. The Cronbach's alpha in the total sample of NS was 0.83. Three items measured participants' level of acceptance, level of comfort caring for, and level of comfort having as a neighbor for each of the following key populations: female sex

workers, transgender people, men who have sex with men, and people who inject drugs. Items were measured on a 5-point scale with a higher score indicating less acceptance/ greater discomfort, and responses averaged over all 12 items.

Transmission misconceptions and knowledge[11,24,29]: Seven items described casual social contact through which HIV cannot be transmitted (e.g. shaking hands). For each item, participants indicated whether they thought HIV could be transmitted this way. The number of incorrect responses was summed.

Participants were further asked if they thought HIV could be transmitted by exposure to several kinds of bodily fluids (e.g. breast milk, sweat), or by behaviors such as unprotected sex with PLWH. The number of correct answers to 11 such items was summed.

Outcome Measures

Intent to discriminate against PLWH[24]: Intent to discriminate in professional situations was assessed by presenting participants the same set of tasks used for instrumental stigma, which are five tasks with low risk of exposure to bodily fluids (e.g. dispensing medication) and four tasks with high risk of exposure to bodily fluids (e.g. starting an IV). They were asked how they would perform each task with a patient living with HIV. Response options were dichotomized as stigmatizing (refuse, get someone else to do it, or perform the task only with unnecessary precautions) versus non-stigmatizing (perform the task as they would with any other patient). Stigmatizing responses were summed into two separate indices, intent to discriminate against PLWH when performing low risk tasks (range 0–5) and intent to discriminate against PLWH when performing high risk tasks (range 0–4).

Endorsement of coercive policies[11,24,29]: Participants indicated their agreement (1 “strongly disagree” to 4 “strongly agree”) with 17 policies related to patient rights (e.g. health care workers having the right to refuse treating PLWH); the right to choose to disclose HIV status, or for PLWH to marry and have children; and mandatory HIV testing. Items were dichotomized as strongly/somewhat agree vs. strongly/somewhat disagree, and reverse coded as necessary so that a stigmatizing responses (e.g. agreeing with mandatory testing, or disagreeing that PLWH have the right not to disclose)was scored1, and a non-stigmatizing response was scored 0. The dichotomous items were then summed into an index (range 0–17).

Statistical Analyses

Description of the sample was done via frequencies and percentages for categorical variables and interquartile range for age. Levels of HIV transmission knowledge and misconceptions, blame, stigma and intent to discriminate at baseline and 12 month follow-up were summarized via means plus standard deviations (SD) per intervention arm. Change in these drivers and outcome variables between baseline and 12 month follow-up was described via mean (SD) difference scores (12 month – baseline). We used t-tests to assess if any of these means differed significantly between the control and the intervention group.

We next ran a set of mediation analyses to assess if the effect of the intervention on the change in the outcomes at 12 months was mediated by several key stigma drivers (instrumental stigma, blame, symbolic stigma, and transmission misconceptions). Mediation analyses are increasingly used in HIV prevention research to understand the pathways that link intervention to outcomes.[30,31] They use regression or structural equation models, and split up the total effect of the intervention on an outcome in a direct effect and an indirect effect. The indirect effect is the product of the effect of the intervention on the mediator and the effect of the mediator on the outcome when controlling for the intervention variable. In the case of multiple mediators, the total indirect effect is the sum of the indirect effects through each of the mediators. Mediation is shown if this indirect effect is found to be significant. For this significance test, it is recommended not to assume a standard normal sampling distribution; hence we employed the non-parametric approach of bootstrapping to build an observation-based approximate sampling distribution[32] and used it to calculate confidence intervals around the indirect effect instead.

We first ran separate simple mediation models with each of the potential mediators. For the outcome change in endorsement of coercive measures, we explored change from baseline in blame, symbolic stigma, transmission misconceptions and instrumental stigma outside of work immediately post intervention (1 month follow-up) as mediators. For the outcomes change in intent to discriminate in professional tasks with high and low risk of exposure to bodily fluids, we added post intervention change in instrumental stigma in high and low risk tasks, respectively, as a potential fifth mediator. We did not include transmission knowledge as a mediator since the intervention did not have a significant effect on this variable. The 1 month follow-up change score variables with an at least marginally significant ($p<0.10$) indirect effect in single mediator models were subsequently included in a multiple mediator model. They were blame, symbolic stigma, and transmission misconceptions for the outcome of endorsement of coercive measures; transmission misconceptions, instrumental stigma outside of work and in low-risk professional tasks for the outcome of intent to discriminate in low-risk professional tasks; and symbolic stigma and instrumental stigma in high-risk professional tasks for the outcome of intent to discriminate in high-risk professional tasks. Both the single and multiple mediator models were run in SPSS as a single-step mediation models using Hayes's indirect macro, which uses OLS for the parameter estimation and bias corrected bootstrapped confidence intervals for the indirect effects.[33] We used 5000 resamples for bootstrapping, and set the seed to 3463, a randomly determined four-digit number. We included the type of institute – government vs. non-profit vs. private, for-profit (=reference group) – as a covariate in all final models.

Results

As seen in Table 1, the NS were predominantly female (94.8%), single (99.3%), young (median age: 20), and Christian (53.8%) or Hindu (40.3%). Nearly all participants were female, about 20–21 years old and unmarried. The mean age of participants in the control group was 20.3 years and in the intervention group it was 20.5 years with the median age being 20 years in both the groups. The household income was not different between the 2 intervention arms. There were small but statistically significant differences between the NS in the intervention and wait-list control group at baseline for misconceptions and symbolic

stigma, with NS in the control group having a higher score on both misconceptions and symbolic stigma. Control group participants also had higher intent to discriminate in high risk professional situations than intervention group participants, while with instrumental stigma in low-risk professional situations, NS belonging to the control group obtained a lower score compared to the intervention group (Table 2). Overall, at baseline, NS endorsed a mean of 8.80 out of 17 coercive measures and intended to discriminate against PLWH in, on an average, 3.14 out of 5 professional situations with low-risk of fluid exposure and 3.63 out of 4 professional situations involving high risk (results not shown). Analyses of changes from baseline to twelve months follow-up showed that the intervention had a significant impact on the main outcome measures; endorsement of coercive measures and intent to discriminate. NS in the intervention group reduced their endorsement of coercive measures significantly more than control group participants (−0.36 Vs +0.22, $p<0.001$) (Table 2). They also reported significantly greater reductions in the mean number of professional situations in which they expressed intent to discriminate (low risk:−0.78 vs. +0.46; high risk: −0.50 vs. +0.14, both $p<0.001$). The intervention also had a significant impact on two of the stigma drivers, viz. transmission misconceptions and instrumental stigma. NS in the intervention group had a larger decrease of misconceptions about HIV transmission risk (−0.47 vs −0.16,$p<0.001$) than control group NS. They also reported significantly greater reductions in worry about acquiring HIV outside of work (−0.31 vs. −0.18, $p<.05$), in low risk professional situations (0.22 vs. −0.02, $p<0.001$) and in high risk professional situations (−0.33 vs. −0.16, $p< 0.001$) compared to NS in the wait-list control group.

Mediator Effect of Stigma Drivers (Instrumental stigma, symbolic stigma, and transmission misconceptions)

Figure 2 and Table 3 show the results of the mediation analysis adjusted for the type of institution to evaluate the indirect and the direct effect of the intervention on the outcome measures of endorsement of coercive measures and intent to discriminate in low risk and high risk professional situations. We postulated that changes in stigma drivers (transmission misconceptions, instrumental stigma, blame and symbolic stigma) mediate the effects of the intervention on endorsement of coercive measures and intent to discriminate. Only those stigma drivers that were significant in single mediator models (results not shown) were included in multiple mediator models. The results from the multiple mediator model show that the effects of intervention on endorsement of coercive measures were mediated by blame, symbolic stigma and transmission misconceptions. As shown by the negative coefficients in Fig 2a, intervention participants had a greater reduction in blame (a=−0.11), symbolic stigma (a=−0.16) and transmission misconceptions (a=−0.60) post intervention than control participants, and the magnitude of this change, in turn, was significantly positively related to change in endorsement of coercive measures at 12 months (b=0.26, for blame; b=0.22 for symbolic stigma; b=0.11 for misconceptions). The indirect effects (a × b) are shown in Table 3, column (a). The direct effect of the intervention on endorsement of coercive measures was reduced from −0.55 to −0.42 and remained significant after inclusion of the mediators, indicating partial mediation only. The effects of intervention on intent to discriminate in low risk professional situations were similarly partially mediated by both worry about acquiring HIV at work (indirect =−0.13, see Table 3b) and outside of work (indirect=−0.01), but not by transmission misconceptions. After receiving the intervention,

NS showed a greater reduction in instrumental stigma and transmission misconceptions compared to NS in the control arm (a=−0.22 and −0.14 or instrumental stigma at work and non-work, respectively; a=−0.60 for misconceptions, see Fig 2b). However, only the instrumental stigma measures were associated with a subsequent greater reduction in intent to discriminate in low risk tasks (b=0.59 and 0.09 resp. for work and non-work). Finally, the effects of intervention on intent to discriminate in high risk professional situations were partially mediated by a reduction in worry about acquiring HIV in high risk situations only (see Fig 2c and Table 3c for details).

Discussion

This study using mediation analysis clearly demonstrates that the effects of stigma reduction intervention on reduction of endorsement of coercive policies and intent to discriminate in low-risk and high-risk professional situations among NS is partially mediated by reductions in stigma drivers (instrumental stigma, blame, symbolic stigma and transmission misconceptions). In addition, the finding that the effects of intervention on the reduction of endorsement of coercive policies and intent to discriminate among NS observed previously at 6 month follow-up [26] were maintained at 12 months shows that this brief intervention has sustained effects. We attained these greater positive effects in the intervention group despite the fact that for several of the mediators and outcomes, the intervention group started out at baseline as slightly less discriminatory that the control group.

Mediation analyses help us understand the mechanisms through which an intervention impacts outcome.[34]The present study is an example of mediation by design where interventions are designed to target a priori identified mediator variables with the stated intent to affect outcomes.[35] Previous research had identified worry of acquiring HIV both in professional situations and outside of work (Instrumental stigma), transmission misconceptions and pre-existing negative attitudes towards marginalized groups vulnerable to HIV (symbolic stigma) as key drivers of HIV-stigma in health care settings in India.[19,24] The present study confirmed that the treatment effect on reducing endorsement of coercive policies and intent to discriminate among NS in the intervention group was in part mediated by stigma drivers. Examining multiple mediators using a longitudinal design allows for a more nuanced and accurate assessment of the mediation effect on outcomes. For instance in the present study, reduction in blame, symbolic stigma and transmission misconceptions post-intervention were related to reduction in endorsement of coercive policies at 12 months. While on the other hand the intent to discriminate was related to worry about acquiring HIV at work. Thus, the effects of intervention on outcomes are differentially mediated with distinct pathways being related to distinct outcomes. In addition, the use of longitudinal design with measurement of mediators in temporal precedence to outcomes supports a causal mechanism for the key stigma drivers in improving outcomes.

In the present study, reductions in hypothesized stigma drivers partially mediated the effects of the intervention on outcome measures. It is uncommon to find, in behavioral research, complete mediation of hypothesized pathways linking intervention to outcomes[36] and more so with stigma, which is a multidimensional construct comprising of a set of heterogeneous interrelated factors from the individual to the institution.[37] The key stigma drivers included

in the study only partially mediated the effects of intervention on outcome measures suggesting a role for other unmeasured factors. For instance, in the present study we did not directly assess the role of institutional policies to PLWH and work environment on stigmatizing attitudes among NS, which could have a significant bearing on stigma in health care settings.[38,39]

The present study confirms our earlier observation that the beneficial effects of stigma reduction intervention on decreases in endorsement of coercive policies and intent to discriminate seen at 6 months among NS[26] is maintained at 12 months. The sustained effects of the intervention on key outcome measures lend support to extending this brief tablet administered stigma reduction intervention to other groups of health care professionals.

While the stigmatizing attitudes among NS were captured using self-reports, which are prone to social desirability bias, the measures included in the study were well validated measures and used in our previous studies in this context.[26] Future studies should attempt to assess stigma in multiple ways including measuring negative attitudes and implicit bias among NS. In addition, they should address the impact of decreases in stigmatizing attitudes among NS on observed patient care behaviors. Another limitation of our study was that the findings from the present study cannot necessarily be generalized outside of India.

The DriSti intervention trial, which is a brief, mostly tablet-administered intervention targeting key stigma drivers fills a critical gap in scalable stigma reduction efforts among health professionals.[40] The intervention modules specifically targeted improving transmission misconceptions, transmission fears and behaviors depicted through patient procedures (instrumental stigma),as well as beliefs and attitudes (symbolic stigma) through a video that describes concepts of stereotyping and judgement and three video testimonials by PLWH on stigma. The third in-person session provided an opportunity to hear directly from a PLWH how common statements and behaviors in health care settings can be stigmatizing and to receive feedback following role plays. Results also demonstrate that stigma reduction interventions delivered using technology platforms are acceptable and effective with healthcare staff where time is a significant constraint. In addition, the intervention targeted a priori identified multiple key stigma drivers relevant to healthcare settings and thus offers the potential for future studies to further streamline and improve HIV stigma reduction interventions by focusing on effective components. The tools developed for the DriSti android app could easily be adapted to smartphone delivery, which could make the intervention easily scalable, given their increased use.

In conclusion, the DriSti intervention trial has important implications for programs that address reduction of stigma in health care settings.[14] In addition; the intervention could be extended to other groups of health care professionals, medical doctors in training and medical students using multiple mHealth formats.

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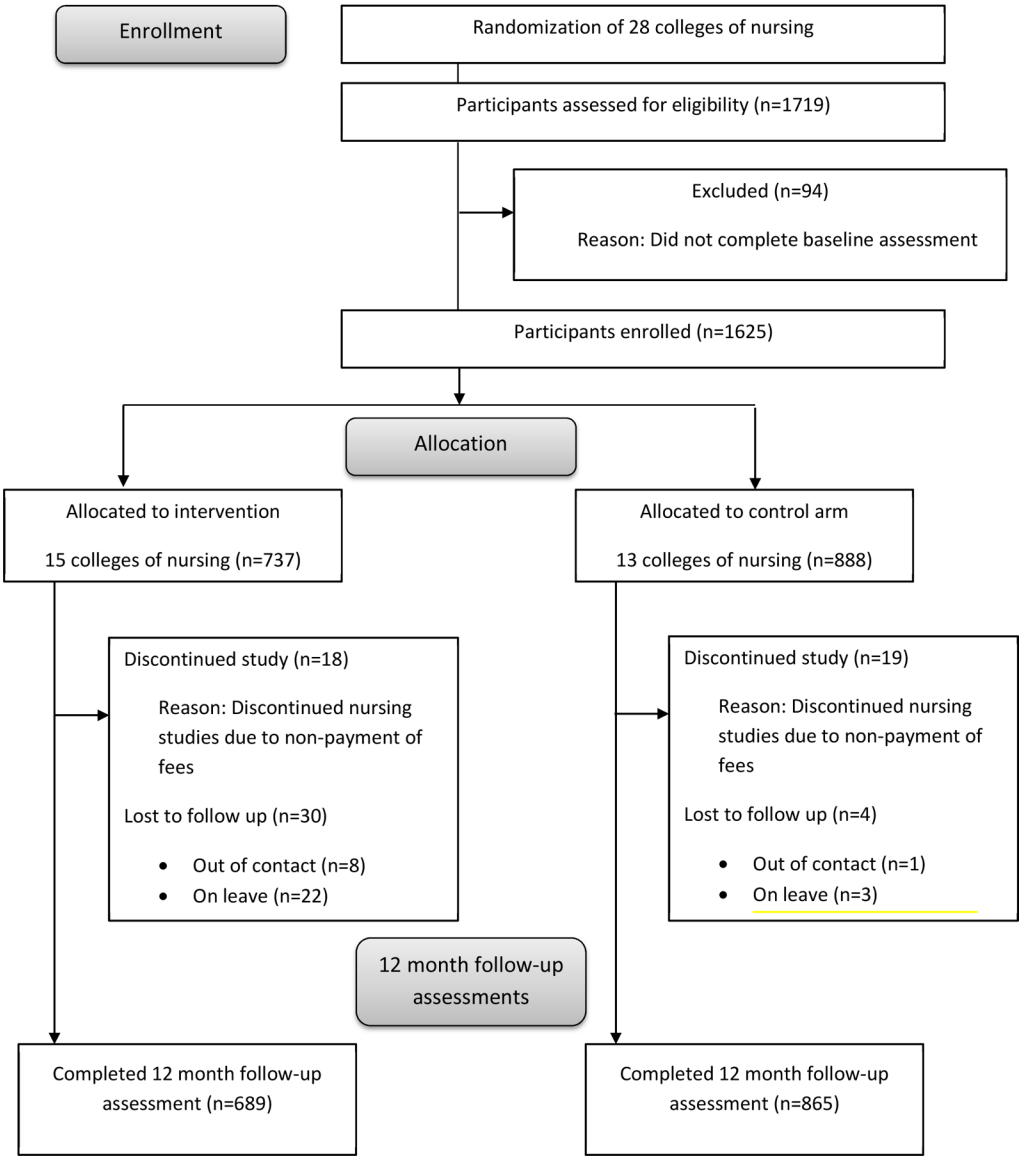

Figure 1:
Dristi flow diagram

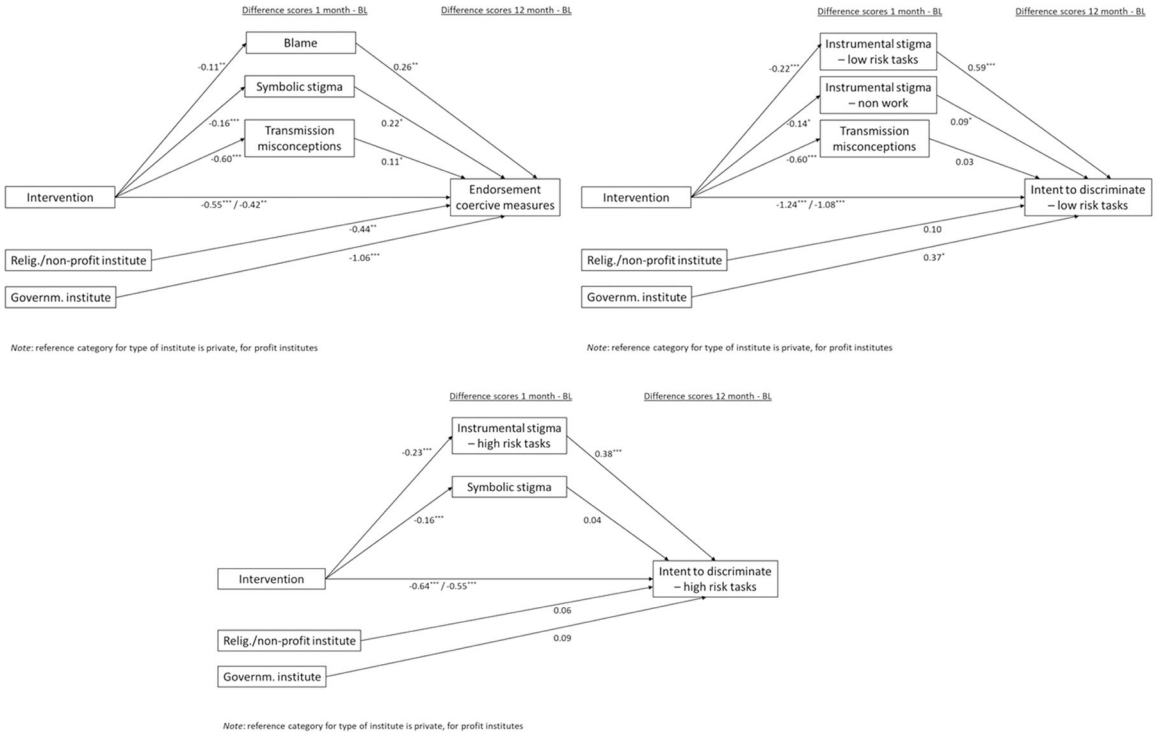

Figure 2:
Total / direct effects of mediation model for difference scores for all 12month outcomes

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Table 1:

Sample characteristics at baseline (n=1492)

	n	%
Female gender	1414	94.8
Religion		
Hindu	602	40.3
Christian	803	53.8
Other	87	5.8
Married	10	0.7
Nursing Program		
Bachelor of Science	1241	83.2
General Nursing & Midwifery	251	16.8
Type of Nursing College		
For-profit	706	47.3
Non-profit / Religious	613	41.1
Government (Public)	173	11.6
Monthly household income (INR)[a]		
≤ 5,000	119	8.0
5,001 – 10,000	395	26.5
10,001 – 15,000	281	18.8
15,001 – 20,000	262	17.6
>20,000	434	29.1
Age: Median (IQR range)	20	20–21

[a]n=1491 due to 1 decline to answer

Table 2:

Baseline & 12-month levels of knowledge, stigma and discrimination: Mean (SD) for intervention (n=679) and control group (n=813)

	Baseline			12 months			Difference (12M – BL)	
	Interv.	**Control**		**Interv.**	**Control**		**Interv.**	**Control**
Transmission knowledge (0–11)	9.47 (1.40)	9.54 (1.31)		9.84 (1.33)	9.80 (1.14)		+0.37 (1.61)	+0.26 (1.55)
Transmission misconceptions casual contact (0–7)	1.31 (1.49)	1.56 ** (1.55)		0.84 (1.24)	1.40 *** (1.60)		−0.47 (1.62)	−0.16 *** (1.69)
Blame (1–4)	2.17 (0.71)	2.22 (0.67)		1.98 (0.73)	2.09 ** (0.65)		−0.19 (0.73)	−0.13 (0.69)
Symbolic stigma KP (1–5)	3.36 (0.79)	3.55 *** (0.81)		3.16 (0.92)	3.39 *** (0.90)		−0.20 (0.86)	−0.16 (0.76)
Instrumental stigma (1–4)								
Outside of work	2.18 (1.04)	2.12 (0.96)		1.87 (0.90)	1.95 (0.86)		−0.31 (1.18)	−0.18 * (1.05)
Low risk prof situations	1.75 (0.65)	1.63 *** (0.57)		1.53 (0.61)	1.61 ** (0.57)		−0.22 (0.60)	−0.02 *** (0.56)
High risk prof situations	2.50 (0.77)	2.52 (0.73)		2.17 (0.80)	2.36 *** (0.74)		−0.33 (0.81)	−0.16 *** (0.71)
Endorsement of Coercive measures index (0–17)	8.72 (2.41)	8.87 (2.33)		8.35 (2.42)	9.09 *** (2.24)		−0.36 (2.86)	+0.22 *** (2.56)
Intent to discriminate, index								
Professional, low risk (0–5)	3.05 (1.59)	3.22 (1.67)		2.27 (1.88)	3.67 *** (1.52)		−0.78 (1.97)	+0.46 *** (1.59)
Professional, high risk (0–4)	3.53 (0.83)	3.72 *** (0.64)		3.03 (1.38)	3.86 *** (0.47)		−0.50 (1.49)	+0.14 *** (0.71)

*** p<.001,

** p<.01,

* p<.05

Table 3:

Indirect effects of intervention on 12 month outcomes via mediators at 1 month follow-up (n=1492)

	Outcomes: difference scores (12mo – BL)							
	(a) Endorsement of Coercive Measures			**(b) Intent to discriminate low risk prof. task**			**(c) Intent to discriminate high risk prof. task**	
Effect intervention via:	**Coefficient**	**95% CI[a]**		**Coefficient**	**95% CI[a]**		**Coefficient**	**95% CI[a]**
Transmission misconceptions	−0.06	−0.13, −0.003		−0.02	−0.06, 0.02			
Blame	−0.03	−0.07, −0.01						
Symbolic stigma	−0.03	−0.08, −0.01					−0.01	−0.02, 0.01
Instrumental stigma outside of work				−0.01	−0.04, −0.002			
Instrumental stigma professional tasks[b]				−0.13	−0.19, −0.09		−0.09	−0.13, −0.06
Total indirect effect	−0.13	−0.21, −0.06		−0.16	−0.23, −0.11		−0.10	−0.14, −0.06

[a]Bootstrapped bias corrected 95% confidence interval

[b]Instrumental stigma during professional tasks included only corresponding low/high risk tasks in the models for the respective outcomes of intent to discriminate in low and high risk professional tasks.