

Table 2. Study characteristics of included behavioural interventions, published between 2021–2025

Author, year of publication	Jurisdiction	Study years	Study design	Intervention description	Study population	Participants	Key intervention effects
Name of intervention <i>Delivery method</i>							
<b>INDIVIDUAL INTERVENTIONS</b>							
Biello <i>et al.</i> , 2022 (66)  MyChoices Mobile app	U.S.	2018-2019	RCT	<p>MyChoices is a theory-driven behavioural change mobile app to improve HIV testing and PrEP uptake. The app includes:</p> <ul style="list-style-type: none"> <li>• Sexual health information in varied formats (e.g. infographics, videos, web links)</li> <li>• Individualized, tailored HIV testing plans</li> <li>• Reminders for HIV/STI testing with geolocation-based notifications</li> <li>• GPS-enabled map with HIV testing locations and PrEP providers</li> <li>• Free home HIV/STI testing kits, condoms, and lubricant</li> </ul> <p>Control: Both study conditions received fact sheets on HIV testing and PrEP uptake, and had access to any services available as the standard of care at each study site</p>	<p>Young MSM (aged 15-24)</p>	<p>MSM (n=60) – Median age: 22 – Control (n=20) Intervention (n=40) – HIV status: HIV- – White, non-Hispanic (n=35) Hispanic/Latino (n=9) Asian, non-Hispanic (n=7) Black, non-Hispanic (n=3) Other/multiple (n=5) Declined to answer (n=1)</p>	<ul style="list-style-type: none"> <li>• No improvement in PrEP uptake</li> </ul>
Biello <i>et al.</i> , 2025 (65)  MyChoices Mobile app  LYNX Mobile app	U.S.	2019-2022	RCT	<ul style="list-style-type: none"> <li>• MyChoices mobile app previously described by Biello</li> <li>• , 2022 (66)</li> <li>• LYNX mobile app is guided by the information-motivation-behavioural skills model and includes: <ul style="list-style-type: none"> <li>✓ Personalized HIV risk score</li> <li>✓ Sexual diary to track sexual partners and encounters</li> <li>✓ Infographics summarizing sexual activities and partner types</li> <li>✓ Bi-directional chat feature to answer questions and provide real-time assistance with PrEP</li> <li>✓ Reminders for HIV/STI testing with geolocation-based notifications</li> <li>✓ GPS-enabled map with HIV testing locations and PrEP providers</li> <li>✓ Free home HIV/STI testing kits, condoms, and lubricant</li> </ul> </li> </ul> <p>Control: Both study conditions received fact sheets on HIV testing and PrEP uptake, and had access to any services available as standard of care at each study site</p>	<p>Young MSM (aged 15-24)</p>	<p>MSM (n=381) – Mean age: 22 – Control (n=130) Intervention: MyChoices (n=124) Intervention: LYNX (n=127) – White (n=194) Black (n=67) Asian (n=34) Latino or Hispanic (n=67) Other or mixed (n=17)</p>	<ul style="list-style-type: none"> <li>• Both apps demonstrated a small but statistically nonsignificant impact on PrEP initiation</li> </ul>
Jones <i>et al.</i> , 2025 (64)  HealthMindr-PrEP Mobile app	U.S.	2020-2022	RCT	<p>HealthMindr-PrEP is a mobile app with HIV prevention content specific to PrEP; the app includes:</p> <ul style="list-style-type: none"> <li>• FAQ on PrEP</li> <li>• PrEP self-assessment</li> <li>• PrEP provider locator</li> <li>• Ability to order condoms, lubricant, and HIV/STI self-test kits</li> <li>• Resources related to substance use and mental health</li> <li>• Personalized study timeline</li> </ul> <p>Control: Participants were only able to see the study timeline on the app</p>	<p>Young MSM (aged 18-34)</p>	<p>MSM (n=685) – Control (n=221) Intervention (n=437) – Non-Hispanic White 43.0% Black 23.6% Hispanic 21.6% Non-Hispanic Other or Multiple races 12.3%</p>	<ul style="list-style-type: none"> <li>• Statistically nonsignificant increase in PrEP initiation</li> </ul>

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Tieosapjaroen <i>et al.</i> , 2025 (67)  Hot Peach Tea <i>Podcast series</i>	Australia	2024	RCT	Hot Peach Tea is a community-based audio drama composed of 6 podcast-style episodes, each 5 minutes in length  Control: Participants received a link to PrEP Access Now, the common approach suggested by clinicians to gain PrEP-related information, including how to initiate, purchase, and use PrEP in Australia with or without insurance	Asian-born MSM in Australia (aged 18+)	MSM (n=200) – Median age: 29 – Control (n=96) Intervention (n=104) – Asian (n=200)	• No change in PrEP initiation
Dangerfield <i>et al.</i> , 2024 (2)  POSSIBLE <i>In-person peer support plus mobile app</i>	U.S.	2019–2021	Pretest-posttest design	POSSIBLE is a multicomponent intervention that includes peer sessions and use of an app to increase perceived HIV risk: <ul style="list-style-type: none"><li>Two sessions with a peer change agent to discuss lifestyles, personal goals and values, HIV vulnerabilities, perceived risk for HIV, and relative PrEP interest</li><li>PrEP use was encouraged by the agent and interested individuals were referred to care at the end of each session</li><li>Between visits, participants self-monitored their sexual behaviours using a mobile app-based diary called PrEPme</li></ul>	Black MSM (aged 18+)	MSM (n=69) – Mean age: 33 – Black (n=69)	• Increase in perceived HIV risk • Increase in the number of PrEP appointments
Schrode <i>et al.</i> , 2025 (3)  MEPS <i>In-person peer support and incentives plus mobile app</i>	U.S.	2019–2022	RCT	The MEPS (Mobile-Enhanced Prevention Support for People Leaving Jail) intervention is a tailored, multi-component six-month long intervention: <ul style="list-style-type: none"><li>14 peer sessions with peer mentor</li><li>Financial incentives earned by engaging in HIV/STI testing and prevention, substance use treatment, and other health-promoting activities</li><li>Geopass, a mobile app, provided an interface for searching for local providers, log appointments, review and update goals, and track incentive earnings</li></ul> Control: Standard of care, which included enrollment in jail-based substance use treatment and re-entry transition program	MSM leaving incarceration with a substance use disorder (aged 18–49)	Cisgender male (n=208) Transgender female (n=19) Gender non-conforming (n=9) Other (n=1) – Mean age: 34 – Control (n=103) MEPS (n=105) – Hispanic or Latino 42% Black or African American 26% White 21% Asian 2% American Indian or Alaska native 1% Native Hawaiian or Other Pacific Islander 1% Other 7%	• Increased PrEP use
Chan <i>et al.</i> , 2021 (4)  PrEPare-to-Start <i>In-person/telehealth counselling</i>	U.S.	2019–2020	RCT	PrEPare-to-Start consists of 2 brief motivational interviewing counselling sessions (10–15 minutes) to help participants decide if they should start PrEP: <ul style="list-style-type: none"><li>Initial session: conducted in-person at the time of STI testing to discuss barriers to PrEP uptake (about 15 mins)</li><li>Booster session: follow-up telephone session; and develop an action plan (about 10 mins)</li></ul> Control: Treatment-as-usual, including referral to PrEP services, access to STI clinic counsellors to discuss PrEP and encourage use, and facilitation of PrEP uptake by addressing structural barriers if possible (e.g. transportation)	MSM at high risk of HIV (aged 18+)	MSM (n=86) – Mean age: 32 – Control (n=43) Intervention (n=43) – White (n=56) African American/Black (n=9) Asian (n=5) Other (n=11)	• Improved linkage to PrEP care

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Silva <i>et al.</i> , 2021 (5)  PS-PrEP <i>In-person/telehealth counselling</i>	U.S.	2015-2017	RCT	<p>PS-PrEP (Partner Services PrEP) is an intervention to improve linkage to PrEP care among Black MSM and transgender women presenting at network referral services (e.g. partner notification services):</p> <ul style="list-style-type: none"> <li>• A 60-minute face-to-face session with a social work interventionist guided participants' through 4 components: <ul style="list-style-type: none"> <li>✓ Interactive education on HIV and PrEP</li> <li>✓ Assessing participant's motivation to reduce HIV risk and engage in PrEP</li> <li>✓ Creation of a PrEP linkage roadmap</li> <li>✓ Problem-solving exercises to address barriers in engagement with PrEP care</li> </ul> </li> <li>• Up to 4 booster check-in sessions via phone/text message from a social worker to address challenges with PrEP care engagement</li> </ul> <p>Control: Treatment-as-usual, including risk assessment, referral for additional STI testing, and provision of HIV prevention programming (e.g. PrEP)</p>	<p>Black MSM and transgender women (aged 18-40)</p> <p>MSM (n=126) Transgender women (n=10) – Median age: 26 – Control (n=65) Intervention (n=71) – Black (n=118) Latino (n=8)</p>		<ul style="list-style-type: none"> <li>• Increased linkage to PrEP care</li> <li>• Increased PrEP uptake</li> </ul>
Lee <i>et al.</i> , 2023 (68)  Listos <i>Telehealth counselling</i>	U.S.	2021	RCT	<p>Listos, Spanish for "ready" or "smart", is a peer-based counselling intervention encouraging HIV and STI self-testing and PrEP uptake:</p> <ul style="list-style-type: none"> <li>• A peer counselling session with one follow-up session, and access to peers via phone/text/email for the study's duration</li> <li>• Provision of mail-in HIV and STI test kits</li> </ul> <p>Note: Initial design was in-person; it was moved to a fully remote format due to COVID-19</p> <p>Control: Only peer counselling</p>	<p>Latinx immigrant sexual minority men (aged 18+)</p> <p>MSM (n=50) – Mean age: 37 – Control (n=20) Intervention (n=30) – Latinx (n=50)</p>		<ul style="list-style-type: none"> <li>• Increased PrEP initiation</li> </ul>
Van den Elshout <i>et al.</i> , 2021 (8)  AMPrEP <i>Mobile app</i>	The Netherlands	2016	RCT	<p>The standard AMPrEP (Amsterdam PrEP) mobile app (Control) allows all users to record on a daily basis whether they used PrEP, had sexual intercourse, the type of sex partner they had anal sex with, and condom use</p> <p>The enhanced version of the AMPrEP app (Intervention) included the standard app features plus:</p> <ul style="list-style-type: none"> <li>• Visual displays of recorded data in graphs and bar charts</li> <li>• Alarm function to set daily reminders</li> <li>• Tab for taking personal notes</li> </ul>	<p>MSM (aged ≥18)</p> <p>MSM (n=165) Transgender female (n=1) – Median age: 39 – Control (n=83) Intervention (n=83) – White (n=146) Nonwhite (n=20)</p>		<ul style="list-style-type: none"> <li>• No change in good adherence was observed</li> </ul>
Mitchell <i>et al.</i> , 2022 (6)  mSMART <i>Mobile app</i>	U.S.	2017-2018	Pretest-posttest design	<p>mSMART (Mobile App-Based Personalized Solutions for Medication Adherence of Rx Pill Tool) is a gamified mobile app for PrEP adherence. Features include:</p> <ul style="list-style-type: none"> <li>• Interactive adherence tracking</li> <li>• Adaptive daily surveys to gauge PrEP knowledge</li> <li>• Individualized adherence strategies</li> <li>• Coping strategies to manage PrEP side effects</li> <li>• Feedback on PrEP adherence</li> </ul>	<p>Young Black MSM (aged 18-30)</p> <p>MSM (n=15) – Mean age: 26 – Black (n=14) Multiracial (n=1)</p>		<ul style="list-style-type: none"> <li>• Improved PrEP adherence</li> </ul>

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Hightow-Weidman <i>et al.</i> , 2025 (7)  P3/P3+ <i>Mobile app</i>	U.S.	2019-2021	RCT	P3 (Prepared, Protected, emPowered) is a mobile app developed to support PrEP adherence through gamification, medication tracking, and social engagement  P3+ is the standard P3 app plus: <ul style="list-style-type: none"><li>Access to in-app adherence coaches</li></ul> Control: Standard of care included adherence-only messages	Young MSM and young TWSM (aged 16-24)	Cisgender male (n=216) Non-binary/gender queer (n=9) Transgender female (n=5) Multiple genders (n=14) – Median age: 22 – Control (n=83) Intervention: P3 (n=82) Intervention: P3+ (n=81) – White (n=137) Black (n=51) Asian (n=16) American Indian or Alaska Native (n=3)	• Improved PrEP adherence in P3/ P3+
Weitzman <i>et al.</i> , 2021 (9)  Dot <i>Mobile app plus text messaging</i>	U.S.	2019	Pretest-posttest design	Dot is a mobile app that offers adherence tracking and pill reminders in addition to text messages to encourage adherence. 3 types of text messages are offered: <ul style="list-style-type: none"><li>Daily pill reminders, plus</li><li>Weekly: 6 educational and 6 motivational messages, plus</li><li>Weekly: reminder text for daily adherence and consistent condom use</li></ul>	Young MSM (aged 20-29)	MSM (n=54) – Mean age: 25 – White (n=28) Asian (n=10) African American (n=10) Hispanic/Latino (n=3) Mixed (n=3)	• Improved PrEP adherence
Liu <i>et al.</i> , 2021 (10)  DOT Diary <i>Mobile app plus text messaging</i>	U.S.	2018	Pretest-posttest design	DOT Diary is an app using an automated directly-observed therapy (aDOT) approach for real-time PrEP adherence monitoring and pill reminder system coupled with an electronic sexual diary: <ul style="list-style-type: none"><li>The aDOT component: date and time stamp of each dosing event, daily dose reminder alarms, and an automated text message if participants are late on taking a dose</li><li>Electronic sexual diary component: tracks sexual encounters, sexual behaviours, rating characteristics of partners, calendar overview showing overlap of PrEP use and sexual encounters while on PrEP</li><li>Text messages are sent to follow up on missed or late doses</li></ul>	Young MSM (aged 18-35)	MSM (n=20) – Median age: 28 – Black (n=15) White (n=5)	• PrEP adherence supported by the app

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Buchbinder <i>et al.</i> , 2023 (11)  DOT Diary <i>Mobile app plus text messaging</i>	U.S.	2019-2020	RCT	DOT Diary mobile app previously described by Liu <i>et al.</i> , 2021 (10), plus: <ul style="list-style-type: none"><li>Micro-incentive (\$0.50) each day DOT Diary was used to record a dose</li></ul> Control: Participants received a micro-incentive (\$0.50) for each day they used a health-related app of their choosing (i.e. a sleep tracking app)	Young MSM (aged 18-35)	MSM (n=100) – Mean age: 26 – Control (n=34) Intervention (n=66) – Control: Asian/Pacific-Islander 11.8% Black/African American 20.6% Latinx 20.6% White 44.1% Other 2.9%  Intervention: Asian/Pacific-Islander 15.2% Black/African American 28.8% Latinx 22.7% White 31.8% Other 1.5%	• No improvement in PrEP adherence
Whiteley <i>et al.</i> , 2021 (12)  Viral Combat <i>Mobile app</i>	U.S.	2017-2019	RCT	Viral Combat is a gaming app for young MSM initiating PrEP: <ul style="list-style-type: none"><li>Players are "inside" the human body, where they combat HIV by engaging in health-promoting behaviours such as taking medication and interacting with providers</li><li>The game consists of five progressively challenging levels; throughout gameplay, tailored messages from healthcare providers and peers reinforce PrEP adherence, use, and routine care</li><li>Success across levels reflects improved health status and adherence behaviours</li></ul> Control: Non-PrEP related mobile gaming app	Young MSM (aged 18-35)	MSM (n=69) – Mean age: 25 – Black/African American 85.5% Hispanic/Latinx 6%	• Increased PrEP adherence
Horvath <i>et al.</i> , 2024 (70)  PrEP iT! <i>Website plus text messaging</i>	U.S.	2021	RCT	PrEP iT! is a website optimized for mobile devices (i.e. not an app) designed to support PrEP adherence and education. Primary components include: <ul style="list-style-type: none"><li>Self-monitoring tool for daily PrEP and sexual activity tracking</li><li>PrEP adherence interface displaying visual feedback on adherence and protection levels</li><li>Brief educational tips with infographics addressing HIV risk, stigma, and PrEP cost</li><li>Feature to ask anonymous PrEP-related questions</li><li>Optional text message reminders for adherence and healthcare appointments</li></ul> Control: Usual PrEP care, as received by participants from their provider	Young MSM (aged 18-29)	MSM (n=80) – Mean age: 25 – Control (n=40) Intervention (n=40) – Non-Hispanic White (n=37) Asian (n=16) Hispanic White (n=14) Non-Hispanic Black (n=9) Hispanic Black (n=4)	• No overall effect on PrEP adherence

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Wray <i>et al.</i> , 2024 (69)  Game Plan for PrEP <i>Website plus text messaging</i>	U.S.	2021-2022	RCT	Game Plan for PrEP is a website that collected an individual's basic demographic and behavioural information and assessed their drinking habits. Features included: <ul style="list-style-type: none"><li>• Feedback on HIV risk and how PrEP could impact this</li><li>• A decisional balance to help weigh the pros and cons of changing sexual behaviour</li><li>• Goal setting (e.g. "set a routine to take PrEP every day"), specific motivations for each goal (e.g. "to improve my relationship with my partner"), and steps to reach their goal (e.g. "keep my meds within reach")</li><li>• Any goals and steps selected were then displayed on a final page that participants could email to themselves</li><li>• Text message service assessed weekly PrEP adherence, sexual risk behaviour, alcohol use, and HIV risk</li></ul> Control: Participants encouraged to visit a website that guided them through educational videos on sleep, hygiene, and diet	Sexual minority men who report heavy alcohol use (aged $\geq 18$ )  Sexual minority men (n=73) – Mean age: 35 – Control (n=36) Intervention (n=37) – White (n=60) Black/African American (n=8) Asian (n=1) Multiracial (n=3) Chose not to respond (n=1)	Sexual minority men (n=73) – Mean age: 35 – Control (n=36) Intervention (n=37) – White (n=60) Black/African American (n=8) Asian (n=1) Multiracial (n=3) Chose not to respond (n=1)	• No improvement in PrEP persistence or adherence • No reduction in condomless anal sex acts
Serrano <i>et al.</i> , 2023 (72)  iTAB <i>Text messaging</i>	U.S.	2013-2015	RCT	iTAB (Individualized Texting for Adherence Building) is a text messaging system where participants receive personalized, automated daily texts to support PrEP adherence: <ul style="list-style-type: none"><li>• Participants can select health promotion and factoid type messages</li><li>• Each message came with a personalized prompt to take PrEP</li><li>• Participants were prompted to respond to whether or not they took PrEP that day</li></ul> Control: Standard of care (not specified)	MSM who use stimulants (aged $\geq 18$ )  MSM who use stimulants (n=119) – Age range: 28-35 – Control (n=61) Intervention (n=58) – White (n=88) African American (n=17) Asian (n=5) Other/unknown (n=4)	MSM who use stimulants (n=119) – Age range: 28-35 – Control (n=61) Intervention (n=58) – White (n=88) African American (n=17) Asian (n=5) Other/unknown (n=4)	• Increased PrEP adherence
Swendeman <i>et al.</i> , 2024 (71)  AMMI <i>Text messaging</i>	U.S.	2017-2019	RCT	AMMI (Automated text messaging and monitoring): Non-interactive daily informational, motivational, and reminder text messages and a weekly self-monitoring survey; up to five messages were sent daily on five different content themes (physical health and health care, mental health and wellness, sexual health, substance use, medication reminders)  AMMI plus peer support: Invitation to participate in reading and posting comments in a private online discussion board, where evidence-based responses and links to information and referrals were provided  AMMI plus peer coaching: Support was provided via telephone calls, text messaging, social media direct messaging, and/or in-person meetings  AMMI plus peer support and coaching: A combination of all described approaches	Adolescents at risk of HIV (aged 12-24)  Cisgender male (n=724) Transgender male (n=48) Transgender female (n=59) Gender diverse male (n=47) Gender diverse female (n=17) – Mean age: 21 – Control: AMMI (n=313) Intervention: AMMI plus peer support (n=205) Intervention: AMMI plus peer coaching (n=196) Intervention: AMMI plus peer support and coaching (n=181) – Black or African American (n=362) Latino or Hispanic (n=257) White (non-Hispanic) (n=184) Asian or Pacific Islander (n=53) Other or mixed background (n=39)	Cisgender male (n=724) Transgender male (n=48) Transgender female (n=59) Gender diverse male (n=47) Gender diverse female (n=17) – Mean age: 21 – Control: AMMI (n=313) Intervention: AMMI plus peer support (n=205) Intervention: AMMI plus peer coaching (n=196) Intervention: AMMI plus peer support and coaching (n=181) – Black or African American (n=362) Latino or Hispanic (n=257) White (non-Hispanic) (n=184) Asian or Pacific Islander (n=53) Other or mixed background (n=39)	• AMMI plus peer support and coaching increased PrEP uptake

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Brothers <i>et al.</i> , 2022 (73)  Proteus Discover <i>Digital monitoring adherence system</i>	U.S.	2017-2019	RCT	<p>Proteus Discover is a digital monitoring adherence system that measures PrEP adherence:</p> <ul style="list-style-type: none"> <li>• A sensor tablet coencapsulated with the drug is swallowed; a signal is transmitted to a wearable patch and registered as an event on the app</li> <li>• Weekly automated weekly text messages with information of estimated HIV risk reduction calculated from the total number of days of confirmed drug ingestion</li> </ul> <p>Two intervention groups:</p> <ul style="list-style-type: none"> <li>• Initial Proteus (IP) arm: start with Proteus Discover for 12 weeks followed by standard PrEP (i.e. no sensor); or</li> <li>• Crossover Proteus (CP) arm: start with standard PrEP (i.e. no sensor) followed by Proteus Discover</li> </ul>	Young MSM and transgender women (aged 16-24)	MSM (n=98) Transgender female (n=2) – Mean age: 22 – Intervention: IP (n=50) Intervention: CP (n=50) – White (n=28) Black (n=17) Latinx (n=33) Asian Pacific Islander, multiracial, and others (n=22)	• Increased PrEP adherence
Nelson <i>et al.</i> , 2022 (75)  Wheeler <i>et al.</i> , 2019 (74)  Whitfield <i>et al.</i> , 2023 (76)  C4 <i>In-person counselling &amp; care coordination</i>	U.S	2014-2017	Pretest-posttest design	<p>The Client-Centred Care Coordination (C4) intervention combines comprehensive risk counselling and services using an integrative anti-racism lens and self-determination theory approach to counseling and client engagement:</p> <ul style="list-style-type: none"> <li>• C4 session offered at each study visit (n=6) with the option to decline</li> <li>• Sessions focused on PrEP understanding, initiation, and adherence</li> <li>• HIV testing, risk reduction education, and clinical monitoring were also offered</li> <li>• Care coordination including referrals, follow-up care, and planning for transition off study and into community care</li> </ul>	Black MSM (aged 18+)	MSM (n=226) – Median age: 26 – Black or African American 86% Afro-Caribbean, African and Afro-Latino 14%	• Increased PrEP initiation and adherence, decreased HIV incidence
Schnall <i>et al.</i> , 2022 (77)  MyPEEPS Mobile <i>Mobile app</i>	U.S.	2018-2020	RCT	<p>MyPEEPS Mobile focuses on psychosocial and contextual risk related to HIV:</p> <ul style="list-style-type: none"> <li>• Content is delivered through games, scenarios, and role-plays within 21 online psychoeducational and skill-building modules, completed over a 3-month period</li> <li>• Provides educational information about HIV and STIs</li> <li>• Raises awareness about minority stress</li> <li>• Builds skills for condom use, emotion regulation, and communication</li> </ul> <p>One group received the intervention immediately ("Immediate"), and another group received the intervention after 9 months ("Delayed")</p>	Young MSM (aged 13-18)	MSM (n=736) – Mean age: 16 – Intervention: Immediate (n=382) Intervention: Delayed (n=381) – White (n=284) Black/African American (n=158) Asian (n=72) American Indian or Alaskan Native (n=43) Native Hawaiian or other Pacific Islander (n=11) Multiracial (n=94) Missing or unknown (n=98)	• Reduced condomless anal sex acts

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Sullivan <i>et al.</i> , 2023 (78)  M-Cubed Mobile app	U.S.	2018-2019	RCT	M-Cubed (Mobile Messaging for Men) is a mobile app to address HIV prevention and care among MSM. Every other day, 1 message is sent; once per week, a 1-minute video (for 3 weeks) is sent. The app tailors content to MSM living with and without HIV: <ul style="list-style-type: none"> <li>For MSM living without HIV: tailored prevention messaging through content and videos based on HIV risk factors for MSM living without HIV</li> <li>For MSM living with or without HIV: prevention and care services are offered (PrEP eligibility screening, ordering platform for delivery of HIV/STI screening kits, service locators for PrEP, nPEP, and HIV treatment/care)</li> </ul> Control: No access to app	MSM, HIV+ and HIV- (aged 18+)	MSM (n=1,220) – Control (n=615) Intervention (n=611) – HIV status: HIV- (n=838) HIV+ (n=388) – Colour (n=709) White (n=510)		• Increased PrEP use
Mustanski <i>et al.</i> , 2023 (80)  SMART Sex Ed Online curriculum	U.S.	2018-2020	Pretest-posttest design	SMART Sex Ed is a 4-module online sexual health education curriculum that addressed the following content areas: <ul style="list-style-type: none"> <li>Sexual and gender identity</li> <li>Sexual activity, pleasure, and consent</li> <li>Sex education in the real world</li> <li>Healthy relationships</li> </ul>	Adolescent MSM (aged 13-18)	MSM (n=983) – Mean age: 17 – HIV status: HIV- and status unknown – White (n=629) Hispanic/Latinx (n=345) Black (n=207) Asian (n=107) Indigenous (n=92) Other (n=104) Categories not mutually exclusive		• Increased PrEP use • Decreased condom use errors
Mustanski <i>et al.</i> , 2025 (79)  KIU! Online curriculum	U.S.	2019-2023	RCT	KIU! (Keep It Up!) is an online sexual health program developed for young MSM vulnerable to HIV; the program uses interactive multimedia to increase sexual health knowledge, motivate safer behaviours, and encourage healthy relationships: <ul style="list-style-type: none"> <li>9 learning modules are completed across three sessions with mandatory 8-hour breaks between sessions</li> <li>Booster sessions delivered at 6 and 12 weeks</li> </ul> This study compared two delivery strategies for implementing KIU!: <ul style="list-style-type: none"> <li>Community-Based Organizations (CBO)</li> <li>Direct-To-Consumer (DTC)</li> </ul>	Young MSM (aged 18-34)	MSM (n=2,124) – White (n=830) Black or African American (n=313) Latinx (n=617) Other (n=364)		• Both delivery strategies enhanced PrEP uptake and adherence

Table 2 (continued). Study characteristics of included behavioural interventions, published between 2021–2025

Author, year of publication	Jurisdiction	Study years	Study design	Intervention description	Study population	Participants	Key intervention effects
Name of intervention <i>Delivery method</i>							
<b>COUPLE-BASED INTERVENTIONS</b>							
Stephenson <i>et al.</i> , 2021 (84)  Stronger Together <i>In-person counselling</i>	U.S.	2014-2017	RCT	<p>Stronger Together is a CHTC intervention aimed at optimizing HIV prevention and care for serodiscordant couples:</p> <ul style="list-style-type: none"> <li>Motivational interviewing is used to improve adherence for the partner living with HIV by creating strategies</li> <li>Couples work together on shared goals to create a joint prevention plan</li> <li>3 in-person counseling sessions (30 min, 60 min, 60 min)</li> <li>3 follow-up booster sessions</li> <li>Individual participants received \$50 for completing each study visit (n=4) with a total incentive amount of \$400/couple</li> </ul> <p>Control condition: Couples are seen separately; HIV+ partner receives individual care, while the HIV- member engages in HIV testing</p>	HIV serodiscordant male couples (aged 18-69)	MSM (n=318; n=159 couples) – Mean age: 40 – Control (n=158 MSM; n=79 couples) Intervention: (n=160 MSM; 80 couples) – HIV status HIV- (n=159) HIV+ (n=159) – White (n=105) Hispanic (n=12)	• Improved adherence
Newcomb <i>et al.</i> , 2025 (81)  2GETHER <i>In-person: Counselling &amp; group education sessions</i>	U.S.	2017-2021	RCT	<p>2GETHER teaches couples to use relationship skills (i.e. communication, coping, problem-solving, acceptance) to optimize relationship functioning, improve sexual health, and reduce HIV transmission risk; ten hours of content are included:</p> <ul style="list-style-type: none"> <li>2 group sessions are aimed at skills building</li> <li>Couples then complete 2 individualized skills coaching sessions focused on skills implementation</li> </ul> <p>Control condition: PEONY (Positive Emotion Orientation for Nurturing Your Relationship) group sessions focused on skill-building</p>	Young male couples (aged 18+, with at least one member of the couple between 18-29)	MSM (n=256; n=128 couples) – Median age: 28 – Control (n=124; n=62 couples) Intervention (n=132; n=66) – HIV status: HIV+ (n=40) HIV- (n=196) Status unknown (n=4) Never tested (n=16) – White (n=132) Hispanic/Latinx (n=48) Black (n=48) Asian (n=8) Multiracial (n=16)	In both intervention and highly active control groups: <ul style="list-style-type: none"> <li>Decreased condomless anal sex acts</li> <li>Decreased STIs</li> <li>Non-significant increase in PrEP use</li> </ul>

Table 2 (continued). Study characteristics of included behavioural interventions, published between 2021–2025

Author, year of publication	Jurisdiction	Study years	Study design	Intervention description	Study population	Participants	Key intervention effects
Name of intervention <i>Delivery method</i>							
Newcomb <i>et al.</i> , 2023 (82)  2GETHER <i>Videoconferencing: counselling &amp; group education sessions</i>	U.S.	2018-2020	RCT	<p>2GETHER (videoconferencing version) teaches couples to use relationship skills (i.e., communication skills, coping skills, problem-solving, acceptance) to optimize relationship functioning, improve sexual health, and reduce HIV transmission risk; ten hours of content are included:</p> <ul style="list-style-type: none"> <li>3 videoconferencing group sessions are aimed at skill-building; prior to each session, participants view self-paced video modules addressing communication skills, coping with stress, relationship satisfaction, and HIV transmission risk</li> <li>2 videoconferencing individual couple coaching sessions are aimed at implementing skills and sexual health</li> </ul> <p>Control condition: A single-session, couple-based HIV testing and risk reduction session</p>	<p>Young male couples (aged 18+, with at least one member of the couple between 18-29)</p>	<p>MSM (n=400; n=200 couples)</p> <p>–</p> <p>Mean age: 28</p> <p>–</p> <p>Control: 200 MSM (n=100 couples)</p> <p>Intervention: 200 MSM (n=100 couples)</p> <p>–</p> <p>HIV status:</p> <p>HIV+ (n=45)</p> <p>HIV- (n=309)</p> <p>Unsure of status (n=4)</p> <p>Never tested (n=42)</p> <p>–</p> <p>White (n=225)</p> <p>Hispanic/Latinx (n=94)</p> <p>Black (n=34)</p> <p>Asian (n=17)</p> <p>Native Hawaiian/Pacific Islander (n=2)</p> <p>Native American/Alaskan Native (n=1)</p> <p>Multiracial (n=23)</p> <p>Other (n=4)</p>	<ul style="list-style-type: none"> <li>Decreased condomless anal sex acts</li> <li>Decreased number of condomless anal sex partners</li> <li>Decreased rectal STIs</li> </ul>
Stephenson <i>et al.</i> , 2022 (83)  Project Nexus <i>Telehealth counselling</i>	U.S.	2016-2018	RCT	<p>Project Nexus is a telehealth-delivered intervention that combines CHTC with home-based HIV testing to help couples develop a shared HIV prevention plan that reflected their mutual understanding, risk profile, and relationship context:</p> <ul style="list-style-type: none"> <li>Single virtual CHTC session lasting 30–45 minutes</li> <li>Two-home HIV self-test kits</li> <li>During the session, partners individually completed HIV self-tests and received their results together, guided by the counselor</li> </ul> <p>Control condition: Two home HIV self-test kits</p>	<p>Male couples (aged &gt;18)</p>	<p>MSM (n=796; n=398 couples)</p> <p>–</p> <p>Mean age: 30</p> <p>–</p> <p>Control (n=382 MSM; n=191 couples)</p> <p>Intervention (n=414 MSM; 207 couples)</p> <p>–</p> <p>HIV status</p> <p>HIV- 98%</p> <p>HIV+ 2%</p> <p>–</p> <p>White (n=605)</p> <p>Black/African American (n=62)</p> <p>Asian (n=68)</p> <p>Latino/Latinx (n=158)</p> <p>Hawaiian, Pacific Islander, other (n=61)</p>	<ul style="list-style-type: none"> <li>Decreased risk behaviour</li> </ul>

Table 2 (continued). Study characteristics of included behavioural interventions, published between 2021–2025

Author, year of publication	Jurisdiction	Study years	Study design	Intervention description	Study population	Participants	Key intervention effects
Name of intervention <i>Delivery method</i>							
GROUP INTERVENTIONS							
Schneider <i>et al.</i> , 2021 (85)  PrEPChicago <i>In-person group training &amp; telehealth support</i>	U.S.	2016-2018	RCT	<p>PrEPChicago is a network intervention aimed to enhance participants' knowledge of PrEP and strengthen their communication and motivational skills to engage others in the PrEP care cascade; a half-day small group workshop was followed by 8 telephone booster session (10-20 mins). The workshop had 4 modules:</p> <ul style="list-style-type: none"> <li>• HIV facts and myths</li> <li>• Background on PrEP</li> <li>• Role playing conversations about motivating peers to engage in PrEP care</li> <li>• Leveraging social media to spread awareness about PrEP</li> </ul> <p>Control: Participants received a sexual risk assessment workshop, whereby participants wrote and discussed fictional narratives about what they believe constituted low, medium, and high HIV/STI risk scenarios</p>	<p>Young Black MSM (aged 18-35)</p> <p>MSM (n=423) – Mean age: 26 – Control (n=214) Intervention (n=209) – HIV status HIV- (n=244) HIV+ (n=179)</p>		<ul style="list-style-type: none"> <li>• Increased number of PrEP referrals</li> <li>• Increased linkage to first PrEP appointment</li> </ul>
Arnold <i>et al.</i> , 2021 (86)  We Are Family <i>In-person group sessions &amp; mobile app</i>	U.S.	2018-2019	Pretest-posttest design	<p>The "We Are Family" intervention has four components designed to overlap with one another:</p> <ul style="list-style-type: none"> <li>• 2.5-hour in-person group session on HIV/STI prevention, HIV stigma, U=U, and PrEP</li> <li>• Monthly community-level events to promote HIV prevention and sexual health</li> <li>• Mobile health app: reiterates group session content, connects users to local resources, and promotes health and well-being</li> <li>• Dedicated service provider facilitates group sessions and provides HIV-related services to the community</li> </ul>	<p>Members of the house ball and gay family communities (aged 18+)</p> <p>Cisgender male (n=65) Non-binary (n=27) Transgender female (n=25) – Mean age: 31 – HIV status HIV-negative n=82 HIV-positive n=34 – Black (n=72) Hispanic (n=38) Mixed race (n=27) Latinx (n=11)</p>		<p>Modest non-significant changes were observed:</p> <ul style="list-style-type: none"> <li>• HIV/HIV+ participants: decrease in condomless anal intercourse</li> <li>• HIV- participants: increase in PrEP adherence, increase in condom use</li> <li>• HIV+ participants: increased ART adherence, increased viral suppression</li> </ul>

CHTC: Couples' HIV counselling and testing

MSM: Men who have sex with men

PrEP: Pre-exposure prophylaxis

RCT: Randomized controlled trial

STI: Sexually transmitted infection

TWSM: Transgender women who have sex with men