

Supplementary Information

Effectiveness of interventions for changing HIV related risk behaviours among key populations in low-income setting: A Meta-Analysis, 2001–2016

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Supplementary Table S1. Search strategy using Medical Subject Headings (MeSH) and keywords.

| Search | Search terms |
|--------|--|
| #1 | 'peer education' OR 'peer influence' OR 'peer support' OR 'peer support program' OR 'peer support interventions' OR 'peer services' |
| #2 | 'HIV intervention' OR HIV counseling OR 'HIV counseling and testing' OR voluntary testing |
| #3 | Sex education OR (health edycation or health promotion) OR outreach programs OR outreach education OR HIV knowledge OR outreach centers OR outreach services OR drop in center OR drop in clinic OR drop in service |
| #4 | 1, 2, and 3 combined with 'OR' |
| #5 | HIV knowledge OR safe sex practices OR risky behavior OR HIV attitudes OR HIV preventions OR health promotion |
| #6 | Impact OR effect OR influence OR consequences |
| #7 | 5 and 6 combined with 'OR' |
| #8 | Target population OR female sex workers OR (msm or men who have sex with men) OR (msm or homosexuals or gay) OR transgender OR injecting drug users |
| #9 | Nepal OR nepalese OR nepali |
| #10 | Combined 4, 7, 8, and 9 with OR |
| #11 | Other examples of combination of search terms: (("hiv"[MeSH Terms] OR "hiv"[All Fields]) AND ("prevention and control"[Subheading] OR ("prevention"[All Fields] AND "control"[All Fields]) OR "prevention and control"[All Fields])) OR (("hiv"[MeSH Terms] OR "hiv"[All Fields]) AND ("Intervention (Amstelveen)"[Journal] OR "intervention"[All Fields] OR "Interv Sch Clin"[Journal] OR "intervention"[All Fields]) AND effectiveness[All Fields]) AND ("nepal"[MeSH Terms] OR "nepal"[All Fields]) AND ("2001/01/01"[PDAT] : "2016/12/31"[PDAT]) VCT counseling AND HIV/effects AND Nepal[pl] sexual health education/organization and administration AND Risk behaviors AND HIV "drop in centre" OR "outreach centre" AND HIV HIV Knowledge, attitude and practice AND behavior therapy/methods* 'human immunodeficiency virus' AND test* OR 'counseling' AND impact OR 'utilization' AND [2001-2016]/py AND 'nepal' 'behavioral approach' AND 'Human immunodeficiency virus' 'peer counseling'/exp OR 'peer counseling' AND ('human immunodeficiency virus'/exp OR 'human immunodeficiency virus') |

Supplementary Table S2. Detailed descriptions of the included studies.

| S.N. | Authors (reference number) | Year | Sample Size | Place of study | Intervention Description | Exposure measures (%) | Outcomes measures (%) | |
|----------------------------------|----------------------------|------|-------------|----------------------------|---|------------------------------|-----------------------|------------------------------------|
| Female Sex Workers (FSWs) | | | | | | | HIV prevalence | Condom use with most recent client |
| 1 | (51) | 2016 | 610 | 22 Terai Highway districts | Peer education and HTS a. Met or interacted with peer educators in last 12 month b. DIC visit in last 12 month c. HTS center visit in last 12 month | a. 73.4, b.71.1, c. 50.6 | 0.8 (0.3-2.0) | 72.8 |
| 2 | (52) | 2016 | 342 | Pokhara Valley | | a. 38.9, b. 16.4, c.14.0 | 0.3 | 81.9 |
| 3 | (53) | 2015 | 500 | Kathmandu Valley | | a. 71.4, b. 54.6 c. 24.4 | 2.0 (0.37-3.63) | 83.0 |
| 4 | (54) | 2012 | 410 | 22 Terai Highway districts | | a. 47.0, b. 44.8, c.45.9 | 1.0 (0.3-1.8) | 75.6 |
| 5 | (55) | 2011 | 593 | Kathmandu Valley | | a. 83.8, b. 33.7, c. 53.5 | 1.7 (0.7-2.7) | 81.6 |
| 6 | (56) | 2011 | 345 | Pokhara Valley | | a. 78.6, b. 56.2, c.58.8 | 1.1 (0.0-2.3) | 78.8 |
| 7 | (57) | 2009 | 600 | 22 Terai Highway districts | | a. 87.2, b. 50.5, c. 65.2 | 2.3 | 84.8 |
| 8 | (58) | 2008 | 500 | Kathmandu Valley | | a. 59.6, b. 21.6, c. 32.8 | 2.2 | 75 |
| 9 | (59) | 2008 | 200 | Pokhara Valley | | a. 54.0, b. 25.5, c. 34.5 | 3 | 64.5 |
| 10 | (60) | 2006 | 500 | Kathmandu Valley | | a. 83.2, b. 31.2, c. 28.2 | 1.4 | 77.2 |
| 11 | (61) | 2006 | 200 | Pokhara Valley | | a. 50.0, b. 36.0, c. 15.0 | 2 | 75 |
| 12 | (62) | 2006 | 400 | 22 Terai Highway districts | | a. 79.2%, b. 38.2%, c. 35.8% | 1.5 | 66.30% |
| 13 | (63)* | 2004 | 200 | Pokhara Valley | No information | N/A | 2 | 64.5 |
| 14 | (64)* | 2004 | 500 | Kathmandu Valley | No information | N/A | 2 | 74 |

| Men having sex with Men (MSM) and Transgender (TG) | | | | | | | HIV prevalence | Condom use during last anal sex | |
|---|--------|------|-----|----------------------------------|---|--|----------------|---------------------------------|------|
| 15 | (65) | 2016 | 340 | 22 Terai Highway districts | Peer education and HTS a. Met or interacted with peer educators in last 12 month b. DIC visit in last 12 month c. HTS center visit in last 12 month | a. 60.3, b. 56.2, c. 24.7 | 8.2 (4.1-15.7) | 60.9 | |
| 16 | (66) | 2015 | 400 | Kathmandu Valley | | a. 27.6, b. 46.0, c. 16.8 | 2.4 | 80.9 | |
| 17 | (67) | 2012 | 400 | Kathmandu Valley | | a. 71.3, b. 55, c. 44.8 | 3.8 (2.0-6.0) | 85.3 | |
| 18 | (68) | 2009 | 400 | Kathmandu Valley | | a. 78.0, b. 54.5, c. 43.8 | 3.8 | 75.8 | |
| 19 | (69) | 2007 | 400 | Kathmandu Valley | | a. 55.9, b. 30.7, c. 9.6 | 3.3 (1.0-6.1) | 71.6 | |
| 20 | (40)# | 2013 | 339 | 15 districts of Nepal | | | 85.5 | N/A | 22 |
| 21 | (70)* | 2004 | 358 | Kathmandu Valley | | HTS a. HTS center visit in last 12 month | N/A | 3.9 | 66.7 |
| People who Inject Drugs (PWIDs) | | | | | | | HIV prevalence | Unsafe injection in past week | |
| 22 | (71) | 2015 | 300 | West to far west Terai districts | | a.60.2, b.69.0, c. 34.7 | 2.3 | 12.8 | |
| 23 | (72) | 2015 | 340 | Kathmandu Valley | | a. 50.6, b. 63.5, c. 23.5 | 7.6 | 2.4 | |
| 24 | (73)\$ | 2015 | 345 | Pokhara Valley | | a. 20.9, b. 28.4, c. 17.1 | 2.6 | 0.3 | |
| 25 | (74) | 2015 | 360 | Eastern terai districts | | a. 43.3, b. 65.3, c. 22.8 | 8.3 | 8.6 | |
| 26 | (75) | 2012 | 360 | Eastern terai districts | | a. 88.1, b. 96.1, c. 49.7 | 8.1 | 8.1 | |
| 27 | (76) | 2012 | 300 | West to far west Terai districts | | a. 44.3, b. 65.0, c. 33.3 | 5.0 | 10.3 | |

| | | | | | | | | |
|----|--------|------|-----|----------------------------------|---|----------------------------|------|------|
| 28 | (77)\$ | 2011 | 340 | Kathmandu Valley | | a. 60.6, b. 72.4, c.23.5 | 8.5 | 3.2 |
| 29 | (78) | 2011 | 345 | Pokhara Valley | | a. 85.5, b. 77.7, c. 35.4 | 4.6 | 2.3 |
| 30 | (79) | 2009 | 300 | Kathmandu Valley | | a. 81, b. 84.7, c. 24.3 | 20.0 | 8.0 |
| 31 | (80) | 2009 | 300 | Pokhara Valley | | a. 85.7, b. 93.7, c., 49.3 | 5.7 | 5.3 |
| 32 | (81) | 2009 | 345 | Eastern terai districts | | a. 90.7, b. 87.5, c. 33.6 | 8.1 | 10.7 |
| 33 | (82) | 2009 | 300 | West to far west Terai districts | | a.81.7, b. 77.3, c. 28.3 | 8.0 | 11.7 |
| 34 | (83) | 2007 | 300 | Kathmandu Valley | | a. 86.0, b. 76.0, c. 18.3 | 33.0 | 10.3 |
| 35 | (84) | 2007 | 300 | Pokhara Valley | | a. 67.3, b. 95.7, c. 44.7 | 8.7 | 8.3 |
| 36 | (85) | 2007 | 345 | Eastern terai districts | | a. 82.3, b. 80.0, c. 23.2 | 17.1 | 13.9 |
| 37 | (86) | 2007 | 300 | West to far west Terai districts | | a.80.3, b. 69.0, c. 14.0 | 11.0 | 10.3 |
| 38 | (87)* | 2005 | 300 | Kathmandu Valley | HTS a. HTS center visit in last 12 month | N/A | 51.7 | 20.3 |
| 39 | (88)* | 2005 | 300 | Pokhara Valley | | N/A | 21.7 | 14.7 |
| 40 | (89)* | 2005 | 339 | Eastern terai districts | | N/A | 31.2 | 31.0 |
| 41 | (90)* | 2005 | 300 | West to far west Terai districts | | N/A | 11.7 | 19 |
| 42 | (91)* | 2003 | 345 | Pokhara Valley | No information | N/A | 22.0 | 21.0 |
| 43 | (92)* | 2003 | 341 | Eastern terai districts | | N/A | 35.5 | 48.1 |

Note: Peer education includes outreach education by peer educators and outreach educators and information, education, and counselling (IEC) activities conducted at drop-in centers

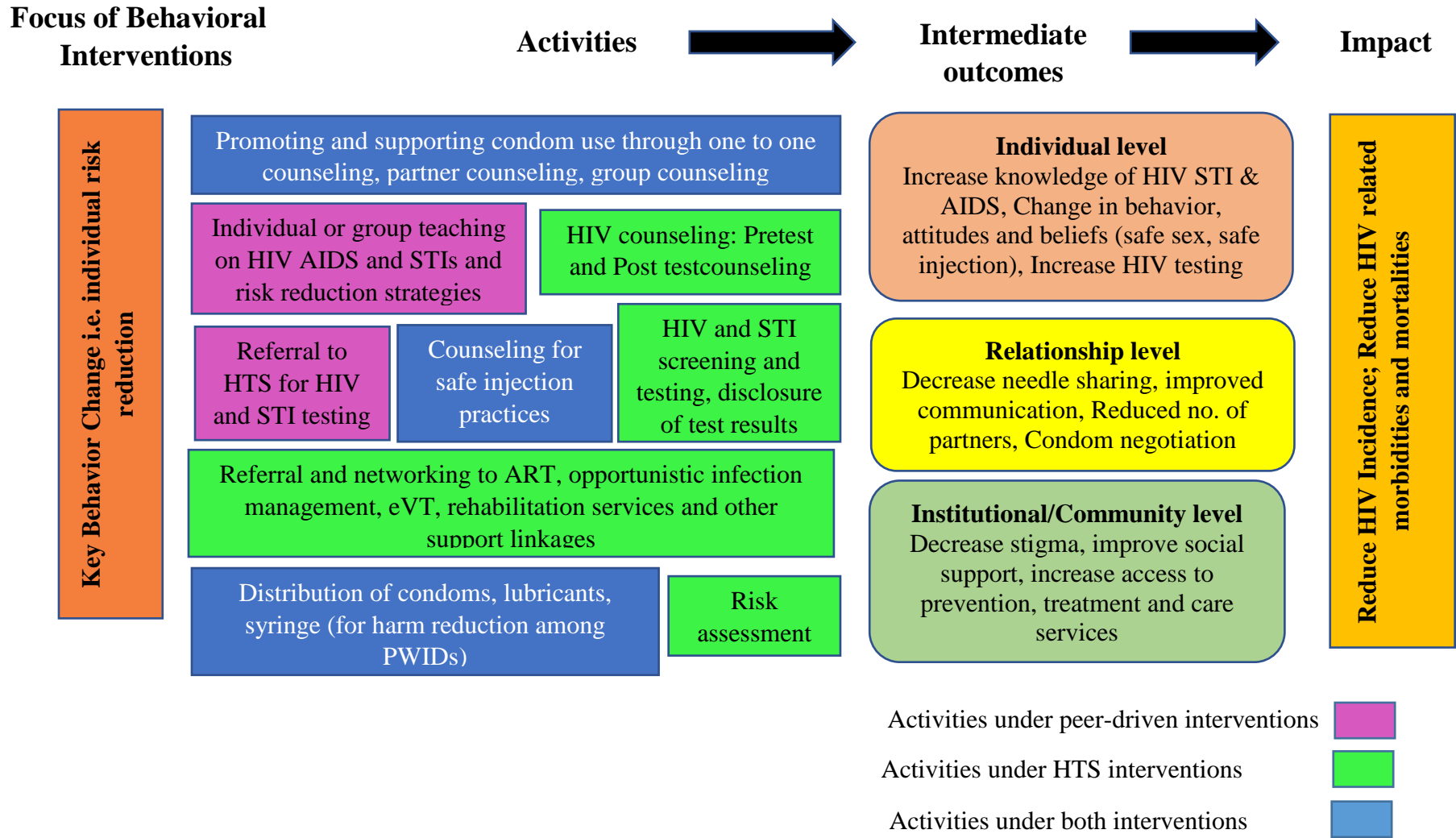
Outreach and peer educators provide education on STI, HIV and AIDS and preventive measures to key population. The teaching eas focused on HIV and STI transmission, condom use and demonstration. Drop-in centre: a safe place for key population to socialize and HIV related educational and counseling activities. HTS provides pre and post-test counseling, conduct HIV test and provide test results. Partner testing is recommended if diagnosed with STI and/or HIV

*Studies not included in meta-analyses assessing effectiveness of HIV interventions as no information about intervention

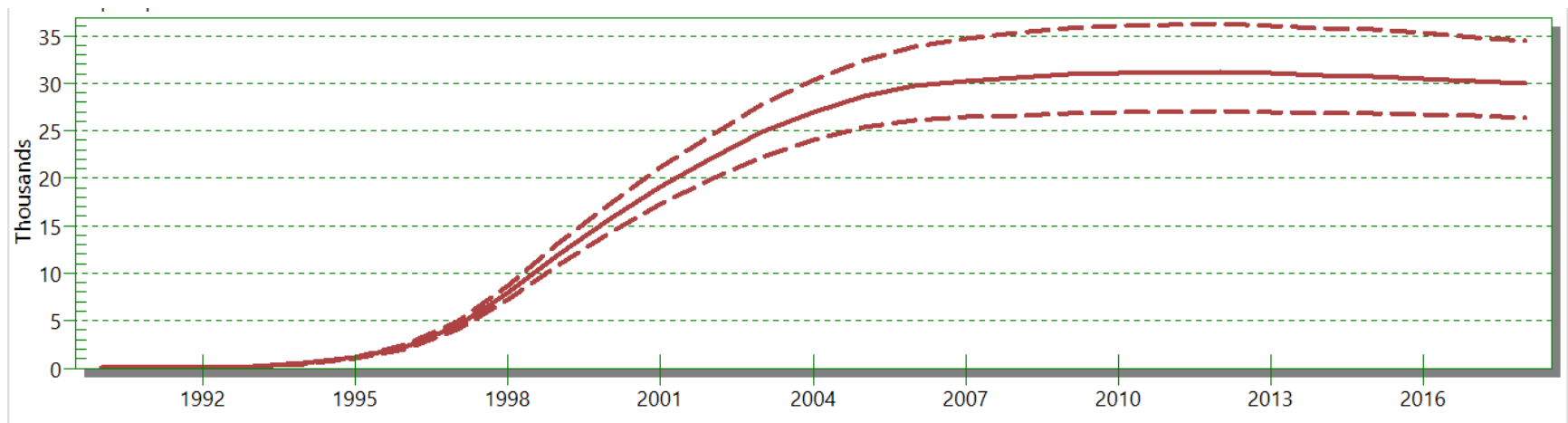
#Studies not included in calculating pooled prevalence.

@Studies not included in analysis as there is only one data point for the time.

\$ Removed from the analysis of safe injecting behavior by outcome (met with OE/PE, visited DIC and HTC) due to insufficient responses to calculate odds



Supplementary Figure S1. Framework describing the process of how HIV related behavioral interventions works.



Supplementary Figure S2. HIV population in Nepal between 1990 and 2018.