

Evaluación de los factores relacionados con la eficacia de los programas de prevención de las conductas sexuales de riesgo en adolescentes



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Evaluación de los factores relacionados con la eficacia de los programas de prevención de las conductas sexuales de riesgo en adolescentes

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INFORMA

Que da su conformidad a la lectura y defensa de la Tesis doctoral presentada por Dña. SILVIA ESCRIBANO CUBAS, titulada “Evaluación de los factores relacionados con la eficacia de los programas de prevención de las conductas sexuales de riesgo en adolescentes”.

Y para que conste a los efectos oportunos, emite el siguiente informe en Elche, a 15 de marzo de 2017.


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CERTIFICAN

Que la presente Tesis Doctoral, titulada "Evaluación de los factores relacionados con la eficacia de los programas de prevención de las conductas sexuales de riesgo en adolescentes" ha sido realizada por Dña. SILVIA ESCRIBANO CUBAS bajo nuestra dirección, y a nuestro juicio reúne las condiciones para ser defendida ante el Tribunal correspondiente para optar al grado de Doctor.

Elche, 15 marzo de 2017

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Esta tesis doctoral ha sido realizada según la normativa reguladora de 29 de octubre, por la que se establece la ordenación de las enseñanzas de doctorado (Real Decreto 1393/2007) y la normativa interna para la presentación de tesis doctorales por conjunto de publicaciones de la Universidad Miguel Hernández de Elche. De acuerdo con la normativa de estudios de doctorado, se detallan a continuación las referencias completas de los artículos que constituyen el cuerpo de la presente tesis:

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A mi hijas, Ivette y Diana

A mi marido, por su apoyo incondicional

A mis padres, por haber hecho de mí lo que soy



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RESUMEN





Resumen

La presente tesis doctoral tiene cuatro objetivos generales: 1) evaluar los factores de protección y riesgo asociados a las conductas sexuales de los adolescentes en España, y analizar su evolución temporal, 2) analizar la eficacia de los programas de promoción de hábitos saludables, de prevención de infecciones de transmisión sexual (ITS) y/o embarazos no planificados a nivel internacional, 3) desarrollar un instrumento de medida válido y fiable para evaluar las barreras percibidas hacia el uso del preservativo, y 4) evaluar la eficacia de un programa de promoción de la salud sexual y prevención del VIH a largo plazo, examinar la fidelidad de la implementación de la intervención, y analizar las variables mediadoras de la eficacia del programa tras 24 meses de su aplicación.

En primer lugar, se examina la situación en nuestro país de los factores de riesgo relacionados con el uso del preservativo y se observa la evolución a lo largo de los años mediante un estudio de cohortes de población adolescente. Se observó que los adolescentes se exponen a un mayor riesgo de contraer ITS y tener embarazos no planificados por un incremento de las conductas sexuales de riesgo.

En segundo lugar, se analiza la eficacia de los programas de promoción de hábitos saludables y preventivos de ITS (incluyendo VIH) y embarazos no planificados durante el periodo comprendido entre 2008 y 2016; y conocer qué estrategias están logrando un impacto a corto y largo plazo tras la implementación del programa. Se concluyó que las intervenciones logran un aumento del uso del preservativo en los adolescentes; aunque se necesita mayor evidencia para confirmar los resultados observados a largo plazo.

En tercer lugar, con el fin de disponer de un instrumento para evaluar las barreras percibidas hacia el uso del preservativo, se presenta un nuevo cuestionario. La escala

“*Barreras hacia el uso del Preservativo en Adolescentes (CUBS-A)*” que fue creada y validada para esta tesis, y es el primer instrumento validado en el ámbito español con población adolescente dirigida a evaluar este constructo.

En cuarto lugar, se evalúa la eficacia del programa *Competencias para adolescentes con una sexualidad saludable* (COMPAS) dos años después de la intervención, en comparación con otro programa con eficacia probada y un grupo control. COMPAS es una intervención de promoción de hábitos sexuales saludables aplicado en el ámbito escolar cuyos objetivos principales son prevenir la transmisión del VIH/sida y otras ITS, y reducir embarazos no planificados en población adolescente. Con el fin de conocer la influencia de la fidelidad de la implementación sobre la eficacia del programa, se evaluaron las variables dosis, adhesión y aceptación de la intervención por parte de los aplicadores. Este estudio incluyó tres condiciones experimentales: alta-fidelidad, baja-fidelidad y un grupo control (sin intervención). Por último, se analizaron las variables que median la eficacia del programa COMPAS para promover el uso del preservativo a largo plazo, con el objetivo de identificar las claves del éxito de la intervención.

La presente tesis compila seis estudios que reflejan los objetivos anteriormente explicados. A continuación se expone el resumen de cada estudio realizado:

Objetivo 1

Evaluar los factores de protección y riesgo asociados a las conductas sexuales de los adolescentes en España, y analizar su evolución temporal.

Estudio 1: Aumento de los comportamientos sexuales de riesgo entre los adolescentes a lo largo del tiempo: comparación entre dos cohortes en España.

A pesar de los avances en el tratamiento y la prevención, el VIH/sida continúa siendo

un problema grave de salud pública. El objetivo de este estudio fue examinar la conducta sexual, los niveles de conocimiento y las actitudes hacia el VIH/sida en dos cohortes de adolescentes españoles. Participaron 2,132 adolescentes con edades entre 15 y 18 años: 1,222 fueron evaluados en 2006 (43.2%) y 910 en 2012 (54.1% eran chicos). Los resultados indicaron un menor nivel de conocimientos sobre el VIH y una actitud menos favorable hacia el VIH/sida en la cohorte de 2012. Además, los adolescentes de la cohorte 2012 tuvieron su primera relación sexual a una edad más temprana e informaron de un mayor número de parejas sexuales que los de la cohorte 2006. Las chicas se implicaron en menos conductas sexuales de riesgo que los chicos, aunque no usaban el preservativo con sus parejas estables. Asumiendo la comparabilidad de ambas cohortes, este estudio sugiere que el riesgo de contraer VIH/sida por parte de los adolescentes españoles se ha incrementado con el paso del tiempo. Este estudio confirma la necesidad de mejorar el impacto de los programas que promueven hábitos sexuales saludables.

Objetivo 2

Analizar la eficacia de los programas de promoción de hábitos saludables, de prevención de infecciones de transmisión sexual y/o embarazos no planificados a nivel internacional.

Estudio 2: Intervenciones para reducir el riesgo de infecciones de transmisión sexual en adolescentes: un meta-análisis, 2008-2016.

El objetivo de este estudio es evaluar la eficacia de las intervenciones que promueven la salud sexual, reducen ITS y embarazos no planificados, dirigidos a población adolescente y disponibles entre 2008 y 2016; y analizar los moderadores

de la eficacia global. Se buscaron bases de datos electrónicas y revistas prestigiosas relacionadas con la prevención de ITS. Se analizaron aquellos estudios que cumplían los criterios de inclusión. Los estudios evaluaron la eficacia de las intervenciones que reducen el riesgo sexual en adolescentes (rango de edad: 11-19) en cualquier parte del mundo. Fueron analizados 63 estudios (59,795 participantes) diferenciando su impacto en las variables comportamentales a corto y largo plazo, así como las variables no conductuales. Los resultados muestran que las intervenciones, a corto plazo, tuvieron un impacto positivo en los conocimientos relacionados con la salud sexual ($d = 1.08$), las actitudes ($d = 0.71$), la autoeficacia hacia el uso del preservativo, ($d = 0.40$), la comunicación sobre sexualidad con la pareja sexual ($d = 0.67$), la intención conductual ($d = 0.49$), y el uso del preservativo ($d = 0.57$). No se encontró ningún impacto en la norma subjetiva. A largo plazo, las intervenciones mejoraron significativamente las actitudes ($d = 0.71$), la intención conductual ($d = 0.26$), y el uso del preservativo ($d = 0.61$). Se discutieron los moderadores de la eficacia. Se concluye que las intervenciones que reducen el riesgo de infecciones de transmisión sexual son eficaces para promover la salud sexual a través del uso del preservativo. Es necesario más evidencia de los efectos a largo plazo, especialmente en las variables biológicas y comportamentales.

Objetivo 3

Desarrollar un instrumento de medida válido y fiable para evaluar las barreras percibidas por los adolescentes hacia el uso del preservativo en las relaciones sexuales.

Estudio 3: Propiedades psicométricas de la escala de barreras de uso del

preservativo para adolescentes.

El uso inconsistente del preservativo en jóvenes se relaciona con la percepción de barreras hacia el uso de este método de protección. Se analizaron las propiedades psicométricas y la estructura factorial de una nueva Escala de Barreras hacia el Uso del Preservativo para adolescentes (*CUBS-A*). La validez concurrente se evaluó con la subescala “Actitudes hacia el uso del preservativo” del instrumento validado HIV-AS y con la variable porcentaje de uso del preservativo. Participaron 629 adolescentes españoles con una edad media de 15.17 ($DT = 1.09$; 51.5% chicos). El análisis factorial exploratorio dio como resultado un instrumento de 15 ítems con cuatro factores: habilidades de negociación, factor sensaciones percibidas, aspectos negativos del preservativo e interrupción de la experiencia sexual, que explicaba el 41.89% de la varianza total ($KMO = 0.84$; $\chi^2 = 1071.93$; $p < .001$). Los resultados muestran una elevada consistencia interna ($\alpha = 0.86$) y un buen ajuste de los datos al modelo ($NNFI = 0.93$, $CFI = 0.95$, $IFI = 0.95$, $RMSEA = .04$). La puntuación total del instrumento y la mayoría de los factores muestran correlaciones aceptables con el porcentaje del uso del preservativo, valores que apoyan la validez criterial ($p \leq .05$). Se encontraron diferencias de género en la mayoría de las subescalas ($p \leq .001$). La *CUBS-A* es un nuevo instrumento válido y fiable para evaluar las barreras que perciben los adolescentes para usar el preservativo en sus relaciones sexuales.

Objetivo 4

Evaluar la eficacia de un programa de promoción de la salud sexual saludable y prevención del VIH a largo plazo, examinar la fidelidad de la implementación de la intervención, y analizar las variables mediadoras de la

eficacia del programa a largo plazo.

Estudio 4: Seguimiento de dos años de un programa de promoción de la salud sexual para adolescentes españoles.

El objetivo de este estudio es evaluar los efectos del programa Competencias para adolescentes con una sexualidad saludable (COMPAS) y compararlos con un programa de evidencia probada programa (*¡Cuidate!*) y un grupo control (CG). Ocho escuelas públicas fueron aleatorizadas a una de las tres condiciones experimentales. Inicialmente, participaron 1,563 adolescentes españoles entre 14 y 16 años, y a los 24 meses tras la implementación, 635 completaron el cuestionario. Mediante autoinforme se evaluaron las variables conducta sexual, conocimientos, actitudes, intención, percepción de riesgo sexual, y norma percibida. Comparado con el grupo control, el programa COMPAS obtuvo mayor nivel de conocimientos en infecciones de transmisión sexual y mejor actitud hacia las personas que viven con VIH a los dos años de seguimiento. Ninguna intervención tuvo impacto a largo plazo en las variables de conducta sexual. Los resultados sugieren que COMPAS tiene un impacto en las variables que predicen la consistencia del uso del preservativo comparable a otras intervenciones.

Estudio 5: Fidelidad de la implementación para promover la eficacia de un programa de salud sexual para adolescentes.

El objetivo del presente estudio fue examinar las variables de la fidelidad de la implementación del programa COMPAS (Competencias para adolescentes con una sexualidad saludable): dosis, adhesión y aceptación. Los participantes fueron 716 con edades comprendidas entre 14 y 16 años (46.5% chicos). Fueron establecidos dos

grupos de fidelidad: alto ($n = 83$) y bajo ($n = 312$), y el resto actuó como grupo control ($n = 321$). Se evaluó el nivel de conocimiento acerca de las infecciones de transmisión sexual (ITS), las actitudes hacia el VIH, la intención del uso del preservativo, y el comportamiento sexual. Se observan mejores resultados en las variables nivel de conocimiento ($p < .001$) y actitud hacia el VIH ($p < .05$), en los sujetos que reciben intervención con respecto a no recibir educación alguna. Entre los dos grupos que reciben el programa, el grupo de alta fidelidad mejora su nivel de conocimientos ($p = .05$) e intención de realizar conductas sexuales seguras ($p = .05$), con respecto al grupo con menor fidelidad. El presente estudio muestra una mejor eficacia cuando los programas son implementados con alta fidelidad.

Estudio 6: Análisis de mediación de una intervención efectiva de promoción de la salud sexual para adolescentes españoles.

El objetivo de este estudio es determinar los factores que median el uso consistente del preservativo en los adolescentes tras 24 meses de haber recibido COMPAS, una intervención para promover una sexualidad saludable dirigida a los adolescentes españoles. Fueron seleccionados 12 centros educativos de España, donde se realizó una evaluación en la línea base, post-implementación, a los 12 y 24 meses de seguimiento. El uso consistente del preservativo fue la conducta final evaluada mediante autoinforme a los 24 meses de la implementación. Basado en la teoría de la conducta planeada, se identificaron las variables que median el efecto de la intervención sobre el uso consistente del preservativo. El análisis de mediación múltiple indica que las actitudes hacia el uso del preservativo cuando hay obstáculos para su uso y la autoeficacia mediaron el efecto del programa COMPAS en el incremento del uso consistente del preservativo. Éste es el primer estudio que

identifica los constructos teóricos que median la eficacia de una intervención de promoción de hábitos sexuales saludables en adolescentes españoles.



INTRODUCCIÓN





Introducción

La salud sexual es definida por la Organización Mundial de la Salud como: “Un estado de bienestar físico, emocional, mental y social relacionado con la sexualidad; la cual no es solamente la ausencia de enfermedad, disfunción o incapacidad. La salud sexual requiere un alcance positivo y respetuoso de la sexualidad y de las relaciones sexuales, así como la posibilidad de tener experiencias sexuales placenteras y seguras, libres de coacción, discriminación y violencia. ...” (OMS, 2006).

Teniendo en cuenta esta definición, es conveniente resaltar el enfoque positivo que se realiza sobre el término, así como la inclusión del concepto de placer en las relaciones sexuales sin ser objetivo en sí mismo la reproducción, junto con premisas como el respeto, la libertad y la seguridad. Por todo ello, se podría concluir que la salud sexual requiere vivir la sexualidad de manera placentera sin los riesgos que para la salud y el bienestar representan los embarazos no planificados, las infecciones de transmisión sexual, así como otras situaciones que pueden poner en peligro la salud de la persona, tanto física, emocional, mental y/o social. Sin embargo, la población joven y adolescente se caracteriza por ser particularmente vulnerable en aquellos aspectos relativos a la salud sexual (OMS, 2016). Nuestros jóvenes viven en un momento sociocultural donde hay un mayor acceso a la información sobre la sexualidad a través de multitud de canales; sin embargo, se encuentran conocimientos erróneos en temas relacionados con la sexualidad (Calatrava, López-del Burgo, & de Irala, 2012; Espada, Guillén-Riquelme, Morales, Orgilés, & Sierra, 2014). Ello puede estar influido por fuentes de dudosa fiabilidad, como internet o los amigos, que son elegidos por los adolescentes como recursos apropiados para buscar información (Camacho, Bardo, Molina, & Vicedo, 2012; Liga Española de la Educación, Ministerio de Sanidad, Política Social e Igualdad, 2013). La desinformación y creencias erróneas, junto con el

conjunto de factores socioculturales relacionados, como la presión de grupo o la percepción normativa, puede llevar a los adolescentes a tomar decisiones inadecuadas en cuestiones relacionadas con la sexualidad. Además, se debe tener en cuenta la maduración cerebral asociada a características presentes en esta etapa como baja planificación, conductas exploratorias, búsqueda de nuevas experiencias o impulsividad; todas relacionadas con la realización de conductas de riesgo (Leshem, 2016; Oliva, 2007). Todo ello justifica un entorno propicio de vulnerabilidad donde se incrementan las conductas sexuales de riesgo, y por ende una mayor exposición a las infecciones de transmisión sexual (ITS), embarazos no planificados, y en general poniendo su salud en peligro.

Situación actual del VIH/sida

ONUSIDA (2016), en sus últimos datos publicados, estima que 36.7 millones de personas en el mundo estaban afectadas por el VIH/sida en el 2015. A pesar de que los nuevos casos han decrecido un 35% a nivel mundial desde 2000 (ONUSIDA, 2015a), el VIH/sida continúa siendo una epidemia con graves consecuencias sanitarias y sociales, donde la incidencia anual es elevada. En el año 2015, 2.1 millones de personas se infectaron con el VIH y 1.1 millones fallecieron por enfermedades directamente relacionadas con el sida. Respecto a la población joven y adolescente, UNICEF (2016), estima que 1.8 millones de personas en todo el mundo con edades comprendidas entre los 10 y 19 años estaban afectados por el VIH en el año 2015; y el 12% de las nuevas infecciones se produjeron en adolescentes entre los 15 y 19 años, lo que supone una estimación de 250,000 adolescentes afectados por esta problemática.

Con respecto a España, los resultados del último informe del Centro Nacional de Epidemiología (2016) muestran estabilidad en la tasa de incidencia del VIH en los últimos años (9.44 por 100,000 habitantes); sin embargo, continúa siendo superior a la media de la

Unión Europea (6.3 por 100,000) (European Centre for Disease Prevention and Control, 2016). Los adolescentes y población joven entre los 15 y 24 años representan el 11% de los nuevos diagnósticos de VIH y el 50% del total se diagnosticaron entre los grupos de edad de 25-29 (16.2%), de 30-34 (16.5%) y de 35-39 años (17.2%). Por otra parte, el mismo informe reporta elevados porcentajes de diagnóstico tardío de la infección (46.5%), cuya tendencia se ha mantenido estable desde el año 2009. Esto sugiere que una gran mayoría de la población se infecta en la adolescencia y primera juventud debido al largo periodo de incubación y al alto porcentaje de diagnósticos tardíos.

Las relaciones sexuales sin protección son la principal vía de transmisión del VIH, con un 79% de los nuevos diagnósticos de VIH en 2015 (Centro Nacional de Epidemiología, 2016). La primera causa de transmisión del VIH se da entre los hombres (53.6%) y en segundo lugar en relaciones heterosexuales (25.4%), para todos los grupos de edades, excepto en los mayores de 50 años donde predominan las relaciones heterosexuales. Mientras que se observa una tendencia descendente en las tasas de nuevos diagnósticos de VIH en las relaciones heterosexuales, con respecto a las relaciones sexuales sin protección entre hombres hay un aumento de tendencia desde el 2009 en los grupos de edad desde los 15 a los 34 años.

Infecciones de transmisión sexual (ITS)

Las ITS son consideradas un problema importante de salud pública por su elevada prevalencia, con una tendencia creciente a nivel mundial, así como la gran repercusión sobre la salud sexual y reproductiva, y general en la población. Ejemplo de ello es que la clamidiasis y la gonorrea son las principales causas de enfermedad inflamatoria de la pelvis (EIP), cuya consecuencia de mayor gravedad es la infertilidad (OMS, 2016), y/o el virus del papiloma humano, que se considera el causante del 30% de los cánceres en el mundo

atribuibles a una infección (de Martel et al., 2012). Por otra parte, es conocido que la presencia de una ITS multiplica el riesgo de contraer el VIH en comparación con personas que no están afectadas por ninguna ITS (OMS, 2016). Esto es atribuible a la exposición de las ITS y el VIH a través de conductas sexuales no saludables a lo largo de la vida, pero también a la mayor facilidad que tiene el VIH de penetrar en el organismo a través de las lesiones que pueden producir las ITS (Centers for Disease Control and Prevention, 2014).

Según estima la OMS (2016), cada año 357 millones de personas contraen alguna ITS, sin ser incluidos los datos del VIH. La infección genital del Herpes simple es la más frecuente, con más de 500 millones de casos a nivel mundial, seguido del VPH con más de 290 millones de mujeres, la *Trichomonas vaginales* (143 millones), la *Chlamydia trachomatis* (131 millones), la *Neisseria gonorrhoea* (78 millones) y la sífilis (5.6 millones). Se estima que más del 90% de las mujeres y del 80% de los hombres activos sexualmente serán infectados por el VPH a lo largo de su vida (Chesson, Dunne, Hariri, & Markowitz, 2014), siendo casi la mitad de los tipos de VPH alto riesgo (Hariri et al., 2011).

En España, el último informe del Centro Nacional de Epidemiología (2015) muestra un incremento continuado de las tasas de las ITS bajo vigilancia epidemiológica, - sífilis e infección gonocócica - desde el año 2000 hasta el último registro actualizado en 2013. Actualmente la tasa de infección por sífilis (8 por 100.000 habitantes) es la más alta observada desde 1995. Por otra parte, la infección gonocócica (*Neisseria gonorrhoeae*) se sitúa en una tasa de 7.12 por 100,000 habitantes, no habiéndose registrado tasas más altas desde 1996. Otras ITS no consideradas de declaración obligatoria (EDO), como la *Chlamydia trachomatis* y el Herpes simple tipo I, son recogidas por el Sistema de Información Microbiológica (SIM) y obtenidos por confirmación de laboratorio. Debido a la baja cobertura poblacional, aproximadamente el 30%, los datos pueden estar infraestimados.

A ello se debería de añadir la propia problemática de las ITS, al ser en ocasiones asintomáticas. En cualquier caso, todas ellas tienen una tendencia de crecimiento a lo largo del tiempo, declarándose la infección de *Chlamydia trachomatis* como la ITS más frecuente en la población española en 2015 con respecto al Herpes simple y *Neisseria gonorrhoeae*. Se registra en la infección *Chlamydia trachomatis* y Herpes simple tipo I mayor frecuencia para el grupo de mujeres con edades entre los 15-24 años con respecto a otros grupos y el segundo con frecuencia para el Herpes simple no tipado; mientras que el grupo de hombres destaca en la infección por *Neisseria gonorrhoeae* como el tercer grupo con mayor distribución (Sistema de Información Microbiológica, 2016). Según Castellsagué (2012), la prevalencia del VHP es del 14% en las mujeres mayores de 18 años y concretamente en el grupo de edad de 18-25 años la prevalencia se duplica. Estos datos fueron recogidos durante los años 2007-2008 y actualmente no se dispone de nuevas actualizaciones sobre la situación actual en España. Por lo que cabe esperar que su prevalencia haya aumentado de acuerdo a las elevadas cifras de infecciones a nivel mundial.

Embarazos no planificados

La OMS considera el embarazo en la adolescencia como una situación de riesgo debido a las complicaciones que tiene sobre el adolescente en todas las esferas: física, psico-emocional y social; además de las repercusiones sobre el recién nacido. Las complicaciones durante el embarazo y el parto son la segunda causa de muerte entre las adolescentes entre 15 y 19 años (OMS, 2014). Relacionado con la morbilidad, las adolescentes embarazadas menores de 19 años tienen mayor riesgo de tener complicaciones perinatales, postnatales y del recién nacido, como infecciones, eclampsia, bajo peso al nacer, parto prematuro y condiciones neonatales severas (Ganchimeg et al., 2014; Kaplanoglu et al., 2015). En otras esferas, destacan repercusiones sociales y emocionales para las adolescentes, sus parejas,

familias y entorno. Por ejemplo, se observan mayores tasas de abandono en la educación, menores oportunidades en el ámbito laboral y como consecuencia menos recursos económicos en el futuro, y aumento en las tasas de pobreza (Fletcher & Wolfe, 2009; Ng & Kaye, 2012). Se estima que 16 millones de adolescentes y jóvenes dan a luz entre los 15 y 19 años (OMS, 2014). En España, los datos de fecundidad en menores de 19 años se mantienen actualmente en 8,207 nacimientos (Instituto Nacional de Estadística, 2015), de los cuales la mayoría no son planificados según queda reflejado en la última encuesta del Instituto de la Juventud (Moreno & Rodríguez, 2013).

Para conocer los datos sobre la prevalencia de embarazos no planificados se puede hacer una estimación a través de las interrupciones voluntarias del embarazo (IVE) publicadas por los organismos competentes en la materia. Sin embargo, no es posible conocer el alcance total debido a que no todos los embarazos no planificados en un inicio dan como resultado una interrupción posterior del mismo. Respecto a los últimos datos publicados en España por el Ministerio de Sanidad, Servicios Sociales e Igualdad (2015), se ha observado una disminución de las tasas de IVE desde hace una década. En el año 2015 se obtuvo una tasa de 10.40 por 1000 mujeres. A pesar de la disminución observada, en el año 2015 se notificaron 94,188 abortos de los que el 11% del total corresponde a mujeres adolescentes menores de 19 años.

Factores relacionados con el uso del preservativo

El uso consistente y correcto del preservativo es considerado el método preventivo más efectivo ante la mayoría de las ITS (National institute of Allergy and infectious Diseases, 2001). Aunque la mayoría de los adolescentes manifiestan el uso del preservativo como método preventivo habitual en sus relaciones sexuales, un porcentaje significativo

más de un 50% – lo usa de manera inconsistente (Espada, Morales, Orgilés, Jemmott, & Jemmott, 2015). La principal razón por la cual los adolescentes y jóvenes españoles se protegen en las relaciones sexuales es con la finalidad de prevenir el embarazo (Ruiz, Giménez, Ballester, Roig, & Castro, 2012; Sierra et al., 2010). La baja percepción del riesgo que entraña tener sexo desprotegido (entendido como sexo sin hacer uso del preservativo) para contraer una ITS, como sífilis, gonorrea o herpes genital, además de otros factores como las barreras percibidas del uso del preservativo, pueden facilitar que los jóvenes y adolescentes utilicen exclusivamente métodos anticonceptivos, como la píldora o el anillo vaginal, quedando desprotegidos ante el VIH/sida y otras ITS (Ballester, Gil, Giménez, & Ruiz, 2009). Por ello, se plantea como posible solución fomentar la actitud positiva hacia el uso del preservativo durante las relaciones coitales reemplazándolas por los antiguos mensajes que situaban el foco principalmente en la prevención (Warner et al., 2012). Según el estudio de Doyle, Calsyn y Ball (2009), una actitud positiva hacia el uso del preservativo correlaciona positivamente con su uso. Por ello es imprescindible aumentar el nivel de conocimientos, desmitificar las creencias en torno al preservativo y reducir las barreras que interfieren para que los adolescentes y jóvenes lo utilicen, y con ello mejorar la actitud hacia su uso.

La literatura científica señalan diferentes barreras por las que los adolescentes deciden no usar el preservativo en sus relaciones sexuales. Entre las principales barreras se encuentran la utilización de otros métodos anticonceptivos (como la píldora) y la confianza en la persona con quien se mantienen relaciones sexuales (Moreno & Rodríguez, 2013; Sierra et al., 2010), la disminución del placer o sensibilidad debido al preservativo (Sierra et al., 2010; Romero-Estudillo et al., 2014; Ruiz, Giménez, & Ballester, 2008), no tener acceso a él en el momento del coito (Romero-Estudillo et al., 2014; Ruiz et al., 2012; Sierra et al.,

2010), interferencias durante el acto sexual por la colocación del preservativo y su precio (Ruiz et al., 2008; Ruiz et al., 2012), el rechazo propio o de su pareja a usarlo (Romero-Estudillo et al., 2014), la posibilidad de que se rompa, la dificultad en obtenerlos y la inconveniencia de su uso (Ruiz et al., 2008).

Debido a las implicaciones que tiene el sexo desprotegido para la salud de los adolescentes, es importante conocer los factores y creencias que actúan como barreras para no usar el preservativo. De esta manera podrá mejorarse el diseño de los programas de promoción de la salud sexual y las campañas que promocionan el uso del preservativo, incidiendo sobre aquellas que están directamente relacionadas con su utilización durante las relaciones sexuales (Ruiz et al., 2008; Sarkar, 2008). Sin embargo, en España no existen instrumentos válidos y fiables, dirigidos a población adolescente, para evaluar las barreras percibidas que interfieren en el uso del preservativo. Existen instrumentos validados pero dirigidos a otro rango de edad u otros contextos (Doyle et al., 2009; St. Lawrence, 1999; Sunmola, 2001).

Panorama actual en promoción de la salud sexual

Las estrategias de ONUSIDA para el año 2016-2021 establecen objetivos específicamente dirigidos a la población adolescente para poner fin a la epidemia del sida en 2030, como el acceso a habilidades, información y capacidad para protegerse del VIH en su objetivo 3, o el acceso a programas de prevención combinada del VIH y a servicios de salud sexual y reproductiva, mencionado en el objetivo 4 (ONUSIDA, 2015b). Multitud de intervenciones de promoción de hábitos sexuales saludables incluyen actividades cuyo objetivo es incrementar el uso consistente del preservativo a través del impacto en las variables precursoras según los modelos teóricos de modificación de la conducta: Teoría de la Conducta Planeada (TCP; Ajzen, 1991) ó el modelo de Información-Motivación-

Habilidades conductuales (IBM; Fisher & Fisher, 1992), como son la actitud hacia la prevención y el uso del preservativo, nivel de conocimiento sobre métodos de protección e ITS, percepción del riesgo, habilidades conductuales y autoeficacia, percepción normativa y la intención de usar el preservativo (Espada, 2007; Lauby et al., 2010; Villarruel, Jemmott, & Jemmott, 2005). Es necesario aplicar intervenciones de promoción de hábitos sexuales saludables eficaces, que hayan demostrado su evidencia en un contexto específico con el objetivo de lograr el máximo impacto.

En los años recientes existe una gran cantidad de publicaciones de ámbito internacional que abordan la evaluación de intervenciones de promoción de sexualidad saludable y/o prevención de ITS. Sin embargo, hay pocas revisiones que evalúen el impacto global de las mismas y/o las estrategias con impacto en los últimos años. Es de gran utilidad contar con meta-análisis que examinen los factores comunes que tienen efecto en las intervenciones preventivas y proporcionen medidas globales de eficacia. Una revisión de revisiones y meta-análisis de von Sadvoszky, Draudt y Boch (2014) identifica 13 estudios secundarios publicados desde 2002 hasta 2012, de los cuales únicamente cuatro son categorizados como meta-análisis cuyo foco de atención se dirige a población adolescente y ninguno de ellos recoge datos con fecha posterior al 2008. El resto de estudios recogidos en esta revisión tiene por objeto otras poblaciones diana o utilizan otra metodología de análisis, como la revisión sistemática. Entre los cuatro meta-análisis que evalúan la eficacia de intervenciones con muestra adolescente, cabe resaltar el de Johnson, Scott-Sheldon, Huedo-Medina y Carey (2011), que evalúa la eficacia de intervenciones preventivas del VIH, y el de Noar, Black, y Pierce (2009), centrado en intervenciones que a través de las nuevas tecnologías fomentan el uso del preservativo; mientras que los otros dos no realizan análisis estadísticos de todas las variables de estudio (Shepherd et al., 2010; Underhill, Operario, &

Montgomery, 2007). von Sadovszky et al. (2014) concluye que las intervenciones que promueven el uso del preservativo son eficaces en incrementar su uso y en disminuir las conductas sexuales de riesgo para las ITS, como aumentar la comunicación sexual, reducir la frecuencia de las relaciones sexuales y del número de parejas, retrasar la edad de debut sexual, aumentar la autoeficacia y el nivel de conocimientos; aunque se necesita mayor número de revisiones meta-análisis con el objetivo de clarificar los efectos a largo plazo. Añade que las intervenciones más exitosas incluyen habilidades para el uso del preservativo y de comunicación. Sin embargo, como se ha comentado anteriormente, la población diana de este meta-análisis no es exclusiva para los adolescentes. Protopogerou y Johnson (2014) también realizaron una revisión de meta-análisis y revisiones sistemáticas para evaluar la eficacia de las intervenciones de prevención de VIH dirigido a población adolescente, sin encontrar ningún estudio que evalúe intervenciones implementadas después del 2008. Los autores llegan a conclusiones similares con respecto a los componentes de los programas que aumentan la eficacia, destacando la comunicación y el entrenamiento de habilidades. Otro meta-análisis publicado recientemente por Petrova y García-Retamero (2015) muestra resultados sobre las intervenciones preventivas de ITS y reducción de conductas sexuales y riesgo implementadas desde 1989 hasta el año 2012 en población adolescente, reduciéndose exclusivamente a las intervenciones realizadas en EEUU. Los autores estiman que se podría lograr una reducción del 30% de la incidencia de ITS mediante intervenciones diseñadas con componentes adecuados, como habilidades de comunicación y del uso del preservativo, así como conocimiento relacionado con las ITS. Por ello, es evidente la limitación que hay actualmente para formular conclusiones firmes sobre la eficacia de los programas de promoción de conductas sexuales seguras a nivel mundial y dirigidas a población adolescente.

La situación actual de las intervenciones escolares de prevención de VIH en España se describe en una revisión reciente (Espada, Morales, Orgilés, Piqueras, & Carballo, 2013). Los autores evalúan la calidad y el impacto de las intervenciones preventivas hacia el VIH y los programas de salud sexual dirigidos a población adolescente en contexto español desde 1995 a 2010. Los resultados indican que existe una escasa evaluación de las intervenciones realizadas en ámbito español y por tanto un amplio desconocimiento de su impacto. Durante este periodo de búsqueda se identificaron catorce estudios controlados y únicamente 4 fueron clasificados como alta calidad. Por otro lado, no se pudo conocer el impacto de las intervenciones debido a la ausencia de evaluaciones a medio y largo plazo de los estudios incluidos en la revisión.

Programa Competencias para adolescentes con una sexualidad saludable (COMPAS)

COMPAS es un programa de promoción de hábitos sexuales saludables desarrollado y aplicado en España en el contexto escolar (Espada, 2007). La intervención se dirige a población adolescente con el objetivo principal de prevenir la transmisión del VIH/sida y otras ITS, además de embarazos no planificados. El programa está basado en la teoría del aprendizaje social (Bandura, 1986) y el modelo IBM (Fisher & Fisher, 1992). Los objetivos secundarios son: a) aumentar el conocimiento sobre VIH y ITS, b) mejorar las actitudes favorables hacia el uso del preservativo y las creencias normativas sobre los comportamientos sexuales saludables, c) aumentar la percepción de riesgo sobre las relaciones sin protección, d) aumentar la intención de no realizar comportamientos sexuales de riesgo, f) promover el uso consistente del preservativo, y g) disminuir las conductas sexuales de riesgo. A continuación se exponen los detalles del programa publicados en Espada et al. (2015):

Objetivos	Promover comportamiento sexual saludable y reducir el riesgo sexual
Población dirigida	Adolescentes españoles
Bases teóricas	<ul style="list-style-type: none">▪ Teoría aprendizaje social▪ Modelo de información-motivación-habilidades conductuales
Duración	Cinco módulos de 50 minutos
Módulos	<ol style="list-style-type: none">1) Sida y Salud: conocimiento<ul style="list-style-type: none">▪ Introducción al programa COMPAS▪ Vulnerabilidad al riesgo sexual▪ Conocimiento sobre cómo afecta el VIH al sistema inmunológico y las vías de transmisión▪ Capacidad para identificar comportamientos de riesgo para la infección del VIH2) Conociendo mejor el sida<ul style="list-style-type: none">▪ Conocimiento sobre la transmisión del VIH y métodos de protección▪ Reestructuración cognitiva para eliminar creencias erróneas3) Tomando decisiones<ul style="list-style-type: none">▪ Toma decisiones para el uso del preservativo▪ Toma decisiones en el área afectiva sexual mediante la evaluación de situaciones donde existen obstáculos para el uso del preservativo.4) Mejorando tu comunicación sobre sexo<ul style="list-style-type: none">▪ Conocimiento sobre la asertividad en la sexual▪ Manejo de obstáculos en el uso del preservativo▪ Habilidades de comunicación: habilidades de negociación y habilidades para rechazar sexo de riesgo5) Manteniendo tus decisiones<ul style="list-style-type: none">▪ Uso correcto del preservativo▪ Autoinstrucciones▪ Ensayo de comportamiento encubierto
Componentes	<ul style="list-style-type: none">▪ Información▪ Habilidades sociales▪ Solución de problemas▪ Mantenimiento de Estrategias: Autoinstrucciones y ensayo de comportamiento encubierto
Metodología	<ul style="list-style-type: none">▪ Actividades interactivas▪ Juego en grupos▪ Role playing▪ Grupos de discusión▪ NO se provee preservativos
Estrategia	Promoción del uso correcto del preservativo

La eficacia del programa COMPAS en España ha sido demostrada en diversos estudios controlados con asignación aleatoria de los centros educativos a las condiciones experimentales. Los resultados con población adolescente escolarizada han sido publicados en diversos estudios (Espada, Orgilés, Morales, Ballester, & Huedo-Medina, 2012; Espada et al., 2015; Morales, Espada, Orgilés, Secades-Villa, & Remor, 2014; Morales, Espada, & Orgilés, 2015). De acuerdo con estos trabajos, COMPAS aumenta el nivel de conocimientos sobre VIH y otras ITS y promueve una actitud favorable hacia aspectos relacionados con el VIH/sida (incluyendo el uso del preservativo), y disminuye la intención de implicarse en comportamientos sexuales de riesgo (Espada et al., 2012; Espada et al., 2015); además de incrementar la autoeficacia y la percepción de riesgo sexual en la evaluación a corto plazo en comparación con un grupo control (sin intervención) (Espada et al., 2015). Tras 12 meses de su aplicación, los adolescentes que recibieron la intervención mostraban mayor nivel de conocimientos sobre VIH e ITS, una actitud más favorable hacia el preservativo y aspectos relacionados con la prevención, percibieron en mayor proporción que otros adolescentes de su edad usaban el preservativo en sus relaciones sexuales e informaron de una edad medio de inicio de la penetración vaginal más tardía, en comparación con los adolescentes que no habían recibido ninguna intervención (Morales et al., 2015). Otro estudio de Morales et al. (2014) evaluó la contribución de los iguales entrenados para incrementar la eficacia del programa COMPAS en comparación con la aplicación por un experto en promoción de la salud sexual. En la evaluación posttest, se observó un mayor nivel de conocimiento en ambos grupos experimentales (expertos+pares y expertos) en comparación con el grupo control, aunque los niveles más altos correspondían al grupo que recibió la intervención exclusivamente por expertos; y con respecto a las actitudes, éstas mejoraban únicamente con el grupo de expertos. En base a estos resultados, se concluyó que la contribución de los

pares a la aplicación de la intervención no incrementaba la eficacia de la misma. Teniendo en cuenta el coste de recursos asociado a la formación de los pares, la implementación más eficiente del programa resultaría de la aplicación por parte de expertos en promoción de la salud sexual, ya formados para este propósito.

En la actualidad, está pendiente evaluar si los efectos del programa COMPAS se mantienen en el tiempo, más allá de los 12 meses post-implementación. Diversos estudios sobre intervenciones preventivas del VIH muestran una disminución de los efectos a largo plazo (Coyle et al., 2013; Villarruel, Zhou, Gallegos, & Ronis, 2010; Yin et al., 2014). Además, una reciente revisión de revisiones sobre intervenciones que promueven el uso del preservativo con evidencia elevada (von Sadvoszky et al., 2014) únicamente encontró dos meta-análisis que analizaban el efecto a largo plazo. Estos meta-análisis informaron de una disminución de los resultados observados a corto plazo, por ello es importante realizar estudios que evalúen en qué medida los resultados observados a corto plazo son mantenidos o no a lo largo del tiempo.

Como queda reflejado, todos los estudios existentes que evalúan la eficacia del programa COMPAS muestran resultados positivos en las variables potencialmente mediadoras de la eficacia. Muchos trabajos analizan la eficacia de los programas preventivos evaluando sus componentes psicosociales y/o comportamentales (Constantine et al., 2015; Markham et al., 2014; Taylor et al., 2014), y asumiéndose su capacidad predictiva sobre los comportamientos finales esperados. La decisión de incluir y evaluar estas variables puede ser explicada debido a que el diseño de los programas se basa en las teorías y/o en modelos de evidencia demostrada, que reflejan las relaciones entre las variables antecesoras e intermedias sobre la conducta final. Algunos de los modelos más utilizados para elaborar programas de prevención de conductas sexuales de riesgo son los basados en la

modificación de conducta: TCP (Ajzen, 1991), la teoría del aprendizaje social (Bandura, 1986), el modelo IBM (Fisher & Fisher, 1992), o el modelo de creencias de salud (Becker, 1974). Sin embargo, es necesario llevar a cabo análisis de mediación con el fin de tener un conocimiento más detallado sobre las variables que median la eficacia de la intervención; permitiendo: a) observar si la intervención alcanza los objetivos esperados a través de las variables intermedias, denominado efecto indirecto o mediado (Baron & Kenny, 1986; Mackinnon, Lockwood, Hoffman, West, & Sheets, 2002), b) analizar qué elementos de la intervención son los verdaderos responsables de la eficacia (Baron & Kenny, 1986; MacKinnon & Dwyer, 1993), y c) conseguir intervenciones más eficaces al poder realizar modificaciones y mejoras en aquellos elementos que no han mostrado el efecto positivo esperado según las teorías explicativas (O'Leary et al., 2015). Hasta la fecha se conoce el efecto que tiene COMPAS en variables relacionadas con el uso del preservativo; sin embargo, se desconoce qué variables están directamente relacionadas con la conducta final, por ejemplo, el uso consistente del preservativo en las relaciones sexuales con penetración por ser uno de los indicadores fiables para evaluar los objetivos del programa.

Además de la importancia de demostrar la eficacia de los programas aplicados en contexto real, los investigadores también deben prestar atención en monitorizar su implementación, siendo un concepto clave en la disseminación de las intervenciones (Dusenbury, Brannigan, Falco, & Hansen, 2003). La fidelidad hace referencia al hecho de que un programa, fuera del contexto investigador, sea implementado de la misma manera en que fue aplicado durante los ensayos de investigación en los que se evaluó su eficacia (ensayos de eficacia), o en ausencia de tales estudios si el programa es aplicado tal y como se ha diseñado (Stith et al., 2006). Es conocido que se obtienen mejores resultados si hay una elevada fidelidad al protocolo diseñado (Durlak & DuPre, 2008; Elliot & Mihalic, 2004;

Fixsen et. al., 2005; Mihalic, Irwin, Elliot, Fagan & Hansen, 2001; Sanders, Turner & Markie-Dadds, 2002). Por ello, la fidelidad está relacionada directamente con la eficacia de la intervención, y es necesaria su evaluación para garantizar la validez interna y externa del programa, evidenciar si los resultados observados pueden ser atribuidos a la pertinencia y validez de los componentes del programa, o en cambio se han visto influenciados por el grado en que se han implementado siguiendo el diseño original, y analizar la viabilidad de la aplicación de los programas en el contexto real (Durlak & Dupre, 2008; Dusenbury et al., 2003).

Objetivos

Teniendo en cuenta lo expresado previamente, los objetivos generales de la presente tesis son:

- 1) Evaluar los factores de protección y riesgo asociadas a las conductas sexuales de los adolescentes en España, y analizar su evolución temporal,
- 2) Analizar la eficacia de los programas de promoción de hábitos saludables, de prevención de infecciones de transmisión sexual y/o embarazos no planificados a nivel internacional,
- 3) Desarrollar un instrumento de medida válido y fiable para evaluar las barreras percibidas por los adolescentes hacia el uso del preservativo, y
- 4) Evaluar la eficacia de un programa de promoción de la salud sexual saludable y prevención del VIH a largo plazo, examinar la fidelidad de la implementación de la intervención, y analizar las variables mediadoras de la eficacia del programa a largo plazo.

En primer lugar, se evalúan las variables psicosociales y conductuales que se relacionan con la conducta final, el uso del preservativo, y con la consistencia de dicha

conducta. En segundo lugar, se realiza un meta-análisis sobre la eficacia de los programas de promoción de la salud sexual dirigidos a población adolescente a nivel internacional. En tercer lugar, se desarrolla una nueva escala para evaluar los motivos que explican el no uso del preservativo en las relaciones sexuales con penetración. En cuarto lugar, se evalúa el impacto de un programa de promoción de hábitos sexuales saludables en población adolescente a nivel nacional mediante un seguimiento de los efectos a largo plazo. Además, se identifican las variables mediadoras de la intervención y se analiza su eficacia teniendo en cuenta la fidelidad de la implementación.





ESTUDIO 1





Sexual risk behaviors increasing among adolescents over time:

Comparison of two cohorts in Spain

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Despite advances in treatment and prevention, HIV/AIDS remains a serious health and social problem. This study's objective is to examine sexual behavior, levels of knowledge, and attitudes toward HIV/AIDS between two cohorts in Spanish adolescents, and to analyze gender differences in these cohorts. Participants were 2132 adolescents between 15 and 18 years of age: 1222 in 2006 (43.2% boys) and 910 in 2012 (54.1% boys). The results indicate lower HIV knowledge and less favorable attitudes about HIV/AIDS in the 2012 cohort. In addition, adolescents from the 2012 cohort had their first sexual intercourse at an earlier age and have more sexual partners than those from the 2006 cohort. Compared to boys, girls engage in fewer risky behaviors, although they did not use condoms with their stable partner; girls tended to use condom less when they were in a stable relationship than boys. This study confirms the insufficiency of prevention campaigns as well as the need to improve the impact from programs that promote healthy sexual habits. Assuming comparability of cohorts, this study suggests increased risk of HIV/AIDS over time.

Keywords: HIV/AIDS; adolescents; sexual behaviors; condom; risk behaviors

The prevalence of HIV/AIDS in Spain is well above the European Union average (UNAIDS, 2012). Adolescents are more likely to contract STDs, with 10.5% of the AIDS cases under 24 years of age in Spain (CNE, 2012). Variables related to sexual risk vary over time, adapting to the social changes (López, Carcedo, Fernández-Rouco, Blázquez, & Kilani, 2011; Rangel & García, 2010). This study addresses the need to observe the trends in sexual risk behaviors in Spanish adolescents and plan specific programs that promote healthy sexual habits.

This study was conducted to examine sexual behavior, knowledge, and attitudes toward HIV/AIDS in two cohorts of school-aged Spanish adolescents measured in 2006 and the other measured in 2012, and to analyze the gender differences in sexual behaviors and the associated variables. Favorable results of knowledge, attitude, and sexual behavior are expected in the more recent cohort, due mainly to increased sexual preventive programs in recent years. Furthermore, gender differences are expected, with more favorable scores for women in their attitude about HIV/AIDS and sexual behavior, except for lower condom use and level of knowledge (Gascón et al., 2003a, 2003b; Muñoz-Silva, Sánchez-García, Martins, & Nunes, 2009).

Method

Participants

The participants were 2132 adolescents aged between 15 and 18 ($M = 15.71$; $SD = .78$), 1222 of which were assessed in 2006 (43.2% boys) and 910 in 2012 (54.1% boys). The average age was 15.85 ($SD = .77$) for the 2006 cohort and 15.71 ($SD = .78$) for 2012. The sample was recruited from five Spanish provinces, and the percentages of representation were similar in both cohorts. According to the *Family Affluence Scale*, 54.9% corresponded to a medium level and 41.8% to a high level.

Instruments

Family Affluence Scale

This short questionnaire measures the number of cars, computers, individual bedrooms, and vacations during the last 12 months (Boyce, Torsheim, Currie, & Zambon, 2006). The validity with respect to current economic indicators is .87.

Battery of items of knowledge about HIV and other STIs

This includes 27 items which deal with various areas: general and STD's knowledge, transmission routes and barrier methods. The questionnaire has a moderate internal consistency for this sample ($\alpha = .76$).

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HIV/AIDS Attitudes Scale for Adolescents

It measures four dimensions about attitude toward safe sex when obstacles exist, the HIV test, condom use, and people living with HIV/AIDS (Espada et al., 2013). The instrument explains 65% of the variance, and it has an internal consistency of .77.

Sexual Behavior Questionnaire

It is comprised of five questions about sexual behaviors: first sexual experience, age of sexual initiation, condom use in the first sexual contact, the protection methods used (“Have you used any of the following methods of protection in the last six months? condoms, the pill,

none, and other methods”), and the number of sexual partners (“How many sexual partners have you had in the last six months?”).

Results

Knowledge about HIV/AIDS

Only 16 of the 27 items were correctly answered by more than 50% of the participants among the two samples. Adolescents from the 2012 cohort had less HIV/AIDS knowledge than the 2006 cohort. In this sense, 66.7% of the adolescents from 2012 answered more than half of the knowledge questionnaire correctly versus 70.9% in 2006. The gender covariates have an

Table 1. Differences between cohorts in the level of knowledge about HIV/AIDS by item and set.

	2006 2012 Total			Phi and <i>V</i> Cramer			
	% correct answer						
1. The AIDS is caused by the HIV	79.5	85.3	81.9	.08**			
2. Spain is one of the European countries most affected by the AIDS	16.7	13.5	15.3	.04*			
3. The main route of HIV transmission in Spain is sex	84.1	92.3	87.6	-.12***			
4. Pets can transmit HIV	40.4	52.1	45.4	.12***			
5. A pregnant woman can transmit HIV to her baby	68.4	55.3	62.8	.13***			
6. People living with HIV can transmit the virus	48.5	30.3	40.8	.18***			
7. HIV is transmitted through semen, vaginal secretions, and blood	84.4	82.0	83.3	.03			
8. HIV is spread through the air	88.4	87.0	87.8	.02			
9. Dangerous to share food or water with infected people	52.1	48.8	50.7	.03			
10. Washing clothes with an HIV/AIDS person involves risk	72.1	66.6	69.7	.06**			
11. Mosquitoes can transmit HIV	28.3	39.2	33.0	-.12***			
12. There is risk of HIV from sharing syringes	91.5	85.4	88.9	.10***			
13. AIDS virus affects all body cells	16.8	17.6	17.1	-.01			
14. Window period is the time to produce antibodies after transmission	11.9	13.8	12.8	-.03			
15. Vaginal ring or IUD are methods to prevent AIDS	39.4	36.4	38.1	.03			
16. Contraceptive pills are effective in preventing HIV transmission	73.6	68.5	71.4	.06**			
17. Condoms are an effective preventive method	94.5	90.0	92.6	.09***			
18. Female condom is as effective as the male condom	57.7	57.5	55.8	.00			
19. Wet kisses are a risk for transmission	43.4	48.6	45.7	-.05*			
20. Hug and kiss to an infected person involve risk	85.4	80.4	83.3	.07**			
21. Intercourse by the “withdrawal” is safe sex	76.2	63.0	70.5	.14***			
22. HIV test is done through a blood test	78.9	75.6	77.5	.04			
23. It is possible to detect HIV infections the day after a risky practice	35.0	32.1	33.8	.03			
24. Current treatments can reduce the amount of HIV	38.5	42.1	40.0	-0.4			
25. Currently there is vaccine against HIV infection	56.9	46.7	52.5	.10***			
26. Diseases due to weakening of the immune system by HIV are called opportunistic	10.1	16.2	12.7	.09***			
27. Gonorrhea and chlamydia are common sexually transmitted diseases	60.7	58.5	59.8	.02			
<i>Total scale</i>							
<50% correct	29.2	33.3	30.9	.13**			
50–75% correct	56.1	56.6	56.3				
>75% correct	14.8	10.1	11.2				
	2006		2012		Total		<i>F</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Mean scale	15.34	4.29	14.85	4.00	15.12	4.17	3.81*

p* < .05; *p* < .005; ****p* < .001.

Table 2. Differences between cohorts in attitudes toward HIV/AIDS.

	Cohort 2006		Cohort 2012		Total		<i>F</i>	<i>df</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Obstacles	9.80	2.01	9.16	2.25	9.53	2.14	44.90	1	.000*
HIV test	6.86	1.20	6.78	1.37	6.83	1.28	1.63	1	.21
Condom use	13.90	1.96	13.07	2.41	13.55	2.20	68.51	1	.000*
People living with HIV	9.54	1.94	8.84	2.01	9.24	2.00	54.08	1	.000*
Total	40.10	4.79	37.85	5.56	39.15	5.25	90.91	1	.000*

* $p < .005$.

effect upon this dependent variable ($F = 8.41$; $p < .005$), not the age variable ($F = 3.29$; $p = .07$; Table 1).

Attitudes toward HIV/AIDS

The 2006 cohort showed more favorable attitude toward HIV/AIDS in the total score and in three of the four subscales, except in the attitude toward HIV testing, which remained stable over time (Table 2). Multivariate analysis of covariance revealed that gender has an effect upon all the attitude dimensions ($p < .001$), while the age influences two subscales, attitude toward safe sex when obstacles exist and questionnaire total score ($p < .001$); here, younger ages demonstrate favorable attitudes.

Sexual behaviors

Greater number of adolescents had sexual penetrative intercourse in the 2006 cohort (Table 3). Adolescents assessed in 2006 first engaged in penetrative sexual intercourse at an older age than the 2012 sample ($p < .005$). The age and gender covariates have an effect upon this variable ($p < .001$ and $p < .05$, respectively). Regarding the use of condoms in the first relation with penetration, adolescents in 2006 were more protective ($p = .05$). There was also a growing trend in the number of

sexual partners (Table 4). In the 2006 cohort, 72.8% had sex with just one partner and 13% did with two; in 2012, those with stable partners dropped to 65.8% and the number of participants with multiple partners rose to 18.9% ($p < .05$). The frequency of condom use increased from 2006 to 2012 among those sexually active. Moreover, the percentage of adolescents not using any protection method fell between 2006 and 2012 (Table 4). No relation was observed between condom use and other protection methods with the age in any cohort (Cramer's $V = .08$; $p = .57$ in 2006; Cramer's $V = .13$; $p = .18$ in 2012).

Gender differences

Gender differences were found in the level of HIV/AIDS knowledge in 2012 ($M = 15.65$; $SD = 3.78$ in girls and $M = 14.70$; $SD = 4.11$ in boys; $t = -2.12$; $p = .04$), but not in 2006 ($M = 15.67$; $SD = 3.97$ in girls and $M = 15.79$; $SD = 4.90$ in boys; $t = .29$; $p = .78$). It is noteworthy that the level of HIV/AIDS knowledge in both genders fell during the 2006–2012 period ($p = .001$).

Girls showed a more favorable attitude toward HIV/AIDS in both periods ($p < .005$), except for the attitude toward condom use in the 2006 cohort (Table 5). No gender differences were found in condom use at the first sexual intercourse. Regarding protection methods, boys

Table 3. Differences between cohorts in sexual behaviors at the first sexual intercourse.

	Cohort 2006 (<i>n</i> = 1222)		Cohort 2012 (<i>n</i> = 910)		Phi and <i>V</i> Cramer	
	<i>N</i>	%	<i>N</i>	%	<i>df</i>	<i>F</i>
Have you ever had sexual vaginal intercourse?	503	41.2	334	36.7		-.05*
Did you use condom at your first sexual intercourse?	402	79.9	253	75.7		.05
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>F</i>
How old were you when you had your first sexual intercourse?	15.06	1.05	14.68	1.16	1	9.71**

* $p < .05$; ** $p < .005$.

Table 4. Differences between cohorts in sexual behavior in the preceding six months.

	Cohort 2006 (n = 438)		Cohort 2012 (n = 325)		Phi and V Cramer
	N	%	N	%	
Number of sexual partners					
One	319	72.8	181	65.8	1.65*
Two	57	13	51	18.9	
Three	38	8.7	19	6.9	
Four	11	2.5	8	2.9	
Frequency use protective methods					
Condom	364	83.1	288	88.6	.15**
Anticonceptive pill	10	2.3	16	4.9	
Female condom	0	0	1	.3	
Other methods	5	1.1	1	.3	
None	59	13.5	19	5.7	

* $p < .05$; ** $p < .001$.

used condoms more than girls in their sexual relations in the 2012 cohort. A growing trend was also observed in condom use and the other protection methods between 2006 and 2012 in boys ($p < .001$); whereas in girls there were no significant differences over time for any protection method.

Discussion

The general level of HIV/AIDS knowledge was moderate, as indicated by previous researches (Calatrava, López-del-Burgo, & de Irala, 2012). Note the high percentage of adolescents who answered more than one-half of the questionnaires incorrectly. In addition, there is a significantly lower HIV/AIDS knowledge in newer generations of adolescents, where the contents concerning protection methods require special mention. These data support the need to strengthen knowledge. Several studies in Spain about information sources reveal that friends, magazines, and teachers are most common (Gascón et al., 2003a; Romero de Castilla, Lora, & Cañete, 2001), so this does not mean that information is reliable.

Spanish adolescent population shows a favorable attitude about HIV/AIDS with moderate-high results. However, the results indicate less favorable attitudes in the newer generations, regardless of gender, except for the attitude factor toward HIV testing, which remains equal. A more favorable attitude to condom use is associated with a higher intention to use them and a higher chance of more consistent use (Stulhofer, Graham, Bozicevic, Kufrin, & Ajdukovic, 2007).

Penetrative sexual relations are being initiated at an earlier age today than it was in the past, in boys and girls, something never observed until then. It highlighted the importance of initiating prevention programs

throughout childhood to ensure psychoeducational training prior to the first sexual contact (UNESCO, 2010).

Adolescents in 2012 tended to use condoms less the first time they had sex than those from 2006 cohort, but reported greater condom and pill use. The increase in condom use may be due to a greater awareness in boys toward protection methods, while girls continue protecting themselves in the same measure. According to Failde, Lameiras and Bimbela (2008), girls protect themselves less due to a decreased perception of risk and feelings of safety with a stable partner.

The present study has some limitations. Although the sample is similar in gender and age, the effect of these was controlled using statistical analyses. Adolescents were enrolled in schools, so these findings cannot be generalized out of the school context. Finally, to establish whether the outcomes of this study actually represent a trend in the observed variables, it would be advisable to replicate this study using a longitudinal design.

The outcomes of this study suggest that, despite the preventive efforts, the level of risk from sexual behaviors is higher among more recent generation of adolescents, which show a greater promiscuity and sexual debut at younger ages with less use of protection methods. Therefore, this study concludes by reaffirming the need to increase the quality of preventive actions to promote healthy sexual habits starting in school settings.

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Table 5. Intergroup and intragroup cohort gender differences in attitudes toward HIV/AIDS and sexual behaviors.

	Cohort 2006		Cohort 2012		t_1	t_2	t_3	t_4
	Girls (n = 694)	Boys (n = 528)	Girls (n = 418)	Boys (n = 492)				
Attitudes								
Condom use with obstacles	10.39 (1.76)	9.03 (2.06)	9.88 (2.18)	8.55 (2.13)	-12.10***	-9.34***	3.70**	4.00*
HIV test	6.96 (1.13)	6.72 (1.28)	6.99 (1.28)	6.60 (1.42)	-3.41**	-4.31***	1.51	-0.31
Condom use	13.90 (1.92)	13.89 (2.00)	13.57 (2.45)	12.66 (2.45)	-10	-5.80***	8.82***	2.52**
People living with HIV	9.80 (1.76)	9.21 (2.11)	9.29 (1.99)	8.46 (1.95)	-5.37***	-6.39***	5.89***	4.32***
Total	41.06 (4.52)	38.85 (4.86)	39.72 (5.26)	36.26 (5.26)	-8.15***	9.88***	8.19***	4.26***
	Girls n = 238	Boys n = 200	Girls n = 125	Boys n = 200	Cramer's V_1	Cramer's V_2	Cramer's V_3	Cramer's V_4
Sexual behavior								
Condom use first sexual intercourse	85.9 %	85.1%	78.1%	76.1%	0.07	0.09	0.05	0.08
Protection methods six months ago					0.7	0.21**	0.21***	0.16
Condoms	84.5%	81.5%	80.8%	93.5%				
Pills	2.9%	1.5%	8.8%	2.5%				
None	11.8%	15.5%	9.6%	3.5%				
Others	0.8%	1.5%	0%	0.5%				
Age first sexual intercourse	15.12 (.85)	15.00 (1.24)	14.75 (1.11)	14.63 (1.22)	t_1	t_2	t_3	t_4
					-1.14	-0.89	3.08**	3.32***

t_1 = differences between males and females cohort 2006; t_2 = differences between males and females cohort 2012; t_3 = differences between cohorts among males; t_4 = differences between cohorts among females; Cramer's V_1 = differences between males and females cohort 2006; Cramer's V_2 = differences between males and females cohort 2012; Cramer's V_3 = differences between cohorts among males; Cramer's V_4 = differences between cohorts among females.

* $p < .05$; ** $p < .005$; *** $p < .001$.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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ESTUDIO 2





**Interventions to Reduce Risk for Sexually Transmitted Infections in
Adolescents: A Meta-analysis of Trials, 2008-2016**

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Interventions to Reduce Risk for Sexually Transmitted Infections in Adolescents: A Meta-Analysis of Trials, 2008-2016

Abstract

Background: Numerous studies have evaluated the efficacy of interventions to reduce risk for sexually transmitted infections in adolescents in the last years; however, their global effects remain unknown since 2008, which is the last year included in meta-analyses with similar purposes (Johnson et al. 2011).

Aims: This study aims at evaluating the efficacy of interventions to promote sexual health, reduce STIs and unplanned pregnancies targeted to adolescents available after 2008; and analyzing the moderators of their global efficacy.

Methods: We searched electronic databases and prestigious journals related to prevention of STIs up to May 2016. The studies evaluated the efficacy of interventions to reduce sexual risk in adolescents (age range: 11-19) anywhere in the world. Standardized mean differences of the relevant outcomes for sexual risk and effect size were calculated for every study.

Analyses incorporated random-effect assumptions for each outcome, using restricted maximum-likelihood estimators. The homogeneity in the results was examined with I^2 statistic and its associated 95% confident interval.

Results: Data from 63 studies (59,795 participants) was analyzed by differentiating their impact on short- and long-term behavioral and non-behavioral outcomes. In the short term, interventions had a positive impact in sexual health-related knowledge ($d=1.08$), attitudes ($d= .71$), self-efficacy toward condom use ($d=.40$), communication about sex with the sexual partner ($d=.67$), behavioral intention ($d=.49$), and condom use ($d=.57$). No impact was found for subjective norms. In the long-term, interventions significantly improved attitudes (d

=.71), behavioral intention ($d=.26$), and condom use ($d=.61$). The moderators of the efficacy are discussed.

Conclusions: Interventions to reduce risk for sexually transmitted infections are effective to promote sexual health through increasing condom use. Meta-analytic findings indicate that interventions are successful to improve non-behavioral outcomes and condom use in the short- and long-term. Interventions should focus on the long-term efficacy, especially in behavioral and biological measures.

Keywords: meta-analysis, HIV/AIDS; intervention; efficacy; sexually transmitted diseases; evaluation; adolescent health.



Introduction

Adolescents remain highly vulnerable to sexually transmitted infections (STIs) [1]. It is estimated 2.1 million adolescents aged 10-19 are living with HIV in 2012, of which 1.3 million live in sub-Saharan Africa and 390,000 in West and Central Africa [2]. Another problem arising from unprotected sexual behaviors, especially affecting adolescents, is unplanned pregnancies. Every year, 16,000 births from adolescent mothers are registered worldwide [3]. Pregnancy at an early age increases the risk of obstetric problems, such as premature birth and anemia; and it is associated with low psychosocial development of the mother, including attrition from schools and lower labor opportunities [4, 5]. Unprotected sex is the main cause of transmission of STIs and unwanted pregnancies. Numerous interventions have been designed to reduce adolescent sexual risk through the promotion of consistent condom use and sexual abstinence.

The efficacy of HIV prevention interventions has been extensively evaluated by meta-analytic and systematic reviews [6-14], although rarely have they focused exclusively on adolescents and young people. Often, these reviews provide evidence of the efficacy of interventions to reduce sexual risk in adolescents from specific locations, such as low- [15, 16] or high-income countries [17], Latin American countries [13], the United States [18], Europe [19], and/or specific populations such as African Americans [12], and/or focus on a specific type of interventions such as computer technology-based interventions [14, 20]; therefore, results cannot be extrapolated to the global adolescent population.

In a relevant meta-analysis of interventions to reduce sexual risk for HIV in adolescents, Johnson et al. [21] examined 67 studies (98 interventions) available from 1985 to 2008. In addition to the effects observed in a previous meta-analysis of studies available from 1985 to 2000 [22], the authors concluded that these interventions were able to reduce

the incidence of STIs through condom use. The results indicated that HIV prevention interventions were successful to increase condom use, skills to negotiate protection methods, communicate about sex with the sexual partner, and postpone and/or reduce the frequency of sexual intercourse. Both meta-analyses conducted by Johnson et al. [21, 22] are relevant for contributing to the knowledge about the efficacy of behavioral interventions to reduce risk of HIV in adolescents, especially because these studies are not delimited by geographic area or focus exclusively on risk adolescent population (as adolescents living in depressed areas, drug users, etc.).

More recently, Protogerou and Johnson [23] conducted a meta-review on the factors underlying the success of behavioral HIV-prevention interventions for adolescents. From the information of five meta-analyses and six systematic reviews, these authors concluded that HIV prevention interventions have positive effects on HIV-related knowledge, subjective norms, abstinence, delaying sexual intercourse, decreasing the number of partners, and condom use. In recent years, a large volume of papers have evaluated interventions aimed at reducing sexual risk and promote a healthy sexuality in adolescents, but the magnitude of the overall impact is unknown. In addition, changes in the moderators of the efficacy of interventions have been identified [21, 22], indicating a high variability in the factors that are related to the success of preventive actions over time. Lyles et al. [10] point out the importance of incorporating new scientific evidence periodically so that the results are useful for the prevention of STIs.

This meta-analysis aims to analyze the efficacy of interventions to promote sexual health and prevention of STIs, including HIV and pregnancies, available in studies available since 2008, which is the last year included in meta-analyses with similar purposes [21, 24]. The goal of this study is to extend the meta-analysis conducted by Johnson including: (1)

interventions to promote sexual health, and (2) other relevant outcomes, such as knowledge, attitudes and intention, besides sexual behaviors, skills and STI rates. The former variables are often not considered in meta-analyses to date.

We also analyze the efficacy of interventions based on sample characteristics (gender, age, HDI, setting of application), intervention methodology (based on a theoretical approach or not, promotion of abstinence, parent's participation), and the evaluation methodology (design of the study, the inclusion of a control group or not, and control group receiving an intervention equivalent to the experimental group but without sexual health contents or non-intervention control group). The short- (posttest assessment) and long-term effects of the interventions were analyzed. The success of the interventions was determined by the extent to which they achieved to increase the number of protected sexual encounters (increased condom use), objective measures (STI and pregnancy) and other non-behavioral outcomes related to sexual risk and included in the main theoretical models for promoting health behaviors [25-27], such as: sexual health-related knowledge, attitudes towards condom use and safe sex, subjective norms, self-efficacy to use condoms, communication about sex with the sexual partner, behavioral intention, including intention to use condoms during sexual intercourse and to remain sexually abstinent.

Methods

Sample of Studies

Searches for studies were performed using several strategies: (1) Searches in electronic databases (PsycINFO, Medline, Scopus, ERIC, Tripdatabase, Social Science Citation Index, Cochrane, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, ISOC, Google scholar, and TESEO) through May 2016. (2) Requests were sent to active researchers in the area of sexual-health promotion and HIV

prevention with adolescents. (3) Manual searches on the websites of prestigious journals related to sexual health promotion and evaluation of preventive interventions (e.g., *African Journal of AIDS Research*, *AIDS*, *AIDS Research and Treatment*, *AIDS and Behavior*, *AIDS Education and Prevention*, *American Journal of Public Health*, *Evaluation and Program Planning*, *Health Communication*, *Health Education Research*, *Health Policy and Planning*, *Health Psychology*, *Journal of Acquired Immune Deficient Syndromes*, *Journal of Sex Research*, *Journal of the Association of Nurses in AIDS Care*, *Social Science & Medicine*). Studies that met the selection criteria and were available by May 31st 2016 were included.

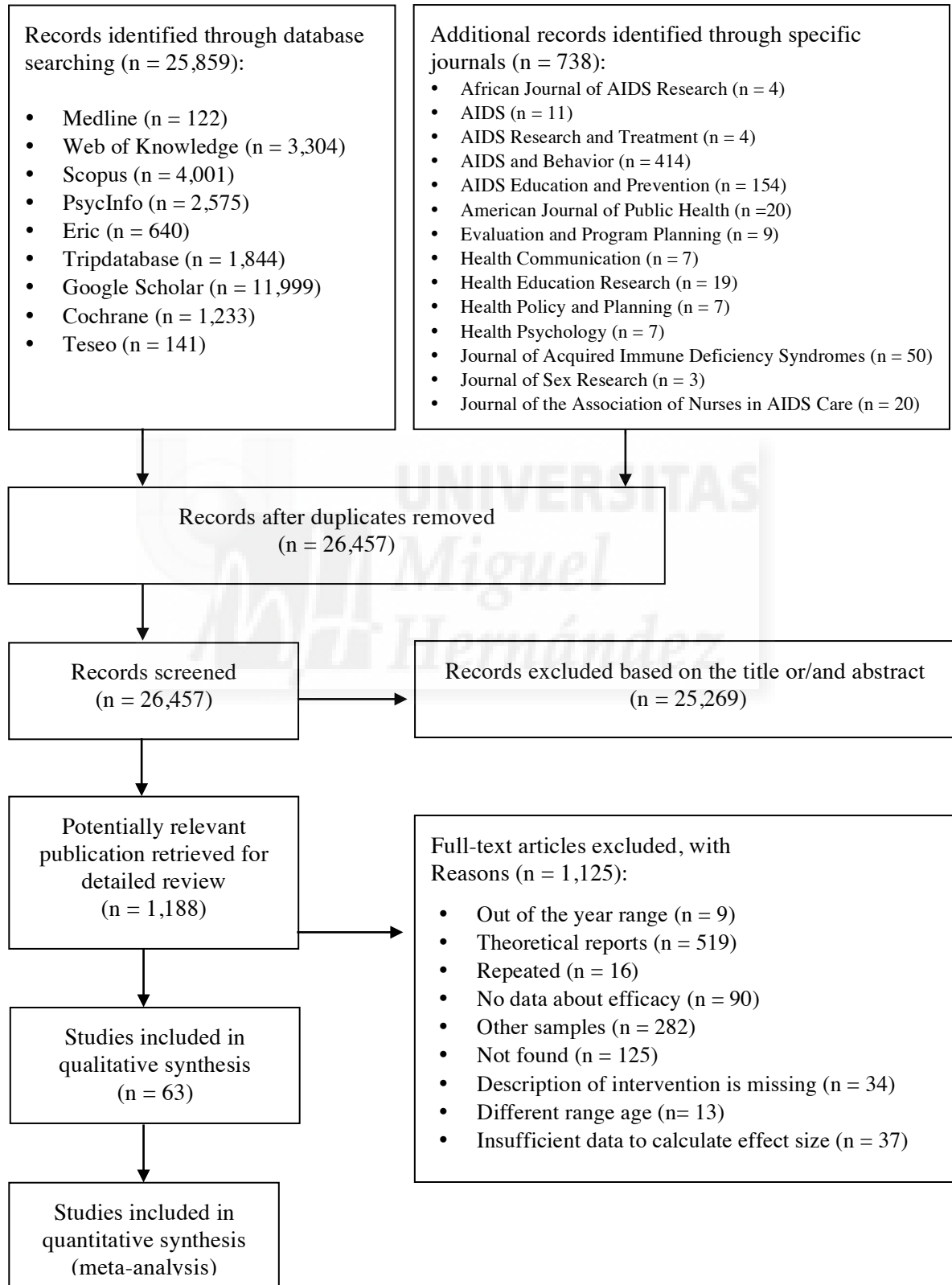
Selection Criteria

The inclusion criteria of the studies were: (1) to evaluate interventions aimed at reducing HIV, STIs, unplanned pregnancies, and promote a healthy sexuality, (2) targeted to adolescents aged 11-19, (3) including relevant behavioral variables and / or precursors of the sexual risk (e.g., knowledge, attitudes, etc.), (4) offered results in terms of pre-post change or experimental design, (5) provided sufficient statistics to calculate effect sizes (ES), and (6) published or available from 2008 to 2016.

Following Fonner and colleagues [16], no exclusion criteria were related to the experimental design (randomized controlled trials or RCTs, non-randomized, before-after) were applied, in order to include as many studies as possible. Excluded were studies reporting: (1) samples older than 19 years old, or studies that did not disaggregate results for participants aged 11 to 19; (2) samples diagnosed with mental health disorders and/or physical illness (e.g., depression); and / or (3) samples selected because they were at high-risk for contracting HIV, STIs, and unplanned pregnancies (e.g., drug users or adolescents from marginal settings). From the literature, 26,457 studies were identified; of which 63 studied were included, using a sample of 59,973 adolescents aged 11-19 (Figure 1). Only 2

of the 20 experts invited to send their papers responded; no study provided met the inclusion criteria.

Fig. 1. Flowchart of the report selection process



Study information

The process of screening and coding of studies was guided by a manual coding. During the screening process, two reviewers independently read 2,581 abstracts to determine the inclusion of studies. There were 1,188 studies, of which most were discarded for not meeting the criteria (Figure 1). In total, 37 studies were discarded because they did not provide sufficient statistics to calculate ES. We contacted the principal author of studies that provided insufficient statistics to calculate ES; only 7 provided us the needed information. Statistics from 63 studies were extracted by two independent coders. The Human Development Index (HDI) for each study was coded according to country and year of publication. This social indicator – developed by the United Nations Development Programme (UNDP) – consists of three parameters: lifelong healthy (life expectancy at birth), education (mean and expected years of schooling), and standard of living (gross national income [GNI] per capita) [28]. The index ranges between 0 and 1, with higher scores indicating greater degree of human development. Following Huedo-Medina et al.'s [13] procedure, when the year of publication was not specified, the next year's value was taken. To calculate the reliability, all studies were screened and coded by another encoder independently. Spearman-Brown formula was used to calculate the reliability for continuous variables, and *Kappa* (*k*) for categorical variables. Reliability was good, ranging from 0.90 to 1, with a mean of 0.96 across categories (Table 1). Discrepancies were resolved by a third reviewer, following the procedure described by Picot et al. [24]

Table 1. Descriptive features of 63 studies

Feature (reliability)	Values (%)
Year of publication ($r = 0.95$)	
<i>M</i>	2012
Median	2012
<i>SD</i>	2.55
Country (<i>Kappa</i> = 0.92)	

Feature (reliability)	Values (%)
United States	31 (49.2)
Spain	5 (7.8)
South Africa	5 (7.8)
China	3 (4.8)
Cuba	3 (4.8)
United Kingdom	2 (3.2)
Mexico	1 (1.6)
Uganda	1 (1.6)
Trinidad and Tobago	1 (1.6)
Thailand	1 (1.6)
Liberia	1 (1.6)
Nigeria	1 (1.6)
Panamá	1 (1.6)
Haiti	1 (1.6)
India	1 (1.6)
Colombia	1 (1.6)
Canada	1 (1.6)
Bahamas	1 (1.6)
South Korea	1 (1.6)
Puerto Rico	1 (1.6)
Human development index	
Very high	41 (65.2)
High	12 (19)
Medium	6 (9.5)
Low	4 (6.3)
Intervention time ($Kappa = 1$)	
Less than 4h	7 (14.6)
4h or more	41 (85.4)
Design	
Randomized control trials	25 (39.7)
Cluster-randomized control trial	20 (31.7)
Non-randomized control trial	18 (28.6)
Intervention based on theories ($\kappa = 0.90$)	45 (71.4)
Methodology ($\kappa = 1$)	
Passive	4 (7.3)
Interactive	51 (92.7)
Follow-ups (in months)	
Mean	7.81 (9.66)
Range	0-40
Goals of the intervention	
HIV	54 (88.5)
STIs	36 (72)
Pregnancy	34 (79.1)
Sexual health promotion	43 (84.3)
Intervention included	
HIV education	54 (94.7)

Feature (reliability)	Values (%)
STIs education	35 (77.8)
Pregnancy	32 (80)
Masculine condom	41 (87.2)
Female condom	3 (10)
Sexual abstinence	28 (73.7)
Transmission routes	31 (83.8)
STIs effects	21 (65.6)
People living with VIH	13 (52)
Drugs prevention	8 (26.7)
Social skills training	16 (53.3)
Auto-instructions	10 (35.7)
Emotional manage	10 (33.3)
Self-esteem	9 (29)
Parents' participation ($\kappa = 1$)	
No	54 (85.7)
Yes	9 (14.3)
School as setting of implementation	55 (94.8)
Participant characteristics ($k = 63$)	
<i>N</i> at posttest ($r = 0.94$)	
<i>Total</i>	38,880
<i>M</i>	1087.69
Median	784
<i>SD</i>	1314.41
% females ($r = 0.98$)	58.26
% sexually active	39.37
Average age ($r = 1$)	
<i>M</i>	14.96
Median	15.01
<i>SD</i>	1.37

K = number of studies; *M* = Mean; *Mdn* = Median; *SD* = Standard Deviation.

In order to determine the effect of the interventions, the ES – standardized mean differences (*d*) of the relevant outcomes for sexual risk – was calculated for every study. We followed Cohen's [29] suggestions of small (0.20 to 0.49), medium (0.50 to 0.79), and large (≥ 0.80) values of *d*. The outcomes included were: knowledge, attitudes, subjective norms, self-efficacy to use condoms, communication about sex with the sexual partner, condom use intention, intention to refuse sex, condom use, and pregnancy and STIs rates. We performed relevant transformations when means and standard deviations were not provided. Following

Johnson et al. [21], data from the main intervention and control groups were used in the studies evaluating the efficacy of two or more interventions compared to a control group. The interventions that included novel contents (including a novelty from a previous validated version) were considered as the main intervention. For example, in the Morales et al. [75] study, the intervention including peers as co-facilitators was considered the main intervention (compared to the traditional version of COMPAS). The effect of short-term interventions (posttest) and long-term were evaluated separately. Every follow-up was codified separately in the database. For intragroup studies, pre and post/follow-up measures were used to calculate ES; while for controlled studies, measures of the intervention and control groups were used.

Analyses incorporated random-effect assumptions for each outcome, using restricted maximum-likelihood estimators in the *metafor* package for *R* [30]. For the long-term analyses, the longest follow-up of each study was used. The homogeneity in the results was examined with I^2 statistic (percent) and its associated 95% confident interval (IC). Conventionally, high heterogeneity corresponds to percentages of around 75%, medium with values around 50%, and low with values around 25% [31]. Egger's regression test was used to examine the possibility of publication bias. The average quality of the studies was calculated according to eight criteria, based on previous studies [32, 33]: type of design, randomization, attrition at posttest, attrition at the follow-up, evaluator blind procedure, use of validated measures for targeted population, equivalence of a control group, sample sizes. Descriptive analyses were conducted using SPSS v23.

Results

Descriptive Outcomes

The analyses included 63 studies published between 2008 and 2016 [34-96]. Half of the studies in the sample were conducted in the United States. Five studies were conducted both in Spain (7.8%) and in South Africa (7.8%). Three studies were respectively from China (4.8%), and Cuba (4.8%). Two studies were conducted in United Kingdom (3.1%). The rest of studies were conducted in other countries (Table 1). The majority of the studies were conducted in either North or South America (66.7%); the 54% represents North America, including Canada and Trinidad and Tobago. Africa was the setting for the 12.7% of the studies, 11.1% were in Europe and 9.5% were in Asia.

The mean HDI of these countries in the year of publication was 0.82 ($SD= 0.13$), with a range from 0.42 to 0.91. The mean of the very high HDI countries ranged from 0.83 to 0.91 ($M= 0.90$, $SD= .01$), with the highest indexes for United States, Canada, and United Kingdom. The mean of the high HDI countries ranged from 0.70 to 0.79 ($M= 0.74$, $SD= .03$); among them, Panamá and South Korea. The mean of the medium HDI countries ranged from 0.60 to 0.66 ($M= 0.65$, $SD= .02$); among them, India and South Africa. The low HDI countries included Liberia (0.41), and Haiti (0.47), Uganda (0.48), Nigeria (0.49), and the mean was 0.46 ($SD= .03$).

The sample comprised 59,795 adolescents at pretest, with 23,618 in control conditions and 36,177 in experimental conditions, with a mean age of 14.96 ($SD=1.37$). About 40% of the participants were sexually experienced. In most cases they were students and the intervention was carried out at school. Few studies combined different settings of implementation, such as García et al. [59], who recruited participants in the School of Medical Science ($N=358$), and some activities were conducted at the parks, streets, hospitals or other places where they could learn about sexual health promotion. Interventions tended to focus on HIV, STIs, pregnancy prevention, and/or sexual health promotion. The duration

of the interventions ranged from 1 to 68 weeks ($M=10.78$, $SD=12.36$). More than half of the interventions (71.4%) were based on theories of health promotion. Social cognitive therapy, the theory of reasoned action, and the theory of planned action were the most used theoretical models. Only 14.3% of the studies included the adolescents' parents in the intervention in order to achieve their goals.

Of the 63 analyzed studies, 25 (39.6%) reported to assign randomly the participants to the experimental conditions (RCTs), which is the high-standard assignment in research due to it minimizes selection bias. There were 20 cluster-randomized control trials (31.7%), and in most of the cases, schools were assigned to the experimental condition. Only 28.6% of the studies did not use randomization as assignment method. Of the 45 studies including a control group, 30 (66.6%) controlled for Hawthorne effects by implementing an alternative intervention to the control groups. United States was the setting of 70% of the studies that included an equivalent intervention to the control group. Health promotion interventions (basically drug avoidance, diet, exercise, and family life education) were usually delivered to control groups [39, 40, 42, 67, 85, 92]. In some cases, adolescents assigned to the control group received sexual health promotion and HIV prevention contents [38, 65, 87, 93, 97], which is an intervention. For example, Armitage and Talibudeen [38] provided information on the history of the condom to the participants assigned to control group. Jones et al. [65] used a passive methodology for the comparison group, which consists on watching three 25-30 min-DVDs about HIV/AIDS (*Force Ripe Man Part1-2*, *Understanding HIV/AIDS*, and *Voices*). The traditional sexual health promotion intervention offered by the school was implemented to the control group in few studies [38, 65, 87, 97]. See Table 1 for more information on the main descriptive characteristics of the included studies. The average quality of the studies was acceptable ($M= 3.23$, $SD= 1.82$; range: 0 to 6.50 out of 8 possible).

There were no statistically significant differences in the quality of the studies across the countries of implementation ($p= 0.40$) nor HDI ($p= .07$).

What was the effect of the interventions on the outcomes?

Short-term outcomes

Interventions significantly enhanced 8 of the 9 evaluated outcomes (Table 2). The studies were widely heterogeneous in the outcomes selected. In short term, interventions significantly increased knowledge – about HIV/AIDS and its routes of transmission, condom use, contraceptives, other STIs (no-HIV), and sexual health in general – and increased behavioral intentions – intentions to use condoms and intentions to refuse sex –, and self-efficacy to use condoms. The interventions also had a positive short-term impact on attitude towards sexual health, including HIV, preventing pregnancy, and beliefs about abstinence, condom use, and people who have sex with same sex. Communication about sex with the sexual partner increased in the adolescents who received the principal intervention. Interventions had a positive effect to increase condom use; but no impact in subjective norms was found in the short-time. Only one study indicated that the intervention was effective to reduce self-reported STIs among treated adolescents that were already sexually active at baseline; however, the intervention had no impact in pregnancy rate [47]. It is important to point out the high heterogeneity across the studies, and how this may have influence the results.

Long-term outcomes

Interventions to reduce risk for sexually transmitted infections in adolescents had a significant impact on 4 of the 9 outcomes evaluated in the studies' long-term measures (Table 2). These interventions significantly and positively impacted on attitude towards sexual health – including HIV, preventing pregnancy, and beliefs about abstinence, condom

use, and people who have sex with same sex –, increased behavioral intention, intention to refuse sex, and condom use. In the long-term, interventions did not have impact on variables on the rest of studied outcomes. An issue that may have influenced the results is the few studies that provided long-term valid data to run detailed models.

Table 2. Weighted Mean Effect Sizes and Related Statistics at Final Available Assessment for Interventions Targeting Adolescents

Outcome	<i>k</i>	<i>d</i> ₊ (95% CI) ^a	<i>p</i> -value	I ² (95% CI) ^b
Knowledge				
Posttest	38	1.08 (0.45 to 1.71)	< .0008	99.18 (98.25 to 99.42)
Follow-up	20	0.91 (-.04 to 1.87)	.063	98.69 (96.88 to 99.17)
Attitudes				
Posttest	32	0.71 (0.33 to 1.09)	< .0002	98.17 (95.53 to 98.59)
Follow-up	12	0.76 (0.10 to 1.43)	.023	95.49 (87.38 to 98.12)
Subjective norms				
Posttest	10	0.19 (-.05 to 0.44)	0.129	49.71 (.00 to 57.81)
Follow-up	8	0.06 (-.64 to 0.77)	0.859	98.38 (96.01 to 99.59)
Self-efficacy to use condoms				
Posttest	21	0.40 (0.13 to 0.67)	0.003	82.91 (49.73 to 83.84)
Follow-up	14	0.46 (-.14 to 1.08)	0.137	99.06 (97.55 to 99.54)
Communication about sex with the sexual partner				
Posttest	4	0.67 (.05 to 1.29)	.033	92.22 (69.10 to 99.33)
Follow-up	3	.02 (-.18 to 0.22)	0.842	0 (0 to 0)
Behavioral intention				
Posttest	24	0.49 (0.25 to 0.72)	<.0001	85.28 (46.24 to 87.95)
Follow-up	15	0.27 (.05 to 0.50)	.016	80.17 (28.67 to 75.84)

Condom use intention				
Posttest	16	0.48 (0.19 to 0.77)	.0009	86.11 (49 to 92.04)
Follow-up	8	.07 (-.05 to 0.19)	.266	0.96 (0 to 1)
Intention to refuse sex				
Posttest	8	0.37 (.02 to 0.73)	.034	71.70 (11.19 to 74.51)
Follow-up	7	0.37 (0.02 to 0.71)	0.025	88.04 (41.27 to 94.16)
Condom use				
Posttest	12	0.57 (38 to 0.75)	< 0.0001	80.52 (49.24 to 91.06)
Follow-up	12	0.61 (0.39 to 0.82)	< 0.0001	84.82 (58.56 to 92.77)

k = number of outcomes included in the analyses.

d_+ = weighted mean effect size.

I^2 = consistency of effect sizes.

^a Estimates of effect size values are greater than 0 (d) for differences in favor of reduced risk for the intervention group.

^b Values range from 0 (homogeneity) to 100 (heterogeneity), assessed using random-effects assumptions.

Publication bias

The Egger's regression test was not significant for posttest ($z = -.85, p = 0.39$) which shows no evidence of publication bias. However, evidence of publication bias was found in the follow-up ($z = 3.37, p = .0007$).

What characteristics of the intervention and sample explain variations in condom use outcomes in the long-term?

Eight of the 11 moderator dimensions evaluated were statistically significant moderators of condom use in long-term outcomes (Table 3). Relative to the characteristics of the intervention and sample, the interventions to reduce risk for sexually transmitted infections and pregnancy in adolescents were more effective in increasing condom use when: 1) the study took place in a nation with higher HDI, 2) the study was implemented in school settings (vs. other settings), 3) the interventions were based in a theoretical approach,

and 4) the intervention did not promote sexual abstinence. Gender and age of the participants and the parent participation did not moderate the effect of the intervention on condom use in the long-term. Regarding the evaluation methodology, the interventions increased condom use more when: 1) the study randomly assigned participants into an experimental group or a control group (RCT) vs. non-randomly assignment was conducted, 2) a control group was not included (intragroup evaluation), and 3) the control group received an alternative, weakened dose intervention. The impact of the interventions on adolescents' condom use increased over time.

Table 3. Estimates of Condom Use Effect Sizes as a Function of Moderator Dimensions and Showing Sub-Groups for Moderators that Are Statistically Significant.

Dimension and level	Q_{Model}	d_+ (95% CI)
Sample characteristics		
Gender	1.51	-0.02 (-0.06, 0.01)
Age	0.08	-0.03 (-0.27, 0.20)
HDI	26.40	
Very high		0.62 (0.35, 0.89)
High		0.51 (-0.07, 1.11)
Medium		0.58 (-0.08, 1.25)
Low		—
Setting of intervention	57.23	
School		0.69 (0.51, 0.87)
Other		0.02 (-0.49, 0.55)
Intervention methodology		
Based on theoretical model	30.86	
Yes		0.71 (0.32, 1.09)
No		0.56 (0.29, 0.82)
Promotes abstinence	22.16	
Yes		0.87 (0.45, 1.30)
No		0.39 (0.06, 0.71)
Parental participation	6.38	
Yes		0.38 (0.01, 0.78)
No		0.57 (-0.09, 1.21)
Evaluation methodology		
Design of the study	26.17	
Randomized control trial		0.63 (0.58, 0.92)
Cluster-randomized control trial		0.49 (-0.01, 1)
Non-randomized		0.59 (-0.10, 1.29)
Control group included	8.01	
Yes		0.37 (0.12, 1.35)

No		0.73 (-0.12, 1.18)
Control receives intervention	19.27	
Yes		0.65 (0.35, 0.95)
No		0.37 (0.29, 1.05)
Year of publication	72.66	0.61 (0.39, 0.82)

CI = confidence interval; HDI = human development index; d_+ = weighted mean effect size.

Discussion

The present meta-analysis summarized the efficacy of interventions for STI prevention and sexual health promotion for adolescents performed in recent years (2008-2016), and identified the moderators of the efficacy of such interventions to increase long-term condom use. The results indicated that short-term interventions are effective in increasing sexual health-related knowledge, promoting a favorable attitude towards HIV and methods of protection, self-efficacy to use condoms, improving the communication about sex with the sexual partner, behavioral intention – including condom use intention and intention to refuse sex –, and increasing condom use among adolescents. Intervention ESs were low to moderate, except for knowledge that was high [29]. These results are consistent with previous reviews and meta-analyses [21, 23, 24, 98] and overall heterogeneity was large (Table 2). Our team was successful at applying several a priori moderators in models of the condom use effect size (Table 3), and we comment on these below.

The lack of impact of interventions on subjective norms (Table 2) may be related to the fact that participants' close friends usually do not attend the intervention, so it would not be expected that participants' close friends increase condom use after the intervention; therefore, the participants' perception of peers' condom use tend to be stable over time, as suggested by Jemmott et al. [99]. This unexpected result suggests that subjective norms component needs to be greater attention as it is one of the precursors of condom use according to the theory [27, 100, 101] and empirical studies [56]. For example, the Network-

Individual-Resource (NIR) model for HIV prevention highlights how exchanges of resources between individuals and their networks underlies and sustains HIV-risk behaviors [101]. Exceptionally, COMPAS intervention – implemented in Spanish schools – had impact in subjective norms one year after its implementation [76].

The short-term effects of the interventions were not significant in the long term, except for knowledge, attitudes, behavioral intention, intent to refuse sex, and condom use. The ES of the interventions' effect in knowledge and behavioral intention decreased over time, but not for condom use that even increased. This suggests that short-term effects observed in non-behavioral variables tend to decline over time; while behavioral measures tend to increase, such as condom use ($d_{\text{short-term}} = 0.57$ vs. $d_{\text{long-term}} = 0.61$). Because of the lack of monitoring data for the long-term, we cannot draw firm conclusions. This is consistent with the systematic review of school-based cognitive-behavioral interventions conducted by Kavanagh et al. [102]. The lack of clarity in the presentation of the results made it difficult to estimate the effects of interventions on condom use; an example is the use of a general measure of sexual behavior index to assess the impact of the intervention on different outcomes of sexual behavior, including condom use [47]. Globally, it is important to note that only 39.37% of participants were sexually active, which may have facilitated that the researchers selected fundamentally non-behavioral variables to assess the efficacy of interventions. However, being sexually active was not a moderator of the efficacy of the interventions. Previous meta-analyses covering a wide range of years in their searches concluded that interventions achieved to reduce risky sexual behaviors among adolescents through increasing condom use, reducing unprotected sex, delaying the age of sexual initiation; although their impact was limited, and sometimes reduced to a subset of the sample [21, 24].

Interventions tended to succeed better when they took place in nations with higher HDI group, such as United States, Canada or Spain. In all societies, adolescents are sheltered by parents and to some extent schools and peer groups. These networks tend to be stronger in high HDI nations. Inconsistently, in a meta-analysis of 37 interventions for HIV prevention (28 studies) applied in Latin American and Caribbean Nations (from 1995 to 2008), Huedo-Medina et al.[13] found greater efficacy to increase condom use in interventions implemented in countries with low or medium HDI. According to these authors [13], the conditions of poverty and deprivation make people more receptive to interventions aimed at improving their knowledge and their ability to make wise health decisions. According to other meta-analyses and reviews assessing the efficacy of interventions in adolescents [21, 23, 24], most studies were conducted in the school context (95%), and had a higher impact in condom use than those delivered in other settings such as streets, health centers, etc. We believe that the availability of schools, the learning context, and the ease access to adolescents, even some time after applying the intervention (monitoring) are factors that make schools a recommendable setting to promote sexual health during adolescence.

The most successful interventions to increase condom use were based in theoretical approaches and did not promote sexual abstinence. Similarly, Johnson et al. [21] concluded that interventions exclusively focused on abstinence were not as effective in reducing sexual frequency as comprehensive interventions including condom use promotion ($d = 0.10$ vs. $d = 0.25$). Interventions based on theoretical approaches – such as Social Cognitive Theory and Theory of Planned Behavior – were the most successful at increasing condom use, consistently with Albarracín et al.[8].

Interventions showed greater efficacy when participants were randomly assigned to the experimental conditions (RCT), uncontrolled studies (intragroup) compared to those including a comparison group; and when the control group received another intervention compared to those receiving nothing. This result suggests that the effect of the interventions which are evaluated without a control group may be overestimated. Pre-post differences can reflect many factors — history, maturation, testing, instrumentation, and so on — other than the intervention itself [103]. All of these factors are less plausible in RCTs, so the results obtained from these designs are valued more.

Another unanticipated result is seeing that impact is greater in studies when the control group received an intervention compared to controls with no intervention. This result may be due to methodological quality of studies. When an additional intervention is applied to the control group, the effects are more likely attributable to the intervention and not to other factors, due to adolescents' awareness of participation [103]. The impact on adolescents' condom use was greater as much recent were the studies, which suggests that this component is better addressed in the sexual-health promotion interventions nowadays.

Limitations. This study has some limitations. Of course, the sample was limited to the years 2008-2016, so the results reflect only the most recent studies. The search strategy may have excluded potential papers, although several methods were used to minimize this possibility. Most of the interventions were assessed with self-reports, whose answers may be exposed to recall bias and social desirability. Results must be interpreted taking into account publication bias in the follow-up analysis. The results may have been influenced by the lack of data to calculate ES, poverty in the description of the interventions, samples, and methodology of the evaluation. This limitation is shared by most meta-analysis of efficacy of interventions to promote sexual health and HIV prevention, according to Johnson,

Michie, and Snyder's [11] recent meta-review of meta-analyses. Authors should be aware of the importance of providing relevant information in their reports in order to permit replication of studies and analyses of the overall efficacy of preventive actions. Given this limitation, Mullen et al. [18] proposed a guide elaborated by the American Psychological Association about the basic information regarding the intervention and methodology of the evaluation that authors should provide in their studies.

Conclusions. To sum up, this meta-analysis provides updated knowledge about the efficacy of the interventions focus on promoting sexual health and HIV prevention in adolescents, and the factors that contribute to a greater efficacy of them; which is relevant to reduce the economic and human cost on interventions that are not effective. All interventions showed positive effects on any of the outcomes assessed, although there was a high heterogeneity in the effects. Most of them had a significant impact in non-behavioral outcomes in the short-time, but effects tended to decrease over time. The impact in condom use tended to increase over time, which confirms the importance of monitoring behavioral outcomes. Due to the small number of studies that track the effects, it cannot be drawn firm conclusions about the long-term efficacy of HIV and sexual-health interventions. Future studies should explore long-term effects, especially in behavioral and biological measures. More evidence is needed of the efficacy of sexual health promotion interventions in adolescents recruited from other settings rather than schools, as foster care centers, health centers, and other organizations.

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ESTUDIO 3





**Psychometric properties of the condom
use barriers scale for adolescents**

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Resumen

El uso inconsistente del preservativo en jóvenes se relaciona con la percepción de barreras hacia el uso de este método de protección. Se analizan las propiedades psicométricas y la estructura factorial de una nueva Escala de Barreras hacia el Uso del Preservativo para Adolescentes (*CUBS-A*). La validez concurrente se evaluó con la subescala “Actitudes hacia el uso del preservativo” del instrumento validado HIV-AS y con la variable porcentaje de uso del preservativo. Participaron 629 adolescentes españoles escolarizados con una edad media de 15.17 ($DT = 1.09$; 51.5% chicos). El análisis factorial exploratorio dio como resultado un instrumento de 15 ítems con cuatro factores: habilidades de negociación, factor sensaciones percibidas, aspectos negativos del preservativo e interrupción de la experiencia sexual, que explicaba el 41.89% de la varianza total ($KMO = 0.84$; $\chi^2 = 1071.93$; $p < .001$). Los resultados muestran una elevada consistencia interna ($\alpha = 0.86$) y un buen ajuste de los datos al modelo ($NNFI = 0.93$, $CFI = 0.95$, $IFI = 0.95$, $RMSEA = .04$). La puntuación total del instrumento y la mayoría de los factores muestran correlaciones aceptables con el porcentaje del uso del preservativo, valores que apoyan la validez criterial ($p \leq .05$). Se encontraron diferencias de género en la mayoría de las subescalas ($p \leq .001$). *CUBS-A* es un nuevo instrumento válido y fiable para evaluar las barreras que perciben los adolescentes para usar el preservativo en sus relaciones sexuales.

Palabras clave: adolescentes, actitudes hacia el uso del condón, barreras hacia el preservativo, uso del preservativo, creación de escala, sexualidad, ITS, propiedades psicométricas.

Abstract

Inconsistent condom use in young people is related to the perceived barriers to their use. The psychometric properties and factor structure of the new Condom Use Barriers Scale for Adolescents (*CUBS-A*) are analyzed. Concurrent validity was assessed by the “Attitude towards condom use” subscale of the validated HIV-AS test and the percentage of condom use variable. A total of 629 Spanish adolescents whose mean age was 15.17 ($SD = 1.09$; 51.5% boys) participated. Exploratory factor analysis supported a 15-item instrument with four factors: negotiation skills, perceived feelings, negative aspects of condoms, and disruption of the sexual experience, which explained 41.89% of the total variance ($KMO = 0.84$; $\chi^2 = 1071.93$; $p < .001$). The results show high internal consistency ($\alpha = 0.86$) and a good fit of the data to the model ($NNFI = 0.93$; $CFI = 0.95$; $IFI = 0.95$; $RMSEA = .04$). Its total score and most of its factors show acceptable correlation with the percentage of condom use, values that support the criterial validity ($p \leq .05$). Gender differences were found in most subscales ($p \leq .001$). The *CUBS-A* is a valid and reliable new instrument for assessing perceived barriers in adolescents for using condoms to protect themselves during sexual intercourse

Keywords: adolescents, attitudes towards condom use, barriers to condom use, condom use, scale development, sexuality, STI, psychometric properties.

Introduction

Condoms are one of the most effective methods for preventing the transmission of STIs and unplanned pregnancies (Centers for Disease Control and Prevention, 2003). It is estimated that between 74% and 86% of sexually active teenagers in Spain used a condom during their last sexual intercourse (Moreno et al., 2013). Compared to other European countries (Lazarus et al., 2009; Ramiro et al., 2015) and the United States (Frieden, Jaffe, Cono, Richards, & Iademarco, 2014), this rate is high. However, when adolescents inform about regular condom use in their sexual relationships, less than 50% of adolescents report using condoms consistently (Escribano, Espada, Morales, & Orgilés, 2015; Espada, Morales, Orgilés, Jemmott, & Jemmott, 2015). The high condom inconsistency among adolescents may suggest the existence of factors that interfere with the consistent use of condoms as a method of prevention, increasing the risk for STIs and unplanned pregnancies. In Spain, the latest data show a growth trend for all STIs (Center for Epidemiology, 2015), according to worldwide data (WHO, 2016). With respect to pregnancies, the Youth Institute survey (Moreno & Rodríguez, 2013) reflects that most of the adolescents who gave birth, their pregnancies were not planned.

The perceived barriers to condom use—evaluated and defined as beliefs about condoms (Lameiras, Rodríguez, Calado, & González, 2003)—are included directly or indirectly in most explanatory models of health behaviors, recognizing their influence on the ultimate behavior. The Theory of Planned Behavior (TPB, Ajzen, 1991) argues that the ultimate behavior is predicted by the intention of carrying out such behavior. Likewise, intention can be predicted by several factors, including attitudes. Attitudes are defined as a set of beliefs about the value of behavior and its consequences, and they are formed from opinions and available information (Ajzen, 1991). From this perspective, perceived barriers

to condom use would be related to the development of attitudes towards their use. Hence, it is important to know what perceived barriers interfere with the use of condoms in order to address them with preventive programs, and thereby improve the attitudes towards their use. In a recent study on the mediation effects of an intervention to promote sexual health, Escribano et al. (2015) concluded that adolescents who had a more favorable attitude towards using condoms when there are obstacles reported greater intention to use them when having sex and were more likely to use them. Several recent studies have found a strong association between positive attitudes towards condom use and the percentage that they are used (Doyle, Calsyn, & Ball, 2008; Stulhofer et al., 2007; Teva, Bermúdez, & Ramiro, 2014).

Barriers that Spanish teenagers perceive for not using condoms are diverse and heterogeneous. As major barriers, several studies have highlighted the choice of other contraceptive methods and the idea of trust in the partner (Moreno & Rodriguez, 2013), decreased pleasure or sensitivity, lack of availability, interference with the sexual intercourse, their high cost (Ruiz et al., 2012), and disagreement with the partner (Romero-Estudillo et al., 2014). These barriers, identified as reasons for hindering condom use, have also been studied in adolescents in the international area (O'Brien, 2013). Furthermore, studies also highlight the presence of gender differences regarding perceived barriers to using condoms or not (Guiella & Madise, 2007).

Despite the relevance of the "barriers to condom use" construct for promoting healthy sexual behaviors in adolescents, we have not found valid and reliable instruments in Spain to assess perceived barriers in adolescents to using condoms. Therefore, the objectives of this study were to: a) analyze the psychometric properties and factor structure of a new scale for assessing the barriers to condom use among adolescents; b) describe the perceived

barriers to condom use in a sample of Spanish adolescents; and c) examine potential gender differences in perceived barriers to condom use. Based on the scientific literature, the following hypotheses were set up to be tested: construct validity will be proven through indirect and significant correlations between the new scale to evaluate condom use and the attitudes towards their use (a subscale of the HIV-AS) and self-reported percentages of condom use. Many studies relate or predict the influence of barriers to condom use on their actual use (Muñoz-Silva, Sánchez-García, Martins, & Nunes, 2007; Muñoz-Silva, Sánchez-García, Martins, & Nunes, 2009). Based on gender differences in the barriers to condom use found in previous studies (Guiella & Madise, 2007), we hypothesize that boys will perceive more barriers related to the interruption of pleasure and the negative aspects of condoms, such as money or security issues, and these barriers will be related to their self-reported use. However, girls will perceive more barriers associated to perceived feelings factors and condom use negotiation skills, and these barriers will be related to their self-reported use. Studies conducted in Spain concur that boys attribute greater importance to pleasure in sexual relations (Lameiras et al., 2003; Teva, et al., 2014), and feeling safe when using condoms is a predictor of the ultimate behavior (Lameiras et al., 2003). However, girls focus more on aspects related to emotions and/or romanticism (Sánchez, Phelan, Moss-Racusin, & Good, 2012; Teva et al., 2014), which is one of the best predictors for not using condoms (Lameiras et al., 2003). For example, Tschann et al. (2010) concluded that girls had fewer strategies of condom use negotiation than boys.

Methods

Participants

The participants included 629 adolescents aged between 13 and 18 years ($M = 15.17$, $SD = 1.09$), with 51.51% males ($n = 324$). All were enrolled in four public schools within

the province of Alicante in Spain, studying in either the 3rd (41.02%) or 4th (39.11%) year of obligatory secondary education (ESO) or equivalent curricular adaptation programs (10.65% in 3rd year adaptation and 9.22% in 4th). Among the participants, 71.66% reported having parents married or living together, 19.90% had parents who were separated, 1.27% were in single-parent families, and 3.50% had been orphaned by either one or both parents. As for their country of origin, 89.03% ($n = 560$) were from Spain, 8.90% from Latin America, 1.59% from Eastern Europe, and less than 1% were from Asia. Socioeconomic status was assessed according to income levels: 30.45% belonged to a low socioeconomic level; 62.23%, medium; and 7.32%, high. A little more than one-third of the participants (34.34%) had had sex (vaginal, oral, and/or anal). For 89.12% of the adolescents, condoms were reported as the primary method used in vaginal and/or anal intercourse, and 38.95% said they used them consistently in their sexual relationships.

Measures

Condom Use Barriers Scale for Adolescents (CUBS-A). An initial questionnaire consisting of 19 items with a three-response option scale was developed (disagree = 1; neither agree nor disagree = 2; agree = 3), with higher scores meaning higher barriers to condom use. The item selection was the first stage in developing the scale. Four experts in human sexuality proposed potential items/barriers to condom use. This task was supported by the scientific literature (Sarkar, 2008), national surveys that describe perceived barriers in adolescents (Moreno & Rodriguez, 2013; Ruiz, Giménez, & Ballester, 2008; Ruiz et al., 2012; Sierra et al., 2010), and validated international questionnaires for adults (St. Lawrence, 1999). The second stage consisted of a pilot study with a small sample ($n = 10$). This stage allowed evaluating item comprehensibility and estimating the time for administering it. The third stage consisted in the analysis of the psychometric properties.

The items refer to the safety and perceived efficacy of condom use, their ease of purchase, the ability to put them on, cost, negotiation skills with the partner, concern about what others might think about having and using them, beliefs about romance, and pleasure.

HIV Attitudes Scale for Adolescents (HIV-AS, Espada, Ballester, Huedo-Medina, Secades-Villa, Orgilés, & Martínez-Lorca, 2013). This questionnaire assesses attitudes about HIV/AIDS in four dimensions: attitude towards protective behaviors when there are obstacles, attitude about testing for HIV, attitude towards using condoms, and attitudes towards people with HIV/AIDS. The instrument explained 65% of the variance and has an internal consistency of 0.77. The attitude towards condom use subscale, with an internal consistency of 0.70, was used to measure concurrent validity. This dimension evaluates the predisposition to defend, use, or have condoms ready for use with four items. Examples of items include “I would be willing to carry condoms for my use” and “I would be willing to say that I agree with using condoms in front of my friends.” The total Likert-type score ranges from 4-16 (*Strongly disagree* to *Strongly agree*).

Sexual behavior. Three questions were formulated to evaluate sexual practices: a) Have you ever engaged in ...: fondling, petting, vaginal intercourse, anal, or oral sex? (with a dichotomous response for each); b) Do you use any of these contraceptive methods during intercourse? (with a multiple response): condoms, contraceptive pill, no method, and others (which?); and c) What percentage of intercourse do you use condoms? (continuous scale from 0 to 100). Variable *c* was used to measure concurrent validity, and responses to this item were categorized as either 1 (consistent condom use, consisting of those who indicated condom use 100% of the times they have sex) or 0 (inconsistent use, the rest of the times).

Procedure

Prior to administering the questionnaires, authorization by the ethics committee at the institution responsible for the study and the collaborating schools was obtained and informed parental consent was sought. Participants completed the questionnaires collectively and anonymously during school hours. During the administration, a researcher was available for resolving doubts. Thirty-two schools were invited to participate, and 4 accepted, with a high response rate (98%).

Data Analysis

SPSS version 20.0 was used to analyze the psychometric properties of the Condom Use Barriers Scale for Adolescents, EQS (Bentler, 1989) version 6.1 was used for confirmatory factor analysis (CFA), and the *R* program was used for internal reliability. The median of nearby points was used as an imputation technique for replacing missing data (<10%). Compared to the mean, the median is considered a more robust statistic of central tendency (Gmel, 2001). The sample was divided randomly into two in order to estimate both factor analyses; exploratory factor analysis (EFA) was performed with 335 participants (53.26%) and CFA was so with 294 (46.74%). To determine the factors underlying the items, EFA was used, calculated by the principal axis factorization method of extraction after checking that the normality assumption of the items with the Kolmogorov-Smirnov statistic was not met. Oblimin rotation was performed because the factors were shown to be theoretically related, as reflected in other English-language barrier scales (e.g., Doyle et al., 2008). The evaluation of the adequacy of EFA analysis was conducted by the Kaiser-Meyer-Olkin (KMO) measure (Kaiser, 1970) and Bartlett's sphericity test (Bartlett, 1950). Item selection was conducted based on the following criteria: a) eigenvalue ≥ 1 ; b) saturation ≥ 0.30 ; c) communality ≥ 0.30 . Internal reliability was calculated by the ordinal alpha value. Concurrent validity was evaluated with the percentage of condom use and attitudes towards

their use variables by Pearson's correlation coefficient (r). In order to confirm the EFA, CFA was carried out using the EQS ML robust method (maximum likelihood corrected for distributions in which the multivariate normal cannot be assumed). Three indices were considered to analyze the goodness of fit of the model: the non-standard adjustment index (NNFI) (Bentler & Bonnett, 1980), comparative fit index (CFI; Bentler, 1990), and the incremental fit index (IFI; Bollen, 1989). For these indices, indicators with values greater than 0.90 were considered a good fit (Bentler, 1989; Hu & Bentler, 1999). Furthermore, the root mean square error of approximation (RMSEA) is considered a proper adjustment for considering the model when values are lower than .06 (strict criterion) (Bentler, 1989; Hu & Bentler, 1999).

A descriptive analysis of the sociodemographic variables, the sexual behavior, and barriers to condom use was made in the total sample and by gender. Gender differences were evaluated by the Student's t-test statistic in quantitative dependent variables, chi-square (χ^2) for categorical variables, and Cramer's V phi with dichotomous variables.

Results

Gender differences in sociodemographic variables

No statistically significant gender differences were found in sociodemographic characteristics except for the participants' grade levels. There was a higher proportion of boys in both curricular adaptation courses than girls, while there were more girls than boys in 3rd and 4th ESO. No gender differences in the use of contraceptive methods ($p = 0.12$) were found.

Exploratory Factor Analysis

The results of the structural matrix are presented in Table 1. A KMO value of 0.85 was obtained, and Bartlett's sphericity test, $\chi^2 (171) = 1272.12$; $p < .001$, confirmed a

structure suitable with five dimensions and an explained variance of 40.25%. However, it does not show a final factorial solution after a maximum of 25 iterations. The items 1, 11, 12, and 19 were removed due to their low communality (0.24, 0.18, 0.23, and 0.19, respectively). After that, a new factor analysis was conducted with the new set of items (15), obtaining a four-factor structure: $KMO = 0.84$ and $\chi^2 = 1071.93$; $p < .001$.

Table 1. *Exploratory Factor Loadings*

	Negotiation skills	Perceived feelings	Negative aspects of condoms	Disruption of the sexual experience
10. Asking somebody to use condoms presumes distrust	0.61	-.23	0.24	-.24
15. I would not know how to suggest to my partner to use condoms	0.63	-.54	0.23	-.27
16. Suggesting using condoms generates doubts in the other about my state of health	0.62	-.33	0.40	-.32
14. My sexual partner does not want to use them	0.60	-.26	0.26	-.42
4. Putting them on my partner or myself would be embarrassing	0.39	-.67	0.36	0.11
18. I am worried that somebody in my house would find them	0.20	-.64	0.27	-.20
9. Buying them is embarrassing	0.26	-.61	0.33	.07
17. I would not know how to put one on correctly	0.30	-.69	0.30	.08
2. They can break	0.24	-.32	0.67	0.21
8. They are not completely safe	0.35	-.28	0.57	0.24
3. They are expensive	0.16	-.24	0.57	-.24
6. They reduce the pleasure	0.25	-.01	0.27	0.75
13. They are not very romantic	0.50	-.16	0.31	0.57
7. Using them makes me feel uncomfortable	0.47	-.21	0.40	0.54
5. They spoil the fun	0.31	-.26	0.24	0.54

Note: Bold type indicates items with loadings > 0.30.

All items obtained moderate saturation in the extracted factors, varying between 0.60 and 0.63 (factor 1), -.61 and -.69 (factor 2), 0.57 and 0.67 (factor 3), and 0.54 and 0.75

(factor 4). We also found that some items saturated in more than one factor; however, we chose the higher value. The communality values of all items were higher than 0.30. The percentage of total variance explained by these four factors was 41.89%.

Confirmatory Factor Analysis

The CFA results with ML estimation revealed a robust structure with four factors with a good fit, as indicated in the different adjustment indexes analyzed: NNFI = 0.93; CFI = 0.95; IFI = 0.95; and RMSEA = .04.

Reliability

The ordinal alpha for the total scale was 0.86. Factor 1 had moderate to low internal reliability ($\alpha = 0.73$) with four items related to negotiation skills. Factor 2 contained three items related to perceived feelings, such as worry and feelings of shame, and obtained an ordinal alpha of 0.81. Factor 3 included four items that refer to negatively perceived aspects of condoms (security, management, and cost), showing an ordinal alpha of 0.63. Factor 4 consisted of four items related to the disruption of the sexual experience and showed moderate internal reliability ($\alpha = 0.78$). It is noteworthy that the alpha obtained for the total scale did not improve by removing any item according to the factorial solution extracted in the exploratory analysis except for a slight improvement in factor 1 of .02 if item 10 was deleted. Table 2 shows the interrelationships between the *CUBS-A* subscales.

Concurrent Validity

Concurrent validity was evaluated with the percentage of condom use and attitudes towards condom use variables in the total sample and by gender (Table 3).

Barriers to Condom Use

Table 4 shows the mean scores and the extracted factors. Gender differences were found in three of the four dimensions of the *CUBS-A*. Boys perceive more barriers in the

dimensions of communication skills and interruption of the sexual experience ($p < .001$), while girls receive a higher score on the perceived feelings factor subscale ($p < .001$). No gender differences were found in the negative aspects of the condom dimension.

Table 2. *Correlations among subscales of CUBS-A*

	Negotiation skills	Perceived feelings	Negative aspects of condoms	Disruption of the sexual experience
Negotiation skills	1			
Perceived feelings	0.45*	1		
Negative aspects of condoms	0.34*	0.35*	1	
Disruption of the sexual experience	0.43**	0.21*	0.40*	1
Total Scale	0.74*	0.72*	0.68*	0.69*

Note: * $p < .05$; ** $p < .01$.

Table 3. *Concurrent criterial validity*

	Attitudes condom use	% condom use ^a	Attitudes condom use	% condom use	Attitudes condom use	% condom use ^a
	Boys ($n = 324$)		Girls ($n = 305$)		Total ($N = 629$)	
Total Scale	-.14*	-.31**	-.17**	-.50**	-.15**	-.39**
Factors						
Negotiation skills	-.15**	-.14	-.19**	-.40**	-.20**	-.26*
Perceived feelings	-.05	-.09	-.06	.04	-.03	-.01
Negative aspects of condoms	-.06	-.36**	-.12*	-.32**	-.86*	-.32**
Disruption of the sexual experience	-.16**	-.32**	-.12	-.60**	-.26**	-.44**

Note: ^a Among those who use condoms ($n = 172$); * $p < .05$; ** $p < .01$; Bold type indicates statistically significant differences.

Discussion

The main objective of this study was to analyze the psychometric properties and factorial structure of a new scale aimed at evaluating the barriers that interfere with condom

use in an adolescent population due to the absence of validated tools in the Spanish context. A valid and reliable tool to evaluate condom use barriers is needed in order to identify those barriers directly related to the use of condoms in this population.

Table 4. *Barriers towards condom use in the total sample and by gender*

	Boys (<i>n</i> = 324)	Girls (<i>n</i> = 305)	Total (<i>N</i> = 627)	<i>t</i>
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	
Total Scale	24.51 (6.02)	24.44 (5.74)	24.48 (5.88)	0.73
Negotiation skills	6.06 (1.95)	5.45 (1.67)	5.76 (1.84)	4.15***
Perceived feelings	6.30 (1.21)	7.41 (2.51)	6.83 (2.42)	-5.79***
Negative aspects of condoms	5.56 (1.78)	5.59 (1.97)	5.56 (1.88)	-2.11
Disruption of the sexual experience	6.93 (2.19)	6.24 (2.08)	6.60 (2.16)	3.78***

Note: *** $p \leq .001$; Bold type indicates statistically significant contrasts.

The results reflect the instrument's good properties. Exploratory factor analysis provides a structure of four factors that explain a high percentage of variance. Confirmatory factor analysis provides good fit indices of the model for the structure of four underlying factors of the exploratory analysis. The instrument showed high internal consistency, and this value did not increase by removing any item. Suitable values of internal consistency for each factor were found, except for factor 3. This can be explained by the low number of items that make up the factor. Loewenthal (1996) considers acceptable values from 0.60 on scales with less than 10 items. It would be interesting to check if these items function the same way in other adolescent samples.

The attitude towards condom use is related to the percentage of condom use in accordance with the Theory of Planned Behavior (Ajzen, 1991) and is consistent with the

sample results. On the other hand, the TPB demonstrates the influence of beliefs on the establishment of attitudes, understanding the barriers as ideas or negative beliefs that subjects perceive about condoms. However, the data showed higher correlations with the percentage criteria of condom use for both sets of items as factors. Therefore, it can be concluded that the scale shows greater ability to accurately measure perceived barriers in samples who are sexually active. Muñoz-Silva et al. (2007) conclude that barriers to condom use is the second most important variable for predicting the frequency of condom use among young Spaniards. One of the possible causes for finding lower correlations between the perceived barriers and attitudes towards condom use is that non-sexually active adolescents form their beliefs about using condoms roughly by information received from their peers, professionals, mentors, parents, the Internet, etc., and the correlations can vary when they encounter difficulty in using condoms during sex.

Data from this study indicate that there are clear gender differences in perceived barriers to condom use. Compared to girls, boys perceive greater disruption of the sexual experience, such as decreased pleasure and negotiation skills, as barriers to using condoms. Various studies concur that boys place more importance upon issues relative to sexual pleasure and satisfaction (Lameiras et al., 2003), while girls focus more on aspects relative to romanticism and feeling connected with their partner during sexual activity (Sanchez et al., 2012). Compared to boys, girls are more concerned on emotional levels, like the feelings of shame that arise when putting them on their partner or buying them. Although these barriers were not related to the attitude towards condom use or the percentage of use in girls, they are important to keep in mind when designing prevention programs, as they reflect the prevailing beliefs in gender roles in matters of sexuality.

It is noteworthy that boys and girls show a lower percentage of condom use when they perceive barriers that interfere with pleasure and identify negative aspects connected to condoms. Carrying out efforts directed at demystifying false beliefs, reducing negative perceptions, and highlighting the positive aspects of condoms, such as pleasure and their use (Crosby, Charnigo, & Shrier, 2014), are recommended. Furthermore, girls relate lower condom use with poor communication and negotiation skills. Tschann et al. (2010) indicated that girls have fewer strategies for verbal and nonverbal communication to negotiate condom use.

The limitations of this study should be taken into account when interpreting its results. First, the sample was incidentally recruited and came from the same geographical area. Second, in order to analyze the correlation between the barriers to condom use and actual condom use in order to analyze the criterial validity, adolescents who reported being sexually active and using condoms as a preventive method were selected. This sub-sample was small (representing 27.34% of the total sample), so it would be interesting to utilize a larger sample of sexually active adolescents to increase the representativeness and generalizability of the results. Third, future research would need to assess the predictive ability of the *CUBS-A*. Finally, the adolescents and youngsters evaluated were in school, so generalizing these results to adolescents in other contexts was not possible.

The results of this study have important implications for the promotion of sexual health in adolescents since it can reveal the barriers our youngsters perceive before they initiate sex and risk behaviors occur; therefore, it is capable of influencing the difficulties by increasing the percentage of condom use at first sexual intercourse. It is desirable that preventive programs include contents that provide adolescents with the knowledge and skills necessary to overcome the identified barriers. It is also important to address the gender

differences in the perception of these barriers, with the ultimate aim of increasing the proportion of teens using condoms consistently.

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ESTUDIO 4





**Two-year follow-up of a sexual health
promotion program for spanish adolescents**

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Abstract

The aim is to evaluate the effects of the *Competencias para adolescentes con una sexualidad saludable* (COMPAS) program and compare them with an evidence-based program (*¡Cuidate!*) and a control group (CG). Eighteen public high schools were randomly assigned to one of the three experimental conditions. Initially, 1,563 Spanish adolescents between 14 and 16 years of age participated, and 24 months after their implementation, 635 of them completed a survey. Self-report measures collected data on sexual behavior, knowledge, attitudes, intention, sexual risk perception, and perceived norm. Compared to the CG, COMPAS increased the level of knowledge about sexually transmitted infections and improved the attitudes toward people living with human immunodeficiency virus at the 2-year follow-up. Neither intervention had a long-term impact on behavioral variables. Results suggest that COMPAS has a comparable impact to the other intervention on the variables predicting consistent condom use.

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Reinforcing the messages and skills that have the greatest impact on condom use and adding booster sessions following program completion as strategies to maintain long-term effects are necessary.

Keywords

adolescence, HIV, sexual health, STIs, program evaluation, preventive programs

According to the latest report by the Spanish National Epidemiology Center (Centro Nacional de Epidemiología, 2014), approximately 25.4% of new acquired immune deficiency syndrome (AIDS) cases in Spain were diagnosed between 20 and 39 years of age, which suggests that a large majority were infected during adolescence and early youth due to the disease's long incubation period and the high proportion of late diagnoses. In 2013, 2,973 Spanish teenagers between 14 and 16 years of age voluntarily terminated their pregnancies. In most of these cases, the pregnancies were unintended, and they accounted for 2.74% of all voluntary terminations in Spain (Ministerio de Sanidad, Servicios Sociales e Igualdad, 2015). These data show the vulnerability of adolescents to sexually transmitted infections (STIs) and unplanned pregnancies due to their involvement in risky sexual behavior. Inconsistent condom use and an early onset age for sexual relations have been identified as predictors of human immunodeficiency virus (HIV) infection and other STIs in multiple studies (Beadnell, Morrison, & Wilsdon, 2005; Pettifor, Van der Straten, Dunban, Shi-Boski, & Padian, 2004).

Interventions to promote healthy sexual habits are aimed at reducing sexual risk behavior, including activities aimed at increasing consistent condom use by influencing the precursors according to the main theoretical variables based on health behavior models such as the information–motivation–behavioral skills (IMB) model (Fisher & Fisher, 1992) and the theory of planned behavior (Ajzen, 1991). Schools are a key environment for prevention and health promotion due to being highly accessible within the community and for the important role they play in the education and development of young people (Ministerio de Sanidad y Consumo, 2008; Monsalve, 2012). However, the proportion of Spanish schools that carry out prevention interventions is low. Exceptions to these include the autonomous communities of Catalonia and Cantabria with coverage of 90%; in some, such as Madrid and Navarre (Ministerio de Sanidad, Servicios Sociales e Igualdad, 2009), only short talks are held. Although some schools implement school programs for this purpose, the impact of these actions is

unknown since their effectiveness is rarely evaluated in terms of outcome (Espada, Morales, Orgilés, Piqueras, & Carballo, 2013).

In Spain, there is very little evidence about the effects of programs to promote sexual health and prevent HIV because they are rarely evaluated, and when they are, they are evaluated in the short term. According to the systematic review by Espada, Morales, Orgilés, Piqueras, and Carballo (2013), most short-term evaluations present relevant methodological issues. In this review, only 2 of the 14 identified studies evaluated the effect of the intervention at three time points: pretest evaluation, posttest, and follow-up. Hernández-Martínez et al. (2009) evaluate an HIV-prevention intervention 6 months after its application in a sample of 481 adolescents aged 16 and 17. Espada (2007) presents the results of an intervention that promotes healthy sexual habits, *Competencias para adolescentes con una sexualidad saludable* (COMPAS; Competencies for adolescents with a healthy sexuality), and includes a follow-up assessment at 12 months in 832 adolescents from different geographic areas of Spain. In the scientific literature, we have yet to find controlled studies in Spain, evaluating the effectiveness of programs to promote sexual health that extend beyond a 12-month follow-up.

The COMPAS program promotes healthy sexual practices implemented in schools based on the development of skills in addition to the transmission of information. COMPAS is aimed at teenagers between 14 and 18 years, with the aim of preventing the transmission of HIV/AIDS and other STIs along with unplanned pregnancies. Several controlled studies evaluate the immediate effects of COMPAS (Espada, Morales, Orgilés, Jemmott, & Jemmott, 2015; Espada, Orgilés, Morales, Ballester, & Huedo-Medina, 2012; Morales, Espada, Orgilés, Secades-Villa, & Remor, 2014) and 12-month outcomes (Morales, Espada, & Orgilés, 2015). At the posttest, COMPAS has shown to be effective in increasing the level of knowledge about HIV and other STIs, sexual risk perception, and the intent to engage in safe sex, and it promotes a favorable attitude toward protection methods and issues related to prevention. At 12 months, adolescents who received the COMPAS program showed a higher level of knowledge about HIV and STIs, a more favorable attitude toward condom use and prevention aspects, perceived high rates of peer condom use, and they initiated in vaginal sex later than the control group (CG; Morales et al., 2015). However, the impact of outcomes at the 24-month follow-up is unknown.

The aim of this study is to evaluate the effectiveness of COMPAS through psychosocial (knowledge, attitude, risk perception, and perceived norm) and behavioral constructs (age at first intercourse with vaginal penetration, oral sex and anal sex, consistent condom use, and number of sexual

partners) in monitoring the effects 2 years after the program's implementation. The effects of COMPAS are compared with those of *¡Cuidate!*, an evidence-based intervention for Latino adolescents in the United States, and a CG who did not receive any intervention. Based on previous studies (Espada et al., 2015; Morales et al., 2015), it is hypothesized that COMPAS will be at least as effective as *¡Cuidate!* and more effective than no intervention to promote healthy sexuality in Spanish adolescents 2 years after its implementation.

Method

Study Design and Participants

In this cluster-randomized trial, 1,563 adolescents from different geographic areas in Spain (north, south, and east) participated. In 2012, students aged 14–16 in 9th and 10th grades of high school or the equivalent were invited to participate in this study. Of the eligible participants, 97% obtained parental written consent. Figure 1 shows the number and proportions of adolescents throughout the study by condition and time. All the adolescents who answered the baseline and 24-month follow-up assessments were included in the analyses. Twenty-four months after the programs' implementation, 635 of the participants (40.62% retention) completed the survey (between January and April 2014).

Assessment of Attrition Bias at Follow-Up

Regarding the analysis of external invalidity, differences ($p < .05$) were only found in age ($p = .01$). Students who dropped out were older ($M = 15$; $SD = 1.10$) than those surveyed at 2-year follow-up ($M = 14.83$; $SD = 1.01$). No differences were found on sex ($p = .06$), be sexual experienced or not ($p = .94$) and consistent condom use ($p = .68$) between those who dropped out and those who did not. The attrition analysis comparing experimental conditions (internal invalidity) revealed statistically significant difference in the retention of participants at the 2-year follow-up between the experimental conditions ($p = .03$), where the groups receiving the COMPAS (75%) and *¡Cuidate!* (65%) interventions had higher retention percentages than the CG (42%; Figure 1). However, the data confirm that the differences in the dropout rate between groups were not related to consistent condom use ($p = .23$), which is the main study outcome.

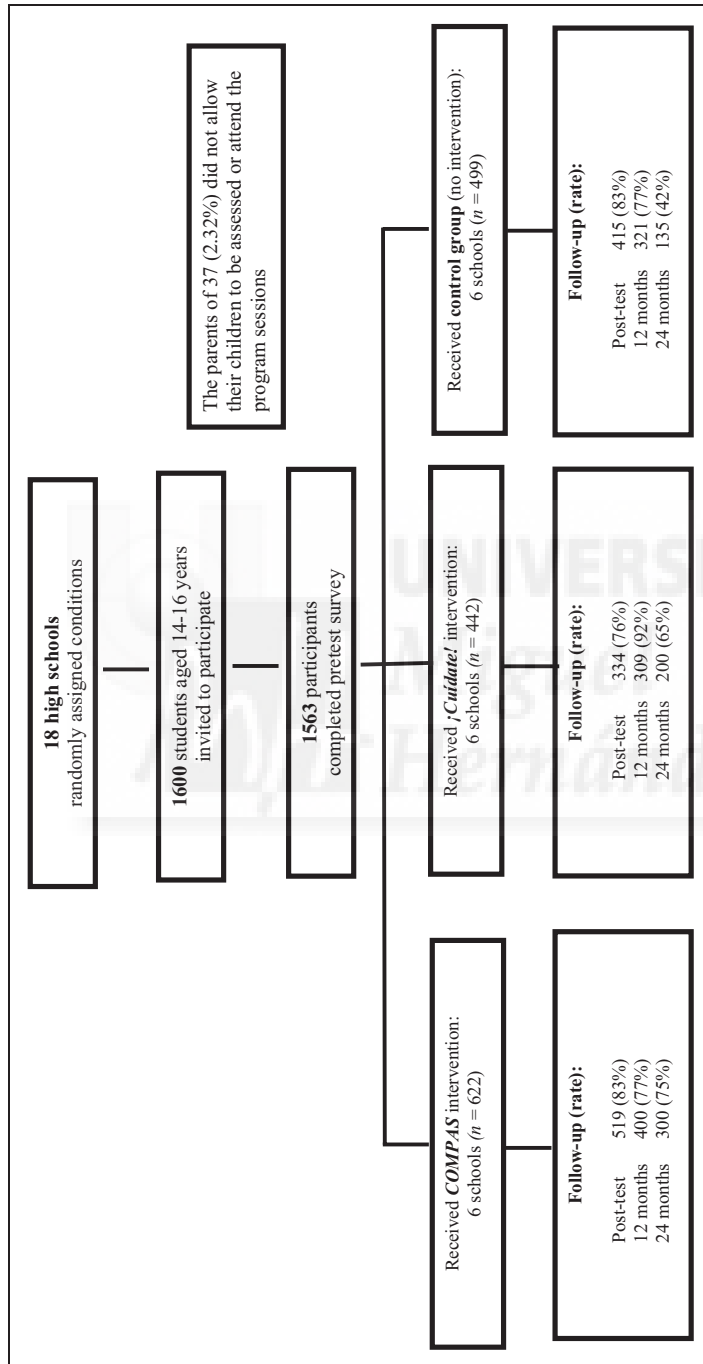


Figure 1. Flowchart for group-randomized, controlled design. Participants who were not followed up were absent at the time of the follow-up session at school and did not answer the evaluation online for unknown reasons.

Interventions

COMPAS program. COMPAS is a school-based sexual health education intervention developed and tested in Spain. The theoretical models underlying COMPAS are the social learning theory (Bandura, 1986) and the IMB model (Fisher & Fisher, 1992). COMPAS consists of five sessions, each lasting 50 min. The first two sessions are dedicated to addressing knowledge about identifying sexual risk, HIV/AIDS and other STIs, methods of protection, and mistaken beliefs. The third session addresses contents such as making decisions related to condom use. The last two modules are about communication skills and ability to negotiate in several sex situations. The complete program description is detailed in Espada, Morales, Orgilés, Jemmott, and Jemmott (2015). The goals of the intervention are: (a) increase knowledge about HIV and other STIs, (b) obtain more favorable attitudes toward condom use and normative beliefs of safe sex behaviors, (c) increase the risk perception of unprotected sex, (d) increase the intention to not engage in sexual risky behaviors, (e) improve problem-solving skills and condom use negotiation skills, (f) increase consistent condom use, and (g) reduce the number of sexual partners. More detailed information about the intervention components and the effectiveness of COMPAS are published elsewhere (Espada et al., 2012, 2015; Morales et al., 2014).

Adapting the original ¡Cuidate! program to Spanish adolescents. ¡Cuidate! is considered the only high-quality program implemented for the Latino population by the Centers for Disease Control and Prevention (2014). It was initially developed to reduce sexual risk among Latino adolescents (13–18 years) living in the United States (Villarruel, Jemmott, & Jemmott, 2006). It was culturally adapted from the *Be Proud! Be Responsible!* curriculum that has been effective in reducing sexual risk among African American youth (Jemmott, Jemmott, & Fong, 1992, 1999, 2010). The principal goals of the program are to influence attitudes, behavioral and normative beliefs, self-efficacy, and negotiation skills regarding HIV risk-reduction behaviors, specifically abstinence and condom use.

The adaptation of ¡Cuidate! to adolescents from Spain is detailed in a previous article (Espada et al., 2015), thus a brief description of the process is provided. A pilot study was conducted to adapt ¡Cuidate! to adolescents living in Spain. As a first step, focus groups with adolescents were conducted to evaluate the appropriateness of the curriculum to Spain. Specific cultural aspects of ¡Cuidate! for Latinos from the United States were revised to be more relevant for Spanish adolescents. The latest version of the

curriculum was approved by psychologists who are experts in sexual risk reduction among adolescents. The Spanish version of *¡Cuidate!* maintains the principal core elements of the original *¡Cuidate!* and the key theories: social cognitive theory and the theory of planned action (Ajzen, 1991; Bandura, 1986; Fishbein & Ajzen, 1975). Its curriculum consists of six 45-min sessions. The contents of the first three sessions are dedicated to teaching about HIV/AIDS and concepts associated with its prevention. The fourth and fifth sessions address contents about condom use (barriers, skills for correct use). The last session's contents are about communication skills. The complete program description is detailed in Espada et al. (2015).

Differences between both curriculums. COMPAS and *¡Cuidate!* were tested with Spanish-speaking adolescents targeted to reduce sexual risk behaviors. Similar theoretical models underlie both group-based interventions and they include the same components to promote sexual health. The methodology used consists of high participation and interaction by both facilitator and participants. However, some differences between the interventions are noticed. Unlike COMPAS, *¡Cuidate!* promotes sexual abstinence, and includes condom demonstrations and a safer sex negotiation strategy, a talking circle to begin and end each session, HIV/STI videos, and provides condoms to the participants. Unlike *¡Cuidate!*, COMPAS includes a description of how HIV affects the body, a self-talk activity, a guided visual imagery activity, and styles of communication applied to dealing with sexual risky situations (e.g., assertive, passive, and argumentative). *¡Cuidate!* and COMPAS can be considered similar in duration, and they employ theoretical models and content that are similar; these are the main reasons why *¡Cuidate!*, as an evidence-based program, was selected to evaluate the effectiveness of COMPAS (Espada et al., 2015; Morales et al., 2015). The characteristics and components of both interventions are detailed elsewhere (Espada et al., 2015).

Procedure

The research ethics committee at the responsible institution revised and approved the study. A protocol to standardize the phases of recruitment, implementation, and evaluation of the interventions was designed. Using a computerized random number generator, three high schools from each of the five participating provinces were randomly selected and invited to participate in the study—15 centers in all. One of them was ineligible due to other sexual risk activities that had been implemented the preceding year.

In order to meet the sample sizes per area—a minimum of 300 participants—four additional high schools were randomly selected. Ultimately, three schools in two provinces participated while in the other three provinces, four centers participated. The authorities at the participating schools committed to not carry out other similar interventions during the project's duration. The project coordinator randomly assigned the 18 high schools to one of the experimental conditions: COMPAS, *¡Cuidate!*, or as a no-intervention CG.

Both interventions implemented 1-hr sessions each week during school hours. There was one facilitator per province. The facilitators were 2 men and 3 women possessing experience in health promotion with adolescents. Their median age was 28.8 (range: 25–29). All of them received 6 hr of training for each intervention. Additional videos demonstrating the implementation of both programs to teenagers were provided to the facilitators. Both programs are highly structured, and facilitators implemented it following intervention manuals. Moreover, online tutorials were also provided to resolve questions about the procedure. These variables are considered as facilitators of the fidelity of implementation (Carroll et al., 2007). The fidelity of implementation was high according to previous studies that evaluated the dimensions of dose and adherence in *¡Cuidate!* (Escribano, Morales, Orgilés, & Espada, 2015), in addition to those of dose, adherence, and acceptance in COMPAS (Escribano et al., Manuscript in preparation). The effects of both interventions were evaluated before the intervention and again 24 months later using the *Google Forms* online survey. The evaluations were conducted in computer classrooms at the high schools. A member of the team conducted phone interviews to collect data from participants who were no longer enrolled in school at the 24-month follow-up. Confidentiality was ensured by providing a personal code for each adolescent. The participants voluntarily accepted to participate in the study and group incentives were provided. More detailed information about the procedure is published elsewhere (Espada et al., 2015; Morales et al., 2015).

Measures

Sociodemographic variables. The following variables were evaluated: gender, age, city of residence, school year, family structure (married, separated and/or divorced, single mother/father, and lost one or both parents), and socioeconomic status by the Family Affluence Scale (FAS; Boyce, Torsheim, Currie, & Zambon, 2006). This questionnaire assesses the number of cars, computers, individual bedrooms, and vacations during the last 12 months.

FAS validity with respect to current economic indicators, such as the gross national product, is .87.

Behavioral measures. Five questions relating to sexual practices were raised: (a) sexual orientation: heterosexual, bisexual, and homosexual; (b) if they have had sex, including petting, masturbation, oral sex, vaginal sex, or anal sex; (c) age of first intercourse, distinguishing vaginal, anal, and oral penetration; (d) number of sexual partners in the last 6 months; and (e) percentage of condom use in the last 6 months (scale from 0 to 100), which is categorized in consistent condom use with a dichotomous variable response—100% was considered consistent use and the rest was considered inconsistent use.

Psychosocial measures

Knowledge about HIV and other STIs. The *Scale of Knowledge about HIV and other STIs* (Espada, Guillén-Riquelme, Morales, Orgilés, & Sierra, 2014) was used. This consists of 24 items with three possible answers: *true*, *false*, or *do not know*, and information is collected about five factors: general, about condoms, routes of transmission, prevention, and other STIs. The sum of the five factors provides a total score ranging from 0 to 24, with higher scores indicating higher levels of knowledge about HIV and other STIs. The questionnaire has high internal consistency ($\alpha = .88$).

Attitudes toward aspects related to HIV. Attitudes toward aspects related to HIV were assessed by means of the *HIV Attitudes Scale for Adolescents* (Espada, Ballester, et al., 2013). It measures four dimensions about attitude toward condom use when obstacles exist, HIV testing, condom use, and people living with HIV/AIDS. The total score ranged from 12 to 48, and higher scores represent more favorable aspects toward HIV/AIDS. These items explained 65% of the variance, and its Cronbach's α was .77.

Intention to engage in safe sex. This evaluated the intention to engage in safer sexual behavior over 12 months with 5 items, which make up two factors: (1) the intention to find, use, and negotiate condom use with sexual partners ($\alpha = .80$) and (2) the intention of condom use under the influence of alcohol and other drugs using a 5-point Likert-type scale response, ranging from 1 = *definitely not* to 5 = *sure* ($\alpha = .75$).

Sexual risk perception. This was assessed by two questions with 4-point scale responses, with 1 being *no risk* and 4 *great risk*: “How much risk is there in the following activities? (a) having oral sex without a condom or

(b) engaging in sexual intercourse/penetration without a condom.” These questions are asked for three different situations related to the possibility of having HIV, other STIs, or an unplanned pregnancy. Cronbach’s α value for the instrument was .87.

Perceived norm was evaluated by asking the perception of the frequency of condom use in their peers in sexual intercourse with a scale of 1 being *never* and 4 *always*.

Statistical Analysis

The analyses were conducted using SPSS, Version 22. Logistic regression was used to analyze the influence on the dropout rate of age, sex, being sexually active, and consistent condom use. Descriptives of the three conditions were calculated by analysis of variance with repeated measures Generalized Linear Model (GLM). Generalized estimating equations (GEE) were used to evaluate the effect of the program after a 24-month follow-up, adjusting the values for baseline differences in sex, age, and type of sexual experience.

GEE models are commonly used to evaluate trials that involve clusters (e.g., schools), since they control the correlations among responses within clusters (Liang & Zeger, 1986). Effects of the two interventions were tested with planned comparisons of prespecified hypotheses (Rosenthal & Rosnow, 1985). To test the 24-month follow-up effects of COMPAS, one contrast compared COMPAS with the CG and another contrast compared COMPAS with *¡Cuidate!* To test the 24-month follow-up effects of *¡Cuidate!*, a contrast compared *¡Cuidate!* with the CG. Based on previous studies (Espada et al., 2015; Jemmott, Jemmott, O’Leary, et al., 2010; Morales et al., 2015), the school (i.e., the cluster) was the unit of randomization, and the individual was the a priori unit of analysis; therefore, the school was controlled in all the analyses. All of the adolescents who answered the baseline and 24-month follow-up assessments were included in the analyses.

Results

Participants’ Characteristics

The characteristics of the participants are shown in Table 1. Statistically significant differences in the baseline, such as their age ($p < .05$), were controlled in all subsequent analyses.

Table 1. Baseline Comparability of Self-Reported Behaviors of 24-Month Follow-Up Participating Students by Experimental Condition.

Characteristics	COMPAS (n = 300)	¡CUIDATE! (n = 200)	CONTROL (n = 135)	Total (N = 635)	p Value ^a
Male, n (%)	133 (44.3)	95 (47.5)	56 (41.5)	284 (44.7)	.544
Age, M (SD) years	16.70 (0.71)	16.85 (0.74)	16.65 (0.67)	16.73 (0.71)	.020
16 Years old	138 (46)	72 (36)	61 (45.2)		
17 Years old	117 (39)	86 (43)	59 (43.7)		
18 Years old	45 (15)	42 (21)	15 (11.1)		
People who have married parents, n (%)	234 (78)	163 (81.5)	101 (74.8)	498 (78.4)	.335
Family income, n (%)					
Low	86 (28.7)	61 (30.5)	49 (36.3)	196 (30.9)	.310
Middle	190 (63.3)	123 (61.5)	71 (52.6)	384 (60.5)	
High	24 (8)	16 (8)	15 (11.1)	55 (8.7)	
Heterosexual, n (%)	281 (94.6)	186 (93.9)	123 (92.5)	590 (93.9)	.564
Bisexual, n (%)	9 (3)	10 (5.1)	7 (5.3)	26 (4.1)	
Homosexual, n (%)	7 (2.4)	2 (1)	3 (2.3)	12 (1.9)	
Sexually experienced, ^b n (%)	208 (69.3)	153 (76.9)	101 (74.8)	462 (72.9)	.151
Experienced in sexual risk practices, ^c n (%)	158 (53)	121 (61.1)	83 (61.5)	362 (57.4)	.112
Multiple partners in the past 6 months, n (%)	72 (53.7)	45 (52.9)	28 (47.5)	145 (52.2)	.713
Condom use (0–100), % (SD)	89 (19.83)	86 (21.92)	86 (21.58)	87.63 (20.86)	.560
Consistent condom use, n (%)	64 (21.3)	41 (20.5)	25 (18.5)	130 (20.5)	.807

^aSignificance tested using F test for continuous variables and χ^2 test for categorical variables. ^bPetting, vaginal sex, oral sex, anal sex, or mutual masturbation. ^cVaginal sex, anal sex, and oral sex.

Table 2. Adjusted Marginal Means for Self-Report Sexual Risk Behavior and Psychological Variables by Experimental Condition and Time.

Outcomes	Baseline			24-Months Follow-Up		
	COMPAS	¡CUIDATE!	CONTROL	COMPAS	¡CUIDATE!	CONTROL
STI and HIV knowledge, M (SE)						
General HIV	5.43 (0.56)	5.35 (0.56)	5.45 (0.57)	5.89 (0.56)	5.85 (0.56)	5.50 (0.57)
Condom use	1.45 (0.24)	1.38 (0.24)	1.48 (0.24)	1.50 (0.25)	1.52 (0.25)	1.46 (0.25)
Routes of transmission	3.30 (0.54)	3.15 (0.53)	3.33 (0.53)	4.47 (0.54)	4.34 (0.54)	4.11 (0.54)
Prevention	1.53 (0.38)	1.45 (0.38)	1.49 (0.38)	2.30 (0.38)	2.34 (0.34)	2.29 (0.39)
Other sexual infections	1.52 (0.53)	1.52 (0.53)	1.77 (0.53)	1.48 (0.48)	1.42 (0.53)	1.28 (0.54)
Total	14.00 (1.49)	13.62 (1.48)	14.30 (1.50)	15.98 (1.50)	15.84 (1.50)	14.85 (1.52)
HIV-related attitudes, M (SE)						
Obstacles	2.41 (0.21)	2.35 (0.21)	2.37 (0.21)	2.39 (0.21)	2.50 (0.21)	2.44 (0.22)
HIV test	1.70 (0.14)	1.71 (0.14)	1.73 (0.14)	2.64 (0.14)	2.73 (0.14)	2.68 (0.14)
Condom	3.28 (0.22)	3.25 (0.21)	3.25 (0.21)	2.54 (0.22)	2.64 (0.21)	2.56 (0.22)
People living with AIDS	2.21 (0.20)	2.12 (0.20)	2.12 (0.20)	2.57 (0.20)	2.61 (0.20)	2.53 (0.20)
Total	9.61 (0.52)	9.43 (0.51)	9.49 (0.51)	9.15 (0.52)	9.46 (0.51)	9.28 (0.53)
Intention to engage in safe sex, M (SE)	4.22 (0.29)	4.19 (0.29)	4.20 (0.28)	4.18 (0.29)	4.29 (0.29)	4.22 (0.29)
Sexual risk perception, M (SE)	2.65 (0.20)	2.60 (0.20)	2.66 (0.20)	2.76 (0.20)	2.73 (0.20)	2.75 (0.20)
Perception of frequency of peer condom use, n (%) ^a						
Always	108 (27.1)	83 (28.8)	93 (29.1)	69 (23.2)	40 (20.1)	23 (17)
Almost always	188 (47.2)	113 (39.2)	141 (44.1)	163 (54.9)	100 (50.3)	77 (57)
Sometimes	82 (20.6)	75 (26)	72 (22.5)	58 (19.5)	58 (29.1)	35 (25.9)
Never	20 (5)	17 (5.9)	14 (4.4)	7 (2.4)	1 (0.5)	0 (0)
Age at the first vaginal sex, M (SE)	14.38 (1.08)	14.51 (1.09)	14.51 (1.09)	15.33 (1.12)	15.61 (1.09)	15.48 (1.12)
Age at the first anal sex, M (SE)	15.23 (3.45)	14.36 (3.48)	14.61 (3.45)	16.28 (3.62)	16.86 (3.50)	15.90 (3.59)
Age at the first oral sex, M (SE)	15.27 (1.14)	14.51 (1.13)	14.77 (1.10)	15.54 (1.14)	15.73 (1.12)	15.67 (1.13)
Consistent condom use, % (SE)	30 (56.6)	35 (53)	37 (52.1)	64 (21.3)	41 (20.5)	25 (18.5)
Multiple partners, % (SE)	30 (50.8)	45 (50.6)	43 (51.8)	72 (53.7)	45 (52.9)	28 (47.5)

Note. STI = sexually transmitted infection; HIV = human immunodeficiency virus.

^aThe numerator represents the number of participants who selected the option and the denominator indicates the number of participants who responded to the question. Analysis was adjusted for gender-, age-, and school-level sexual experience at baseline.

Effects of the Interventions

Behavioral measures. Twenty-four months after application, neither COMPAS nor the comparison program, had a significant impact on behavioral variables compared to the CG. Adolescents who received *¡Cuidate!* significantly delayed their age of first oral sex ($M = 15.73$; $SD = 1.12$) compared to COMPAS ($M = 15.54$; $SD = 1.14$) (Table 2). No statistically significant differences between both interventions in other behavioral variables were found (Table 3).

Psychosocial outcomes. Table 4 shows the differences between the conditions in the outcome variables. At the 24-month follow-up evaluation, the adolescents who received COMPAS reported significantly higher scores for knowledge about other STIs ($p < .05$). The attitudes toward people living with HIV were significantly more favorable ($p < .05$) compared to the CG.

The results show that the group receiving *¡Cuidate!* had a higher level of knowledge about HIV, specifically about condom use ($p < .05$), other STIs ($p < .05$), and the total scale ($p < .05$) compared to the CG at the 24-month follow-up. No significant differences in other psychosocial constructs were observed between *¡Cuidate!* and the CG.

Comparing the effectiveness of both interventions, differences were found for the dimension attitude toward people with HIV/AIDS. The group receiving *¡Cuidate!* shows a more favorable attitude toward people with HIV/AIDS ($p < .05$) with respect to COMPAS. For other psychosocial variables, no statistically significant differences between groups are evident between COMPAS and *¡Cuidate!*.

Discussion

At the 2-year follow-up evaluation, the COMPAS program did increase the level of knowledge about STIs and promoted a more favorable attitude toward people living with HIV as compared to the CG. The positive effects of the intervention in both constructs were maintained over time, according to the results observed in the evaluation of the program in the posttest (Espada et al., 2015) and at the 12-month follow-up (Morales et al., 2015). However, some of the effects of COMPAS that were evident over the short term and at the 12-month follow-up were not observed at the 24-month assessment. Specifically, there were no differences between the COMPAS group and the CG in the level of knowledge about HIV, condom use, HIV transmission routes, and the attitude for condom use when barriers

Table 3. Generalized Estimating Equations Model-Based Significance Tests and Effect Size Estimates for the Intervention Effect on Self-Reported Sexual Behaviors Over the 24-Month Follow-Up Period.

Outcome	COMPAS—CONTROL		¡CUIDATE!—CONTROL		COMPAS—¡CUIDATE!	
	AOR ^a (95% CI)	p Value	AOR ^b (95% CI)	p Value	AOR ^c (95% CI)	p Value
Age at the first vaginal sex	0.87 [0.56, 1.37]	.562	1.00 [0.65, 1.52]	.993	1.14 [0.73, 1.79]	.553
Age at the first anal sex	1.89 [0.55, 6.17]	.318	0.77 [0.35, 1.66]	.514	0.43 [0.13, 1.41]	.168
Age at the first oral sex	1.64 [0.93, 2.87]	.060	0.77 [0.46, 1.27]	.307	0.47 [0.28, 0.85]	.013*
Consistent condom use	0.85 [0.42, 1.74]	.661	0.98 [0.50, 1.91]	.960	1.17 [0.56, 2.43]	.659
Total sexual partners	0.965 [0.43, 2.15]	.931	1.27 [0.60, 2.72]	.526	1.31 [0.57, 2.96]	.517
Multiple partners	0.99 [0.83, 1.16]	.904	1.00 [0.87, 1.16]	.911	1.02 [0.86, 1.19]	.811

Note. Each analysis was adjusted for gender-, age-, and school-level sexual experience at baseline. AOR = adjusted odds ratio; CI = confidence interval.

^aAn odds ratio > 1 indicates that the score is higher in COMPAS compared to the control group. ^bAn odds ratio > 1 indicates that the score is higher in ¡CUIDATE! compared to the control group. ^cAn odds ratio < 1 indicates that the score is higher in COMPAS compared to ¡CUIDATE!

*p < 0.05.

Table 4. Generalized Estimating Equations Model-Based Significance Tests and Effect Size Estimates for the Intervention Effect on Self-Reported Sexual Behavior and Psychological Variables Over the 24-Month Follow-Up Period.

Outcome	COMPAS—CONTROL		¡CUIDATE!—CONTROL		COMPAS—¡CUIDATE!	
	AOR ^a (95% CI)	p Value	AOR ^b (95% CI)	p Value	AOR ^c (95% CI)	p Value
STI and HIV knowledge						
General HIV	0.98 [0.78, 1.21]	.860	0.90 [0.70, 1.15]	.418	0.92 [0.72, 1.18]	.553
Condom use	0.97 [0.89, 1.06]	.574	0.90 [0.81, 0.99]	.042*	0.92 [0.83, 1.02]	.124
Routes of transmission	1.00 [0.81, 1.25]	.942	0.86 [0.69, 1.08]	.201	0.86 [0.69, 1.07]	.193
Prevention	1.04 [0.90, 1.20]	.580	0.96 [0.82, 1.11]	.616	0.93 [0.80, 1.07]	.336
Other sexual infections	0.77 [0.61, 0.97]	.031*	0.77 [0.60, 0.98]	.039*	1.00 [0.80, 1.25]	.969
Total	0.74 [0.41, 1.33]	.318	0.50 [0.26, 0.96]	.039*	0.70 [0.37, 1.32]	.277
Attitudes related to HIV						
Obstacles	1.04 [0.97, 1.19]	.252	0.98 [0.90, 1.06]	.694	0.94 [0.87, 1.02]	.152
HIV test	0.97 [0.93, 1.02]	.333	0.98 [0.93, 1.04]	.651	1.01 [0.96, 1.06]	.576
Condom	1.03 [0.94, 1.12]	.474	0.99 [0.90, 1.10]	.959	0.97 [0.88, 1.05]	.496
People living with AIDS	1.09 [1.02, 1.17]	.023*	1.00 [0.92, 1.09]	.973	0.92 [0.85, 0.99]	.041*
Total	1.13 [0.93, 1.37]	.193	0.94 [0.76, 1.18]	.637	0.84 [0.68, 1.03]	.104
Intention to engage in safe sex	1.02 [0.93, 1.13]	.567	0.99 [0.89, 1.10]	.877	0.96 [0.87, 1.06]	.46
Sexual risk perception	0.99 [0.92, 1.06]	.741	0.95 [0.87, 1.02]	.166	0.96 [0.88, 1.04]	.321
Perception of frequency of peer's condom use	1.03 [0.87, 1.22]	.695	1.07 [0.89, 1.30]	.437	1.03 [0.86, 1.24]	.697

Note. Each analysis was adjusted for gender-, age-, and school-level sexual experience at baseline. AOR = adjusted odds ratio; CI = confidence interval; STI = sexually transmitted infection; HIV = human immunodeficiency virus; AIDS = acquired immune deficiency syndrome.

^aAn odds ratio > 1 indicates that the score is higher in COMPAS compared to the control group. ^bAn odds ratio > 1 indicates that the score is higher in ¡CUIDATE! compared to the control group. ^cAn odds ratio < 1 indicates that the score is higher in COMPAS compared to ¡CUIDATE!

*p < 0.05.

exist. Other short-term effects observed in COMPAS, such as the increase in the level of knowledge about prevention methods, the perception of risk associated with unprotected sex, the intention to engage in safer sex, and a positive attitude toward HIV testing and condom use, were not maintained at the 24-month follow-up. One year after implementation, COMPAS had a positive effect on the perception of peer condom use and delayed the age of first vaginal intercourse. However, these effects were not observed at the 24-month follow-up.

In a recent study, analyzing the mediating effects of the effectiveness of COMPAS to increase consistent long-term condom use, Escribano, Espada, Morales, and Orgilés (2015) conclude that the attitude of adolescents about condom use when there are barriers and the intention to use condoms are key to increasing the effectiveness of intervention to promote consistent condom use in Spanish adolescents. These results suggest that additional and periodic educational efforts to promote safe sex should be addressed at schools, for example, activities focused on overcoming perceived barriers for condom use and promoting a more favorable attitude toward condom when there are obstacles. This is an opportunity to consider the advantages and disadvantages of using condoms, discuss them with adolescents, and empower them with negotiating skills to have safe sex. The main aim of these activities should be to increase condom use intention, which increases the odds of using condoms when they have sex (Ajzen, 1991).

The results at 24 months showed that *¡Cuidate!* increased the level of knowledge about condom use and HIV/STIs in general compared to the CG. The program also had a positive impact on the knowledge about other STIs, coinciding with the results of COMPAS. *¡Cuidate!* had no significant impact on the remaining psychosocial variables, such as attitudes toward HIV, risk perception, perceived norm, and intent to engage in safer sexual behaviors nor did it impact any behavioral variables. A study evaluating the effectiveness of *¡Cuidate!* at 48 months after implementation in Mexican adolescents via sexual behavior outcomes (Villarruel, Zhou, Gallegos, & Ronis, 2010) indicates that no impact on consistent condom use is evident, nor does it manage to decrease the number of sexual partners, results that are in line with the present study. However, in this study (Villarruel et al., 2010), *¡Cuidate!* managed to delay the age of first vaginal intercourse. In this study, *¡Cuidate!* also managed to delay the age of onset of oral sex like COMPAS but not compared to the CG. From the results of this study, one can conclude that 24 months after implementation, the effects of the *¡Cuidate!* program did not last in many of the psychosocial variables, namely, the attitude toward HIV, intent to engage in safe sex, nor did it

delay the age of first intercourse with oral sex, observed in the effects after 12 months (Morales et al., 2015).

The effects of the COMPAS and *¡Cuidate!* interventions at the 24-month follow-up on psychosocial variables were equivalent—coinciding with those found in previous studies that compared the efficacy of both interventions in the short term (Espada et al., 2015) and at a 12-month follow-up (Morales et al., 2015). One exception to this was the attitude toward people living with HIV, which was more favorable in adolescents who received the *¡Cuidate!* program. Regarding behavioral variables, *¡Cuidate!* delayed the onset age of oral sex compared to COMPAS. This difference in the effectiveness of both interventions is not surprising since *¡Cuidate!* promotes sexual abstinence as the primary method of protection in sexual relationships, and COMPAS only promotes correct and consistent condom use if sex occurs.

The effect of both interventions on psychosocial variables (risk perception, intention of condom use, etc.) immediately after application (Espada et al., 2012, 2015; Morales et al., 2015) decreased over time, while effects were found in behavioral variables at the 12-month follow-up (age of sexual debut; Morales et al., 2015). This trend is observed in previous studies, such as Pergallo, Gonzalez-Guarda, McCabe, and Cianelli (2012). At the 24-month follow-up, improvements in the level of knowledge about STIs and the attitude toward people infected with HIV were found in both interventions. It is remarkable that in the literature, there are few studies reporting a significant and positive impact on reducing sexual risk in adolescents and young people in the long term (Chen et al., 2010; Gong et al., 2009). The Focus on Youth in the Caribbean intervention, included by the Centers for Disease Control and Prevention as a Best Evidence Program, has been extensively evaluated in longitudinal studies by several authors (Chen et al., 2010; Gong et al., 2009; Wang et al., 2013), showing a high long-term impact in precursors—knowledge, skills, intention, and self-efficacy—and sexual behavior variables. Gong et al. (2009) found an improvement in the level of knowledge, perceptions of their ability of use condoms, behavioral intention, and increased condom use at 24 months after the implementation of an HIV-prevention intervention in a controlled study. Chen et al. (2010) and Wang et al. (2013) show a significant increase in the level of knowledge about HIV/AIDS, self-efficacy, and intention and ability to use condoms at 36 months postevaluation. However, it must be noted that booster sessions were performed after completion of the procedure. Based on the results obtained from these studies and the comparison with the outcomes of the present study, the application of periodic booster sessions seems to be an

effective strategy in maintaining the effects of interventions on sexual behavior over time (Chen et al., 2010; Malow, Kershaw, Sipsma, Rosenberg, & Dévieux, 2007; Peragallo et al., 2012).

This study presents several limitations that should be taken into account when interpreting the results. First, the high rate of lost participants at 24 months postintervention can be explained by the high school dropout rate in Spain (26%), which is one of the highest in Europe (Felgueroso, Gutiérrez-Domenech, & Jiménez, 2013), and that a high proportion of the participants had graduated after 2 years. This rate is consistent with other studies evaluating programs, such as Malow, Kershaw, Sipsma, Rosenberg, and Dévieux (2007), who reported a dropout rate of approximately 50% of the participants at the 2- and 5-year follow-ups. The authors indicate that the high dropout rate in longitudinal studies is one of the main reasons why researchers avoid this type of design despite the advantages offered. The low retention rate may have reduced the statistical power of tests of the efficacy of the intervention; therefore, the results should be interpreted with caution. However, the sample across three conditions was equivalent in sociodemographic and sexual experience variables. Also, the CG had higher dropped out percentages than the both interventions groups. We do not have a firm explanation for this result, but it could be explained by the low motivation of students and less implication of schools of CG to get involved in the project, since they did not received any intervention. Second, the sole use of a self-report assessment method is another limitation. Biological measures provide objective measures of program effectiveness (i.e., HIV status, chlamydia, syphilis, and/or gonorrhea). The study sample cannot be considered representative of Spanish adolescents since the participants were recruited from only 5 of the 50 provinces in Spain.

This is the first controlled study conducted in Spain evaluating the long-term efficacy of a school program promoting sexual health, and it also compares its effects to an evidence-based intervention and a CG. With these results, we can conclude that COMPAS maintains the level of knowledge about HIV and other STIs in addition to a favorable attitude toward people living with HIV in the long term. Other effects that were observed in the short term, but faded later, included knowledge about HIV, condom use, HIV transmission routes and prevention methods; attitude toward condom use in general; and when barriers exist, sexual risk perception, and the intention to engage in safe sex. Twelve months after application, the effects remained on knowledge about HIV, condom use and HIV transmission routes, and attitude about condom use, despite barriers for their use, and it is effective for increasing the perceived norm and delaying the age of the

first vaginal sexual intercourse. Compared to the CG, COMPAS has a comparable impact to the other evidence-based intervention on variables predicting consistent condom use. When comparing the effectiveness of both interventions, *¡Cuidate!* only showed better results than COMPAS in attitude toward people living with HIV, and it also delayed the onset age of oral sex. However, none of the interventions had a significant impact on consistent condom use.

Future research should aim at promoting strategies to resolve problems associated with condom use and the intention to use condoms and to identify others that facilitate long-term consistent condom use. Finally, periodical booster sessions are recommended after the program completion as a possible solution to maintain the effects on sexual behaviors.

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ESTUDIO 5



**Implementation fidelity for promoting the
effectiveness of an adolescent sexual health program**

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Implementation fidelity for promoting the effectiveness of an adolescent sexual health program



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ABSTRACT

The goal of the present study was to examine COMPAS program (*Competencies for adolescents with a healthy sexuality*) outcomes based on implementation fidelity: dose, adherence, and acceptance. Participants were 716 adolescents aged 14–16 years (46.5% boys). Two fidelity groups were established: high ($n = 83$) and low ($n = 312$), with the remaining sample serving as a non-program control group ($n = 321$). Knowledge about sexually transmitted infections (STIs), attitudes towards HIV, intention to use condoms, and sexual behavior were evaluated. Results indicated that adolescents receiving the intervention displayed improved STI knowledge ($p < 0.001$) and improved attitudes toward HIV ($p < 0.05$) as compared to the control group. Between the two intervention groups, a high-fidelity group intended to engage more in safe sex behaviors ($p = 0.05$) and displayed greater STI knowledge ($p = 0.05$) as compared to the low-fidelity group. The present study revealed improved efficiency when applying prevention programs with implementation fidelity.

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1. Introduction

School-based sexual health promotion interventions play a significant role in reducing adolescents' risky sexual behaviors (e.g., inconsistent condom use and multiple partners), which decreases the probability of an unplanned pregnancy or contracting a sexually transmitted infection (STI), including HIV (UNESCO, 2010). Effective programs are based on strategies that provide preventive value but also require rigorous implementation for achieving desired effects. However, program results can be limited if the original protocol is not properly adhered (Oosthuizen & Louw, 2013).

According to Dusenbury, Brannigan, Falco, and Hansen (2003), implementation fidelity refers to the degree to which a program or intervention is applied in the same way as was originally intended. Implementation fidelity is a complex and multidimensional concept, and Dane and Schneider (1998) proposed a model that includes five fidelity dimensions: adherence (compliance program), dose (number of sessions), quality (facilitator competence;

proper use of materials and good activity performance), differentiation (uniqueness of the program components), and acceptance (participants' satisfaction).

Recent research has provided several frameworks for guiding fidelity measurement and evaluating relationships between the different model components (Berkel, Mauritius, Schoenfelder, & Sandler, 2011; Carroll et al., 2007; Hasson, 2010; Wang et al., 2014). One recent model has pared down the components to three: adherence, dose, and some aspects of acceptance (e.g., a teacher's perception of student engagement). This model also includes moderating variables (i.e., a teacher's level of comfort, teaching experience and training, and perception regarding the importance of the program and modifying program activities) that can have positive or negative influences on implementation fidelity. Facilitative or hindering effects are determined by whether specific program content is/is not applied in real contexts according to the protocol (Carroll et al., 2007).

There are several reasons for conducting an exhaustive implementation assessment (Dusenbury et al., 2003). An intervention can be considered ineffective when poor fidelity is able to explain observed outcomes (Type III error) (Dobson & Cook, 1980). In addition, an exhaustive assessment provides evidence as to implementation viability, how program modifications can influence efficacy, and why effective programs fail or succeed, among

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others. Multiple studies have examined the relationship between implementation fidelity intervention effectiveness (Wang et al., 2014), as program internal and external validity needs to be ensured (Durlak & Dupre, 2008). However, thus far, few studies have comprehensively evaluated implementation fidelity with Spanish adolescents within a sexual health context (Ariza, Villalbí, Sánchez-Martínez, & Nebot, 2011; Escribano, Morales, Orgilés, & Espada, 2015).

Very few studies have included randomized controlled assessments of sexual health intervention effectiveness within Spanish samples (Espada, Morales, Orgilés, Piqueras, & Carballo, 2013). *Competencies for adolescents with a healthy sexuality* (COMPAS; Espada, 2012) is a school-based program aimed at developing skills that include promoting condom use and preventing the transmission of HIV/AIDS (and other STIs) among adolescents in Spain. The COMPAS program has been previously effective in promoting healthy sexual habits among adolescents from different geographic regions in Spain (Espada, Orgilés, Morales, Ballester, & Huedo-Medina, 2012; Morales, Espada, Orgilés, Secades-Villa, & Remor, 2014). A 12-month follow-up also supported COMPAS' effectiveness based on reports of delayed age for first vaginal sexual experience, increasing perceptions of peers' condom use, increasing STI knowledge, and changing attitudes toward condom use and people living with HIV/AIDS (Morales, Espada, & Orgilés, 2015). While COMPAS appears to be effective for reducing sexual risk among Spanish adolescents, there is yet no evidence as to how fidelity implementation influences program effectiveness.

The objectives of the present study are twofold: (1) evaluating the COMPAS program based on levels of adherence, dose, and acceptance and (2) assess program efficacy according to the degree of implementation fidelity. We hypothesized that program effectiveness would be greater with increased loyalty to the tracking protocol.

2. Methods

2.1. Study design and participants

We conducted a quasi-experimental intervention with a total of 716 adolescents aged 14–16 years. Participants were enrolled in the

9th and 10th grades of high school, or the equivalent, from 2012 to 2013; 53% of the sample was female, with a mean age = 14.65 years (*SE* = 0.03). Participants were from different geographical areas in Spain: Alicante (*n* = 252; 35.20%) and Murcia (*n* = 86; 12.01%) in the southeast, Oviedo (*n* = 126; 17.60%) in the north, Castellón (*n* = 102; 14.25%) in the east, and Granada (*n* = 150; 20.95%) in the south. Most participants lived with parents who were married or living together (*n* = 549; 76.68%); 20.81% (*n* = 149) had separated or divorced parents, and 2.51% (*n* = 18) were orphans from one or both parents. According to the Family Affluence Scale (FAS; Boyce, Torsheim, Currie, & Zambon, 2006), 30.87% (*n* = 221) had a low socioeconomic status, 59.77% (*n* = 428) were in the middle range, and 9.38% (*n* = 67) had a high socioeconomic status.

Twelve months after the programs' implementation, 716 participants (61.83% retention) completed the survey (Fig. 1). All participants who completed the baseline and 12-month follow-up assessments were included in the analyses; 55.17% (*n* = 395) were included in the intervention group, and 44.83% were in the control group (CG) (*n* = 321). Based on degree of implementation fidelity, two groups – high (HFG) and low (LFG) – were established. Within each fidelity dimension (attendance, adherence, and acceptance), the 80th percentile was established as a cutoff. Before setting this criterion, other less restrictive options were tested; however, when using lower percentiles, no differences were observed on any outcome variable between the HFG and LFG. This could be explained by the high rate of fidelity for all dimensions; consequently, the groups were not equal. This is because when lower percentiles were used, more than 50% of the participants were classified into the HFG. Another possibility was to sum scores on the three dimensions, but this was not possible given that different measurement scales were used. Dose was evaluated with an ordinal measure, while a 10-point Likert scale was used for adherence and acceptance.

The HFG consisted of 83 adolescents who scored above 80% on all dimensions; that is, they attended 100% of the sessions and received scores equal to or greater than 18 (out of a maximum of 20) for acceptance and adherence. Participants classified in the LFG (*n* = 312) did not meet the 80% criterion for any dimension; that is, they attended from 1 to 4 sessions and/or received scores lower than 18 for adherence and/or acceptance

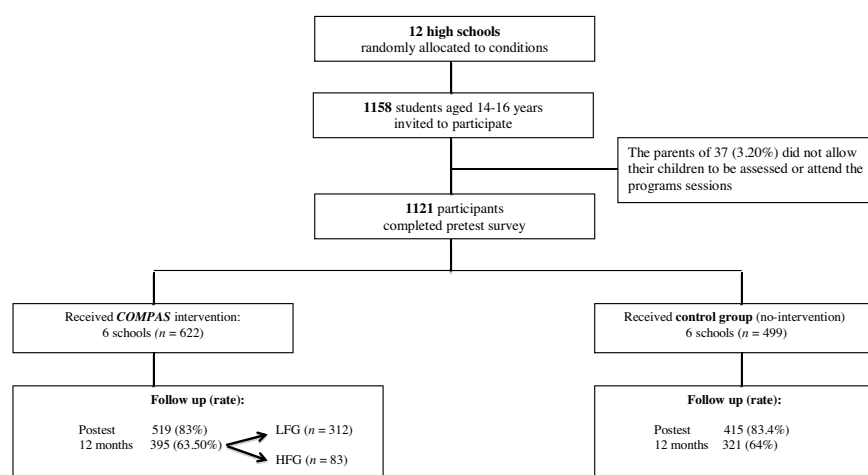


Fig. 1. Flowchart for group-randomized, controlled design. Participants who were not followed up were absent at the time of the follow-up session at school and did not answered the evaluation online for unknown reasons.

2.2. Measures

2.2.1. Socio-demographic variables

The following demographic variables were evaluated: gender, age, province of residence, school year, and family structure (married, separated and/or divorced, single mother/father, or lost one or both parents).

2.2.2. Family affluence scale

The FAS (Boyce et al., 2006) measures family wealth via four items. This scale is an index based on the number of cars and computers that belong to the family, individual rooms for each family member, and family vacations taken in the last 12 months. The scale has good criterion validity according to current economic indicators, including GNP ($r = 0.87$).

2.2.3. Implementation fidelity questionnaire

The main project investigator designed this scale. To establish groups according to degree of implementation fidelity, three dimensions – dosage, adherence, and acceptance – were assessed via self-report. The dose dimension was assessed using the number of sessions that each participant attended. The adherence dimension was assessed using the sum of two items: a) degree of compliance with the content provided for each activity, and b) estimate as to the degree of compliance with the session objects; total scores ranged from 0 to 20. The acceptance dimension was also measured as the sum of two items: a) estimate as to the degree of group motivation during program implementation and b) estimate as to the degree of participation or engagement in the program; total scores for this dimension also ranged from 0 to 20. All items were assessed using a Likert scale, with scores ranging from 0 to 10 for each item, except for dose (which was evaluated using an ordinal measure).

2.2.4. Knowledge of HIV and other STIs

The Knowledge about HIV and other STIs Scale for adolescents (Espada, Guillén-Riquelme, Morales, Orgilés, & Sierra, 2014) consists of 24 items, with three potential answers for each statement: *true*, *false*, or *do not know*. This scale comprises five dimensions: general knowledge about HIV, condoms as a protective method, routes of HIV transmission, HIV prevention, and other STIs. These factors explain 46.2% of the total variance in STI knowledge. The sum of the five factors provides a total score ranging from 0 to 24, with higher scores indicating higher levels of HIV and STI knowledge. This scale has adequate internal consistency ($\alpha = 0.88$) and moderate temporal stability after eight weeks ($r = 0.59$).

2.2.5. Attitudes towards HIV/AIDS

The Attitudes towards HIV/AIDS Scale for Adolescents (HIV-AS; Espada, Ballester et al., 2013) consists of 12 items and evaluates four dimensions: attitudes toward condom use, attitudes toward condom use when there are obstacles, attitudes toward HIV testing, and attitudes toward people living with HIV/AIDS. The sum of the four dimensions provides a total score ranging from 12 to 48, with higher scores indicating more favorable attitudes towards HIV/AIDS. The scale explained 65% of the variance in HIV/AIDS attitudes. This scale has adequate internal consistency ($r = 0.77$) and test-retest reliability after 10 weeks ($r = 0.60$) ($p < 0.001$).

2.2.6. Behavioral intention questionnaire

This scale evaluates intentions toward engaging in safe sexual behaviors in the next 12 months (through five items, which make

up two factors). The first factor refers to an intention to obtain condoms, use them, and negotiate their use with a sexual partner ($\alpha = 0.80$) through the following questions: a) “I will seek condoms if I need them,” b) “I will use condoms when I have sex,” and c) “I will negotiate condom use with my sexual partner before having sex.” The second factor examines condom use while under the influence of alcohol and other drugs, with adequate internal consistency ($\alpha = 0.75$). The five items are rated on a 5-point Likert scale, from 1 = *definitely not* to 5 = *definitely*. The total score ranges from 5 to 25, with higher scores indicating greater intention to engage in safe sexual behaviors in the next 12 months.

2.2.7. Sexual behavior questionnaire

Sexual behavior was evaluated through the following three questions: a) participation in penetrative sex (“Have you ever had sexual intercourse?”), with dichotomous response options (yes/no); b) percent condom use in the past six months (“What percent of the time do you use condoms in your sexual relationships?”), on a continuous scale ranging from 0 to 100; and c) age of onset for vaginal penetration (open response).

2.3. Intervention

COMPAS is based on social learning theory (Bandura, 1977) and the Information-Motivation-Behavioral skills model for AIDS preventive behavior (IBM; Fisher & Fisher, 1992), which identifies sexual behavior predictors and highlights the following precursors: level of knowledge, attitudes, beliefs, and behavioral intention. The program consists of five, 50-min modules implemented during 5 weekly sessions: 1) AIDS and Health, 2) Knowing AIDS better, 3) Making decisions, 4) Improving one's communication about sex, and 5) Maintaining one's decisions. The methodology is participatory, including a series of brief group discussions, group games, brainstorming, and skill-building activities. COMPAS is highly structured, and facilitators implemented the program along with intervention manuals. Notebooks for completing the activities were provided to all participants. The principal goal of the program is to promote sexual health habits through transmitting information and skill development. More details regarding the curriculum have been described in previous reports (see Espada, Morales, Orgilés, Jemmott, & Jemmott, 2015; Morales et al., 2014; Morales et al., 2015).

2.4. Procedure

Upon ethics committee approval from the sponsoring institution, informed parental consent was obtained. Using random sampling, 12 public high schools were recruited to participate from five Spanish provinces. Two schools from each province were involved, except for Granada and Asturias, which were represented by three high schools in order to obtain equal sample sizes across provinces. Students at each school were randomly assigned to COMPAS or the CG by the principal investigator. The intervention group received the program, and participants were distributed between the HFG and LFG based on responses to the Fidelity Implementation Questionnaire. The intervention group represented 55.20% of the sample. The investigation was implemented within all 9th and 10th grade classrooms at each school. The number of classes was equal across schools, with a mean of 2 classes per level. Participation rates were high because the program was implemented as part of each school's secondary compulsory education courses; only 1.25% of students did not attend any sessions. The groups corresponded to natural classroom groups; thus, there was a mean of 25 students during each session.

Five trained facilitators (two men and three women, average age = 28.80, range: 25–29) conducted the evaluations and intervention implementation (one per province). The facilitators were university-qualified psychologists with experience and training implementing sexual health preventive programs. Additionally, each facilitator received six hours of COMPAS training. The facilitators watched videos demonstrating five adolescent group sessions. Online tutorials were also provided to resolve any questions regarding the procedure. The questionnaires were administered in groups of about 25 students during tutorial classes (before the intervention, immediately after, and 12 months later). A personal code was provided for each participant in order to match the three evaluations. The code consisted of a random number. The nature of the study was voluntary and confidential. Facilitators were the only ones who provided answers to the fidelity questionnaire at the end of each session.

2.5. Data analysis

Statistical analyses were performed using SPSS Version 20.0. First, a descriptive analysis on the fidelity dimensions (dose, adherence, and acceptance) was performed. Next, a comparative analysis was conducted between the different fidelity groups in order to assess any differences regarding program effectiveness. A new independent variable – fidelity – was created by combining all fidelity dimensions and to classify participants in the HFG and LFG.

Intervention results for both groups were compared, along with comparisons to the CG. Based on degree of fidelity, intervention effects were tested using planned comparisons for pre-specified hypotheses (Rosenthal & Rosnow, 1985). Effect sizes were calculated using the standardized mean difference (*d*), where 0.20 is considered small, 0.50 medium, and 0.80 large, according to Cohen (1988).

Baseline equivalence among the HFG, LFG, and CG was calculated from ANOVA (quantitative variables) and chi-square (qualitative variables) tests. Generalized Estimating Equations (GEE) (Liang & Zeger, 1986) were conducted to test COMPAS effectiveness compared to the CG on selected outcomes. GEE analyses are commonly used in order to adjust for intergroup and intragroup variability, as well as control for correlations among responses. Analyses were run independently for each variable. The variable *school* was also controlled during all analyses. The unit of analysis was at the individual level, and the unit of randomization was at the school level.

3. Results

There were no significant differences between groups at baseline on any of the dependent or demographic variables (Table 1).

Related to the dose, 18.50% of adolescents in the intervention group attended 1–4 sessions and were assigned to the LFG, while 80.30% attended all sessions and were assigned to the HFG. A small percentage of the sample (5.50%) attended 3 or fewer sessions. Administrators determined adherence based on scores greater than 14 on global 0–20 scales, which included two items: degree of compliance in terms of content for each activity (*M* = 8.58; *SE* = 0.07) and degree of accomplishing goals for each session (*M* = 8.63; *SE* = 0.07). Overall, 30.4% of participants received 100% of the planned content; 69.60% received between 70% and 90% of the content. The acceptance dimension, which refers to adolescents' satisfaction with the program, was measured through motivation and participation items. Acceptance was determined by scores greater than 14 on global 0–20 scales. Overall, 57.20% of participants obtained scores greater than 16.

The influence of implementation fidelity – categorized based on the 80th percentile of the dose, adherence, and acceptance dimensions – on the outcome variables was evaluated during a post-test and 12-month follow-up. Intervention effectiveness was assessed through precursors of sexual behaviors (knowledge and attitudes regarding HIV and behavioral intentions for safer sexual practices) and actual sexual behaviors (Table 2). Regarding to total knowledge, at both post-test and follow-up, the HFG showed greater knowledge regarding HIV and other STIs compared to the LFG and CG (Fig. 2). At posttest, significant differences emerged between the HFG and CG (*p* < 0.001; *d* = 0.93) and the LFG and CG (*p* < 0.001; *d* = 0.70). At 12-months follow-up, significant differences were observed between the HFG and LFG (*p* < 0.001; *d* = 0.58), LFG and CG (*p* < 0.001; *d* = 0.28), and HFG and LFG (*p* < 0.05; *d* = 0.31).

Long-term attitudes toward HIV were less favorable than attitudes at baseline for every group (HFG, LFG, and CG). At post-test, statistically significant differences were observed regarding attitudes towards HIV between the HFG and CG (*p* < 0.001; *d* = 0.62) and between the LFG and CG (*p* = 0.02; *d* = 0.33). Results indicated that the HFG had greater intentions toward engaging in safer sexual behaviors at post-test compared to the LFG and CG. Statistically significant differences were observed between the HFG and LFG (*p* = 0.05; *d* = 0.91). No statistically significant

Table 1 Sociodemographic Characteristics and Self-Reported Behaviors Among Adolescents at Baseline by Experimental Condition.

Variables	HFG <i>M</i> (<i>SE</i>) or%	LFG	CG	Total	<i>Df</i>	<i>F</i>	<i>p</i>
Sociodemographics							
Age	14.58 (0.04)	14.61 (0.08)	14.71 (0.04)	14.65 (0.03)	2	2.11	0.12
Gender (% men)	35 (42.20)	156 (50)	142 (44.20)	333 (46.5)	2	0.63 ^a	0.24
Grade or equivalent (9th) (%)	195 (60.8)	55 (74.30)	202 (63)	452 (63.1)	6	9.64 ^a	1.14
Socioeconomic status							
Upper	28 (8.7)	5 (6.8)	35 (10.9)	68 (9.5)	4	2.59 ^a	0.63
Middle	199 (62)	44 (59.5)	184 (57.3)	427 (59.6)			
Low	94 (29.3)	25 (33.8)	102 (31.8)	221 (30.9)			
Dependent variables							
HIV and STD knowledge (<i>n</i> = 716)	14.19 (0.22)	13.91 (0.49)	14.40 (0.22)	14.16 (0.15)	2	1.10	0.33
Attitudes toward HIV (<i>n</i> = 716)	9.84 (0.07)	9.56 (0.16)	9.50 (0.08)	9.57 (0.05)	2	2.08	0.13
Behavioral intention (<i>n</i> = 716)	4.18 (0.03)	4.22 (0.07)	4.18 (0.04)	4.20 (0.02)	2	0.33	0.72
Sexually active (%) (<i>n</i> = 124)	45 (14)	12 (16.20)	66 (20.60)	124 (17.3)	2	4.88 ^a	0.08
Age of first vaginal sex (<i>n</i> = 124)	14.57 (0.21)	14.23 (0.36)	14.50 (0.16)	14.39 (0.02)	2	0.66	0.52
Percent condom use (<i>n</i> = 124)	0.85 (0.04)	0.86 (0.07)	0.86 (0.02)	0.86 (0.02)	2	0.01	0.99

Note: LFG = low-fidelity group; HFG = high-fidelity group; CG = control group; ^aχ².

Table 2
Intervention Effects on Precursors and Sexual Behavior at Posttest and 12-Month Follow-up by Experimental Condition.

Variable	Time	HFG	LFG	CG	HFG-CG (1)				LFG-CG (2)				LFG-HFG (3)				
		Mean (SE)	Mean (SE)	Mean (SE)	Coefficient	SE	p	d	Coefficient	SE	p	d	Coefficient	SE	p	d	
STI knowledge ^a	Time 2	18.24 (0.31)	17.29 (0.20)	14.60 (0.23)	51.10 (22.29, 117.15)	0.42	<0.001	0.93	23.46 (12.04, 45.72)	0.34	<0.001	0.70	0.46 (0.19, 1.10)	0.44	0.08		
	Time 3	19.61 (0.38)	18.42 (0.22)	17.27 (0.23)	13.79 (5.25, 36.24)	0.49	<.0001	0.58	5.01 (2.42, 10.36)	0.37	<0.001	0.28	0.36 (0.13, 0.98)	0.50	0.05	0.31	
	Time 2	10.54 (0.12)	10.06 (0.09)	9.50 (0.10)	2.06 (1.51, 2.81)	0.16	<0.001	0.62	1.63 (1.19, 2.22)	0.16	0.02	0.33	0.79 (0.59, 1.06)	0.15	0.12		
Attitudes toward HIV ^b	Time 3	9.59 (0.99)	9.21 (0.07)	9.09 (0.66)	1.08 (0.80, 1.47)	0.15	0.61		1.05 (0.83, 1.31)	0.12	0.71		0.97 (0.71, 1.31)	0.16	0.82		
	Time 2	4.42 (0.06)	4.29 (0.04)	4.20 (0.04)	4.20 (1.05, 1.38)	0.07	0.09		1.05 (0.95, 1.17)	0.05	0.32		0.88 (0.78, 0.99)	0.06	0.05	0.91	
	Time 3	4.27 (0.07)	4.28 (0.04)	4.14 (0.04)	4.14 (0.92, 1.30)	0.09	0.30		1.10 (0.98, 1.24)	0.06	0.12		1.00 (0.85, 1.19)	0.08	0.98		
Behavioral intention ^c	Time 2	14.92 (0.40)	14.44 (0.17)	14.57 (0.11)	1.41 (0.47, 4.26)	0.56	0.54		1.14 (0.74, 1.77)	0.22	0.56		1.52 (0.52, 4.44)	0.55	0.45		
	Time 3	15.17 (0.21)	15.25 (0.13)	15.05 (0.09)	1.14 (0.40, 3.19)	0.53	0.81		1.60 (0.99, 2.58)	0.24	0.06		1.96 (0.72, 5.31)	0.51	0.19		
	Time 2	91.92 (4.05)	80.78 (3.92)	84.93 (2.59)	639.72 (1.29E-006, 3.15E+11)	10.21	0.53		0.03 (1.20E-006, 811.98)	5.19	0.50		2.63E-006 (1.14E-018, 6037111.90)	14.52	0.38		
Percent of condom use ^e	Time 3	86.85 (3.17)	86.40 (2.21)	83.61 (2.23)	16.74 (3.26E-008, 8.61E+9)	10.24	0.78		32.46 (0.00, 429603.64)	4.84	0.47		0.12 (4.05E-014, 3.30E+11)	14.63	0.88		

Note: LFG = low-fidelity group; HFG = high-fidelity group; CG = control group; Time 2 = posttest; Time 3 = 12-month follow-up.

^a Total score (0–24).

^b Item score rated on a 1–4 point Likert scale, 1 = *definitely not* to 4 = *definitely*.

^c Item score rated on a 1–5 point Likert scale, 1 = *definitely not* to 5 = *definitely*.

^d Mean age of first vaginal sex.

^e Item score ranging from 0 to 100, 0 = never use a condom during sex to 100 = always use a condom during sex. Only sexually active participants responded to this question.

differences were observed between the three groups at any time point in terms of first vaginal intercourse and rate of condom use.

4. Discussion

Program implementation evaluation is a relatively new area of research in the international literature (Breitenstein et al., 2010; Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). The goal of the present study was to measure all available fidelity dimensions (dose, adherence, and acceptance) relevant to program efficacy. These three dimensions were then combined into a single variable, with the goal of obtaining a global measure and examining this measure’s relationship to program effectiveness.

The self-reports provided by the facilitators indicated that implementation fidelity was high for all dimensions, even though

only a few adolescents received the maximum level of fidelity. These results are consistent with other program fidelity evaluations (Diclemente et al., 2004; Gallegos, Villaruel, Loveland-Cherry, Ronis, & Zhou, 2008; Villaruel, Jemmott, & Jemmott, 2006). However, these studies were conducted outside of Spain. To date, few studies have evaluated implementation fidelity with school-based programs for reducing risky sexual behaviors among adolescents in Spain (Escribano, Morales et al., 2015; Espada et al., 2015). Specifically, only Escribano, Morales et al. (2015) examined the influence of implementation fidelity on the effectiveness of a sexual risk reduction intervention for Spanish adolescents. It is noteworthy that more than a third of our sample (80.30%) attended the whole program. The dose (number of sessions attended) was high, as our sample was obtained from a scholarly environment, where attendance was compulsory. Concerning protocol

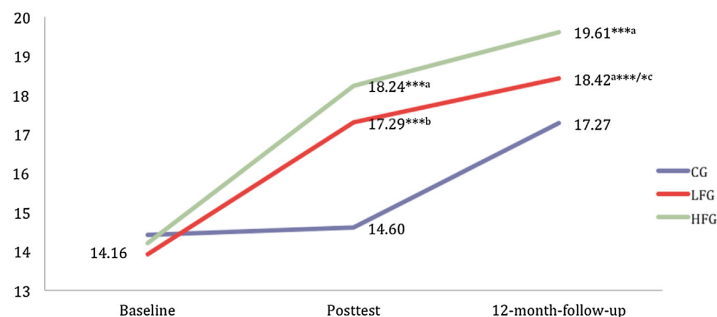


Fig. 2. Knowledge about HIV and other STIs (means) for each period across conditions (total scores ranged from 1 to 24). LFG = low-fidelity group; HFG = high-fidelity group; CG = control group; ^aComparison between HFG and CG; ^bComparison between LFG and CG; ^cComparison between HFG and HLG; * $p < 0.05$; **** $p < 0.001$.

adherence, nearly all participants (98%) complied with the intervention goals. Finally, intervention acceptance was also high, as reflected in adolescents' motivation and participation scores.

In the present study, implementation fidelity was high, which was associated with higher intervention effectiveness. Therefore, identifying aspects that increase implementation fidelity is necessary for achieving maximum intervention effects, commonly applied outside of controlled environments (Mihalic, Fagan, & Argamaso, 2008; Wang et al., 2014). Some variables that affect implementation fidelity include facilitator training, assistance for resolving doubts during implementation, and guidelines for explaining detailed activities (Carroll et al., 2007; Elliott & Mihalic, 2004; Mihalic et al., 2008). COMPAS has a structure that makes it easily replicable without any variations. According to Wang et al. (2014), teacher training protects against activity modifications, which is predictive of intervention efficacy. Thus, appropriate facilitator training could produce favorable implementation results.

Conversely, a study from Sánchez-Martínez et al. (2010), despite a consideration of facilitator factors influencing implementation, revealed lower compliance than was observed within the present study. However, it should be noted that that previous program was carried out by schoolteachers, who likely differentially affect program outcomes when compared with trained facilitators. In addition, Allcock et al. (2012) evaluated the efficacy of an evidence-based program when disseminated without researcher or agency support. The authors concluded that improvements were not equivalent. Thus, facilitator characteristics are likely to significantly impact fidelity (Durlak & Dupre, 2008). To this end, strategies regarding technical assistance, training (Allcock et al., 2012), and facilitator variables should be considered in future research examining program sustainability.

It is useful to validate a categorization system for comparing results between different fidelity levels (Rijsdijk et al., 2011). For this reason, we created a single fidelity variable by using the 80th percentile for each dimension (dose, acceptance, and adherence) with respect to our established protocol. After establishing the dimensions of interest, and how to categorize them into a single variable, we sought to determine the influence of implementation fidelity on COMPAS effectiveness. Results revealed that fidelity influenced program effectiveness, confirming our initial hypothesis. Compared to the LFG, the HFG increased their HIV and other STI (long-term) knowledge, demonstrating a greater intention to engage in safer sexual behaviors (short-term). In a recent study analyzing the mediating effects of COMPAS on self-reported condom use after a 24-month follow-up, we observed that condom use intention was the most important predictor (Escribano, Espada, Morales, & Orgilés, 2015). Therefore, it is important to implement preventive programs with maximum fidelity. No relationship was observed between implementation fidelity and COMPAS effects on sexual behaviors. This may be due to the small percentage of adolescents receiving the intervention who actually reported being sexually active at the 12-month follow-up ($n = 149$, 37.72%). Previous studies on the efficacy of sexual health interventions with Spanish adolescent population, such as Villalbí (2000), informed a similar rate of sexually active in the post-test assessment. Thus, it was only possible to assess mediating variables on sexual behaviors among the sexually active participants. However, as Resnicow et al. (1998) concluded, rates obtained via self-report are usually higher due to social desirability biases, and diminished variability will be observed. Finally, the type of analysis and group distribution may have led to a lack of observed differences.

The present study highlights that when an intervention is applied with lower implementation fidelity, it remains effective at achieving its goals (Ariza et al., 2011). This was exemplified by

statistically significant differences between the LFG and CG on the outcome variables. Compared to the CG, the LFG showed greater improvement in knowledge (short and long-term) and attitudes towards HIV (short-term). According to the information-motivation-behavioral skills model (IBM; Fisher & Fisher, 1992), both variables (knowledge and attitudes) are precursors for sexual behaviors.

A few study limitations should be noted. First, the sample sizes were not equal between the intervention conditions; however, no significant group differences were observed at pre-test, indicating that intervention participants were initially comparable. Second, using self-reports to assess implementation fidelity can increase the possibility of social desirability effects. Although self-reports are advantageous (e.g., fast, simple, and low cost), these measures should be complemented with other methods. This can include an observational component or interviews with facilitators to determine program feasibility, reliability, and validity. Third, future research is necessary for assessing all dimensions representing implementation fidelity using COMPAS in order to capture a more complete picture of this process. To this end, it would be advisable to use incipient publications of theoretical models as guides (Berkel et al., 2011; Carroll et al., 2007; Hasson, 2010). Finally, the study sample is not necessarily considered representative of all Spanish adolescents despite being recruited from five geographical regions. However, even though the current study was conducted at multiple sites across several provinces, there were no significant differences among sociodemographic variables across the study sites ($p < 0.001$).

The present study provides new evidence within the field of sexual health promotion regarding factors influencing program implementation and resultant efficacy. These findings highlight the importance of measuring implementation processes as an essential element for health promotion intervention evaluation.

5. Lessons learned

Overall, the present findings have implications for evaluating and further implementing school-based interventions for promoting healthy sexual habits. The first lesson learned was that regardless of fidelity level, any form of sexual health promotion is better than no intervention at all. Our results indicate that carrying out preventive interventions for sexual health, even if implemented with low fidelity, can improve knowledge and attitudes regarding STI-related issues. Furthermore, when the program is implemented without dosage modifications, adherence, and acceptance (high fidelity), STI knowledge increased, and intentions to engage in safer sexual behaviors were greater when compared to a low fidelity application.

Based on our results, the two most important lessons were: (1) the need to include measures of implementation fidelity when assessing intervention processes, and (2) it is necessary to look deeper into the influence of fidelity on program effectiveness. We revealed factors that may influence COMPAS effectiveness when implemented within a natural context. This information could be relevant for other school-based interventions. Finally, we addressed issues concerning sample size differences across intervention groups. Due to our study characteristics, more research is needed (including long-term monitoring) to determine the influence of implementation fidelity on school-based HIV, other STI, and pregnancy prevention intervention efficacy.

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ESTUDIO 6





**Mediation analysis of an effective sexual
health promotion intervention for spanish adolescents**

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Mediation Analysis of an Effective Sexual Health Promotion Intervention for Spanish Adolescents

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Abstract The objective of this study is to determinate the factors that mediate in the self-reported consistent condom use over the 24-months post-intervention period in adolescents who received COMPAS, a sexual health promotion intervention targeted to Spanish adolescents. Twelve high schools located in Spain were randomized to an intervention or a control group with baseline, immediate-post, 12 and 24-month post-intervention assessments. Self-reported consistent condom use by 24 months post-intervention was the primary outcome. Based on the theory of planned behavior, we identified which theory-based variables mediated the intervention's effect on consistent condom use. Serial multiple mediation analysis indicated that attitudes toward condom use, when there are obstacles to use it, and self-efficacy mediated the COMPAS's effect in increasing consistent condom use. This is the first study that identifies the theoretical constructs that mediate the efficacy of a school-based intervention to promote sexual health in adolescents from Spain.

Resumen El objetivo de este estudio es determinar los factores que median el uso consistente del preservativo en los adolescentes tras 24 meses de haber recibido COMPAS, una intervención para promover una sexualidad saludable dirigida a los adolescentes españoles. Fueron seleccionados 12 centros educativos de España, donde se realizó una evaluación en la línea base, post-implementación, a los 12 y 24 meses de seguimiento. El uso consistente del preservativo fue la conducta final evaluada mediante autoinforme

a los 24 meses de la implementación. Basado en la teoría de la conducta planeada, se identificaron las variables que median el efecto de la intervención sobre el uso consistente del preservativo. El análisis de mediación múltiple indica que las actitudes hacia el uso del preservativo cuando hay obstáculos para su uso y la autoeficacia mediaron el efecto del programa COMPAS en el incremento del uso consistente del preservativo. Éste es el primer estudio que identifica los constructos teóricos que median la eficacia de una intervención de promoción de hábitos sexuales saludables en adolescentes españoles.

Keywords Consistent condom use · Sexual health promotion intervention · Adolescents · Mediation analysis · Theory of planned behavior

Palabras clave Uso consistente del preservativo · Intervención de promoción de la salud sexual · Adolescentes · Análisis de mediación · Teoría de la conducta planeada

Introduction

In Spain, the main route of HIV transmissions are unprotected sexual relations, and young individuals between 15 and 24 years of age represent 11.2 % of recorded cases there [1]. During the last decade, the number of STI diagnoses under epidemiological surveillance has increased [2]. In 2013, the highest infection rate in women between 15 and 24 was for chlamydia trachomatis and herpes simplex virus 1. Neisseria gonorrhoeae rate is highest in men 25–34 years old, followed by the group between 15 and 24 years old [3]. It is estimated that between 80 and 95 % of Spanish adolescents use condoms during their sexual relations; however,

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they do not use them consistently [4–6]. One recent study indicates that only 37 % of Spanish adolescent use condoms every time they engage in sexual relations [7]. Because of this, and despite advances in sexual education, implementing effective prevention programs whose objective is to promote healthy sexual habits, among them consistent condom use, remains necessary.

The COMPAS program (Spanish name: *Competencias para adolescentes con una sexualidad saludable*) is a school-based intervention directed at developing skills for preventing the transmission of HIV/AIDS, other STIs, and unplanned pregnancies. It has shown to be effective in promoting healthy sexuality in several controlled studies. In a first controlled study, COMPAS showed to be effective in increasing the level of knowledge about HIV and the intention to use condoms, and it improved the attitude towards HIV and protection methods in 832 adolescents from 15 schools [8]. Another study concluded that the program's effectiveness was greater when it was applied by experts in sexual health promotion in comparison to trained peer applicators [9]. COMPAS was recently confirmed to be at least as effective 12 months after its application as an evidence-based intervention [10].

The effectiveness of prevention programs is usually evaluated by the impact on mediating variables that predict the final behavior [7, 11]. The theory of planned behavior (TPB) [12], one of the most used to predict health behavior, shows the presence of relationships between intermediate variables and the expected final behavior. In accordance with the TPB, the final behavior is predicted by the intention, whose predictors are perceived norms, the perceived behavior control—equivalent to the concept of self-efficacy proposed by Bandura [13]—and the attitude.

Mediation analyses provide valuable information for learning which variables addressed in the program have greater influence on the expected behavioral change, i.e., which elements are responsible for the success or failure of the interventions; this way, the interventions can adapt and become more effective following their implementation. On the one hand, they provide data on the effects of the intervention on the potential mediators, and the influence of these on the expected final behavior; and on the other, about the indirect effect of the intervention on the behavior by the potential mediators [14, 15]. This perspective permits rigorously assessing the effectiveness of the prevention programs and tests the fit of the data with the theoretical models underlying the intervention [16]. Despite the importance of identifying the mediators of the effectiveness of the interventions, the factors underlying the effectiveness of the COMPAS program in promoting consistent condom use have yet to be learned. The mediation analysis would permit identifying the outcomes that mediate the effect between the intervention and the final

result, as well as those that do not play a relevant role in achieving the objectives.

This work's objective was to examine the effect of variables based on the TPB [12] to increase consistent condom use 24 months after the application of a sexual health promotion intervention in adolescents. In accordance with this model, the attitude, perceived norm, and self-efficacy are precursors of the intention, and in turn, the intention is the best predictor of behavior [17]. Based on the structural model of the TPB, we hypothesize that the intention to use condoms will mediate the effect of other theoretical constructs on self-reported consistent condom use. The results of this study will permit identifying the variables—based on the theory and worked in the intervention—that mediate their effectiveness to increase consistent condom use with respect to a control group.

Methods

Participants

On the baseline, the sample comprised 1121 adolescents aged 14–16 (50.7 % girls; average age = 14.76, $SD = 0.75$). As reported elsewhere [7], the participants were 9th and 10th grade high school students at the beginning of the study. They participated in the trial over a 25-month period that began in January 2012. Of them, 78.1 % reported that their parents were married. Regarding socioeconomic status, 33.4 % belong to a low SES, 58.4 % to a middle SES, and 8.2 % to a high SES. Just over half, 50.5 % ($n = 566$) of the adolescents are sexually active when considering sexual practices that include vaginal penetration, anal sex, and/or oral sex. Most identified themselves as heterosexual (95.5 %), and there were no differences for this variable between the control and intervention groups ($\chi^2 = 3.74$; $p = 0.61$) (Table 1).

Participants were recruited from 12 high schools located in the north, east, and south of Spain. Six of the schools were randomly assigned to the COMPAS group ($n = 622$) with the remaining to the control without intervention condition ($n = 499$). On the baseline, the groups were equivalent in the variables analyzed except for age (COMPAS = 14.70; $SD = 0.71$ vs. control group = 14.84; $SD = 0.78$) ($F = 3.55$; $p < 0.05$) and the percentage reporting to be sexually active (COMPAS = 45 % vs. control group = 57.3 %) ($F = 16.75$; $p < 0.001$) (Table 1). These differences on the baseline were controlled in all analyses.

Measures

The participants were evaluated before implementing the intervention, immediately afterwards, and the effects were

Table 1 Baseline characteristics and reports of consistent condom use by 24-months follow-up of participating Spanish adolescents by experimental condition

Characteristics	COMPAS	Control group	Total	Test statistics ^a
Sample size (<i>N</i>)	622	499	1121	
No. (%) male	322/622 (51.8)	231/499 (46.3)	553/1121 (49.3)	3.32
Mean age (<i>SD</i>), years	14.70 (0.71)	14.84 (0.78)	14.76 (0.75)	3.55**
14 years old	278/621 (44.8)	195/489 (39.9)	473/1110 (42.6)	14.39***
15 years old	247/621 (39.8)	174/489 (35.6)	421/1110 (37.9)	
16 years old	96/621 (15.5)	120/489 (24.5)	216/1110 (19.5)	
No. (%) who have married parents	465/592 (78.5)	368/474 (77.6)	833/1066 (78.1)	0.77
No. (%) family income				
Low	198/622 (31.8)	176/499 (35.3)	374/1121 (33.4)	2.83
Middle	377/622 (60.6)	278/499 (55.7)	655/1121 (58.4)	
High	47/622 (7.6)	45/499 (9)	92/1121 (8.2)	
No. (%) sexual orientation				
Heterosexual	495/520(95.3)	469/490 (95.7)	1060/1110 (95.5)	3.74
Bisexual	19/520 (3.1)	8/490 (1.6)	27/1110 (2.4)	
Gay/homosexual	10/520 (1.6)	13/490 (2.7)	23/1110 (2.1)	
No. (%) sexually experienced	280/622 (45)	286/499 (57.3)	566/1121 (50.5)	16.75***
No. (%) Consistent condom use by 24-month follow up	64/300 (21.3)	25/135 (18.5)	89/435 (20.5)	

SD standard deviation

** $p \leq 0.05$; *** $p \leq 0.001$

^a Significance tested using F test for continuous variables and χ^2 test for categorical variables

monitored at 12 and 24 months. The primary outcome was self-reported consistent condom use at the 24-month follow-up. The potential mediators (M1)—precursors of the intention in accordance with the TPB [12]—were evaluated in the post-test, and the intention of using condoms (M2) was evaluated during the 12-month follow-up.

All provided sociodemographic information including age, sex, sexual orientation (heterosexual, homosexual, and bisexual), and reported about their sexual experience—vaginal penetration, anal sex and/or oral sex, family structure, and socioeconomic status. *The Family Affluence Scale (FAS)* [18] was used, which evaluates a family's economic wellbeing with four items: the number of cars and computers a family possesses, possession of a bedroom by oneself, and the number of family vacation periods taken during the preceding 12 months. Good criteria validity is observed with respect to actual economic indicators such as gross national product ($r = 0.87$).

Knowledge about HIV and STIs was assessed using the *Scale of Knowledge about HIV and other STIs* (ECI, its Spanish acronym for the *Escala de Conocimiento sobre HIV y otras ITS*) [19]. This consists of 24 items distributed in five factors: general knowledge about HIV, knowledge about condoms, knowledge about the transmission routes of STIs, knowledge about prevention, and knowledge about other STIs. There is also a general scale of knowledge about HIV

and other STIs. *True*, *False*, and *I do not know* are the response options for each statement. Item examples include “When a boy/girl has gonorrhoea, treating their partner is unnecessary” and “HIV is transmitted by vaginal and seminal secretions, and blood.” In this sample, the questionnaire showed good internal consistency ($\alpha = 0.84$).

Attitude towards condom use was rated from 1 (*Strongly disagree*) to 5 (*Strongly agree*), evaluated with the 3-item *Attitude towards condom use* subscale from the 12-item *HIV Attitudes Scale for Adolescents* [20]. One item example is, “If I were to have sexual relations and I realized that neither of us possesses any condoms, I would wait to acquire some before maintaining sexual contact.” The subscale reliability with the sample from this study was adequate ($\alpha = 0.76$).

Perceived norm was evaluated with the item, “How frequently do you believe that your peers use condoms in their sexual relations,” with a Likert-type response scale of 1 meaning *Never* and 4 meaning *Always*.

Self-efficacy was evaluated with the *General Self-Efficacy Scale with Spanish adolescents* [21]. It is comprised of 10 items with a 10-point Likert response scale ranging from 1 (*Totally disagree*) to 10 (*Totally agree*). The instrument explains 51.88 % of the explained variance and possesses high internal consistency with this sample ($\alpha = 0.90$).

Sexual risk perception was evaluated with a 3-item scale and a 4-point Likert response scale of 1 meaning *No risk* and 4 meaning *Very risky*. The participants had to indicate how risky they thought vaginal sex without a condom was for having an unwanted pregnancy, in addition to contracting HIV or other STIs (non-HIV). The internal consistency of this scale in this study was good ($\alpha = 0.88$).

Intention towards condom use was evaluated with the item, “I will use a condom during the upcoming 12 months if I have sexual relations,” included in the *intention to acquire, use, and negotiate condom use with a sexual partner* ($\alpha = 0.80$) factor from the 5-item *Scale of intention to engage in safer sexual behavior in the next 12 months*. This used a 5-point Likert response scale with 1 = *Definitely not* and 5 = *Certainly*. Previous studies attest to the good psychometric properties of this scale [7, 10].

Consistent condom use was calculated from responses to the item, “What percentage of the time do you use a condom in your sexual relations?” with a continuous response scale between 0 (*Never*) and 100 (*Always*). Those who indicated using a condom 100 % of the time were categorized in the group that consistently used condoms while the rest were included in the group that did not use condoms consistently. Only those participants who reported to be sexually active responded to this question.

Intervention

COMPAS is a school intervention promoting sexual health and HIV prevention based on the Social Learning Theory [22] and the Information-Motivation-Behavioral Skills model (IMB) [23]. These theoretical models strive to learn the predicting factors of sexual behavior, highlighting social influence, the level of information, attitudes and beliefs, and behavioral intention as precursors. The program’s objectives are to increase the level of knowledge and attitudes related to HIV/AIDS, as well as reduce risky sexual behavior. The main components of COMPAS are transmission of information, social skills training, problem-solving training, and strategies to maintain safer sexual behavior.

The intervention consists of five 50-min sessions during school hours that address the following contents, respectively: (1) *AIDS and Health*: introduction to HIV/AIDS, transmission routes, sexual risk vulnerability, and training on identifying HIV risk behavior; (2) *Knowing AIDS better*: works on knowledge about prevention methods and demystification of erroneous beliefs about sexuality established in adolescents; (3) *Making decisions*: Decision making on condom use and in the affective sexual area through assessment of situations where there are obstacles for acquiring condoms; (4) *Improving your communication about sex*: includes dynamics for training on assertiveness

and communication skills for negotiating condom use and refusing unprotected sex; and (5) *Maintaining your decisions*: includes training on correct condom use, self-instructions, and covert behavior rehearsal. These contents are presented in mixed groups of approximately 15–20 participants via participatory activities, group games, role-playing, and group discussions, encouraging the involvement of each of the adolescents.

Procedure

Authorization was obtained by the ethics committee of the institution responsible for the study. Participating in it were 12 of the 15 schools invited from five Spanish provinces: Alicante, Oviedo, Castellón, Granada, and Murcia, of which six schools had been randomly assigned the COMPAS condition ($n = 622$) and the other six to the control/without intervention group ($n = 499$). The main reason why these 3 schools refused to participate in the study was the incompatibility with other scholar activities. In general, the schools reported high satisfaction and sensitivity with the program because they perceived the need to promote healthy sexual behaviors among adolescents. All of the schools met the criteria of not having applied any sexual health promotion interventions in the year prior, and furthermore, they committed to not hold any during the duration of the project. The participants were assessed before the intervention, immediately after (in 2012), and again after 12 (in 2013) and 24 months (2014).

The application of the intervention, as well as the administration of the questionnaires, was conducted in groups during school hours and this explains the high rate of participation (97 %). There were 5 facilitators (one per province), 2 male and 3 female, (average age = 28.8, range 25–29), qualified university psychologists, with experience and specific training in applying prevention programs in the area of sexuality. Each facilitator received 6 h of training on the COMPAS program to ensure high fidelity in its implementation. A video was shown to them on the application of each of the sessions to a group of adolescents, and online tutorials were scheduled to resolve doubts that arose throughout the fieldwork.

Data Analysis

Statistical analyses were carried out using SPSS Statistics v 20.0. A descriptive analysis of the sociodemographic variables and outcomes was conducted first. ANOVA simple was used to compare the baseline of the quantitative dependent variables, and Chi square (χ^2) for the qualitative variables between the control and experimental groups.

Mediation analyses were performed using the PRO-CESS v 2.12 macro for Windows [24]. The significant

criterion was $p \leq 0.05$, and 5000 samples were used for bias-corrected bootstrap confidence intervals. We conducted serial multiple mediator models using the procedures described by Hayes [24]. The generic model of serial multiple mediation with two mediators was used (Fig. 1). The predictor was a dummy variable contrasting the sexual health promotion intervention (COMPAS) with the control group. The primary outcome was a binary variable, self-reported consistent condom use at the 24-month follow-up. Analyses were controlled for age, being sexually active or not, and baseline measures.

Based on the TPB, we assigned Mediator 1 (M1) as changes in knowledge about HIV and STIs, attitudes towards condom use, attitudes towards condom use when barriers exist, sexual risk perception, self-efficacy, and perceived norms; Mediator 2 was assigned (M2) as a change in the intention to use condoms. Three indirect effects are estimated in serial multiple mediation models as products of regression weight linking X to Y through M1 (Ind 1), M2 (Ind 3), and M1 and M2 (Ind 2) [24].

According to previous studies evaluating HIV risk-reduction intervention [25], separate mediation analyses were conducted for each potential mediator using a product-of-coefficient approach [26]. Path α demonstrates the effect of the intervention on the potential mediators (M1); path β shows the effect of the potential mediators (M1) on the intention to use condoms mediator (M2); path c evaluates the effect of the intention to use condoms (M2) on the outcome (Y), consistent condom use. The mediation was determined by testing whether the indirect effects are statistically different from zero.

Results

Mediation

Table 2 shows the averages and standard deviations of the outcomes in each evaluation: baseline, post, 12-month follow-up, and 24-month follow-up in the intervention and

Fig. 1 Serial multiple mediation model with two mediators. X independent variable, Y dependent variable, M1 mediators, M2 mediator 2; a1, a2, b1, b2, d21, c' Regression coefficients

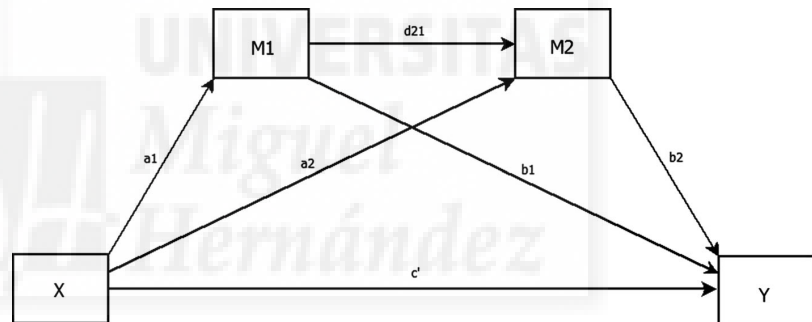


Table 2 Self-reported consistent condom use and potential mediators by intervention condition and assessment period, Spain, 2012–2014

	Baseline		Post		12 months		24 months	
	COMPAS (N = 622)	Control (N = 499)	COMPAS (N = 519)	Control (N = 415)	COMPAS (N = 400)	Control (N = 321)	COMPAS (N = 300)	Control (N = 135)
Outcome no. (%)								
Consistent condom use	62 (9 %)	64 (10.5 %)	–	–	67 (45.9)	49 (33.8)	100 (23.2)	36 (17.8)
Potential mediator mean (\pm) SD								
HIV and STIs knowledge	6.36 (2.15)	6.72 (2.16)	6.98 (3.13)	6.03 (2.89)	17.33 (3.28)	15.80 (3.55)	15.84 (2.55)	14.76 (2.99)
Attitude toward condom use	13.09 (2.31)	13.05 (2.56)	13.83 (2.36)	13.26 (2.53)	13.71 (2.13)	13.35 (2.46)	14.02 (2.27)	14 (2.27)
Attitude toward condom use when barriers exist	9.50 (2.16)	9.30 (2.23)	9.96 (2.23)	9.31 (2.26)	9.88 (2.07)	9.32 (2.26)	9.78 (2.29)	9.94 (2.13)
Sexual risk perception	10.45 (2.07)	10.53 (2.07)	10.71 (1.98)	10.48 (2.14)	10.85 (1.71)	10.58 (2.01)	11.01 (1.69)	10.88 (1.77)
Self-efficacy	69.57 (15.48)	68.78 (16.46)	72.41 (14.82)	68.22 (14.71)	–	–	74.78 (11.97)	72.49 (11.84)
Perceived norms	2.04 (0.83)	2.03 (0.81)	2.01 (0.79)	2.07 (0.79)	1.93 (0.74)	2.11 (0.78)	1.98 (0.73)	1.98 (0.73)

control groups. As Table 3 shows, the intervention had a significant impact on 4 of the 6 outcomes: knowledge about HIV and other STIs ($ACI = 0.23, 1.28; p < 0.005$), attitude towards condom use ($ACI = 0.19, 1.10; p < 0.05$), attitude towards condom use when barriers exist for their use ($ACI = 0.09, 0.90; p < 0.05$), and self-efficacy ($ACI = 1.26, 6.85; p < 0.005$). However, the intervention did not have a significant impact on the perceived norm ($ACI = -0.28, 0.02; p = 0.11$) or the perception of risk ($ACI = -0.11, 0.60; p = 0.19$).

Path β shows the existing relationship between the outcomes and the intention to use condoms. The results show that four of the six outcomes had a significant statistical impact on the intention to use condoms: attitude towards condom use when barriers exist for their use ($ACI = 0.001, 0.07; p < 0.05$), perception of risk ($ACI = 0.003, 0.08; p < 0.05$), self-efficacy ($ACI = 0.00, 0.01; p < 0.05$), and perceived norm ($ACI = -0.23, -0.05; p < 0.005$). In all the models analyzed, path γ shows that the intention to use condoms at 12 months was related to consistent condom use at 24 months.

The intervention did not have an indirect impact on consistent condom use through the level of knowledge ($Ind\ 1 = -0.002; ACI = -0.07, 0.05$), attitude towards condom use ($Ind\ 1 = 0.03; ACI = -0.01, 0.14$), attitude towards condom use when barriers exist for their use ($Ind\ 1 = 0.04; ACI = -0.008, 0.15$), perception of risk ($Ind\ 1 = -0.01; ACI = -0.08, 0.01$), self-efficacy ($Ind\ 1 = -0.004; ACI = -0.08, 0.07$), or perceived norm ($Ind\ 1 = -0.001; ACI = -0.05, 0.03$).

The intervention positively affected consistent condom use indirectly through the attitude towards condom use when barriers exist (M1) in serial with the intention to use condoms (M2) ($Ind\ 2 = 0.03; ACI = 0.002, 0.12$). Additionally, the intervention had a significant impact on consistent condom use indirectly through self-efficacy (M1) in serial with the intention to use condoms (M2) ($Ind\ 2 = 0.03; ACI = 0.002, 0.12$).

Indirect effects through the intention to use condoms mediator were significant in four of the six models analyzed: attitude towards condom use ($Ind\ 3 = -0.27; ACI = -0.69, -0.01$), attitude towards condom use when barriers exist ($Ind\ 3 = -0.30; ACI = -0.71, -0.04$), self-efficacy ($Ind\ 3 = -0.28; ACI = -0.70, -0.008$), and perceived norm ($Ind\ 3 = -0.26; ACI = -0.69, -0.01$). For the models that included the variables of knowledge about HIV and other STIs (M1) and perception of risk (M1), no indirect effect of the intervention on consistent condom use through the intention of condom use (M2) was observed, ($Ind\ 3 = -0.25; ACI = -0.68, 0.02$) and ($Ind\ 3 = -0.26; ACI = -0.68, 0.02$), respectively.

It is noteworthy that even though the intervention had no impact on the perceived norm or the perception of risk,

path β shows that the adolescents who perceive that their peers use condoms more frequently in their sexual relations and/or those who perceive that unprotected sex involves a greater risk for contracting HIV/STIs or unwanted pregnancies had firmer intentions to use condoms during sex, which was related with the self-reported consistent condom use ($ACI = 1.04, 2.33; p < 0.005$) ($ACI = 1.06, 2.36; p < 0.001$), respectively. In contrast, the intervention increased the level of knowledge about HIV and other STIs. However, possession of greater levels of knowledge about HIV and other STIs was not related with the intention of using condoms (path β) ($ACI = -0.01, 0.04; p = 0.29$) or with consistent condom use ($Ind\ 2 = 0.01; ACI = -0.01, 0.08$).

Discussion

The present study confirms the positive changes produced by COMPAS in the short term for increasing the level of knowledge about HIV and other STIs, the attitude towards condom use along with when barriers exist for their use, and self-efficacy. These results are consistent with previous studies evaluating the short-term effectiveness of COMPAS [7, 8] and subsequent to 12 months after its application [10], except in the perception of sexual risk. Espada [4] found that COMPAS increases the perception of risk in its participants with respect to a control group. However, the effect size of this inter-group difference was small ($d = 0.11$) [27]. Other studies, such as that by Baumler [14], found inconsistencies between the evaluation study and the results from the mediation, and they justify them by the use of a different type of analysis.

In accordance with the TPB [12], the results show that the attitude towards condoms when difficulties exist for their use, the perceived norm of condom use by peers, and self-efficacy were precursors of the intention to use condoms, which stands out by being the variable with the greatest capacity to influence consistent condom use. Other variables, such as the level of knowledge of condom use and the attitude towards condoms, were not related with the intention to use this method of protection.

The perceived norm was the most influential variable on the intention, just as in other studies [28]; however, COMPAS did not have a significant short-term impact on this precursor. This unexpected result can be explained by several reasons. On the one hand, COMPAS was implemented by experts in sexual health promotion, rather than peers who can change the perception of peers' condom use. On the other hand, participants' close friends outside the school environment did not receive the intervention, so it would not be expected that participants' close friends increase condom use after the intervention. Consequently,

Table 3 Mediation analysis of intervention effect of COMPAS compared with a control group on self-report of consistent condom use by the 24-month follow-up among adolescents from Spain

Potential mediator	Effect of the intervention on the potential mediator			Effect of the potential mediator on condom use intention			Effect of the condom use intention on consistent condom use			Indirect effect of the potential mediator on consistent condom use 24-months post-intervention		
	α path ^a (SE)	95 % CI	P value	β path ^b (SE)	95 % CI	P value	c path ^c (SE)	95 % CI	P value	Ind 1 ^d [ACI] ^e	Ind 2 ^e [ACI] ^e	Ind 3 ^f [ACI] ^e
HIV and STIs knowledge	0.75 (0.26)	0.23, 1.28	0.004	0.01 (0.01)	-0.01, 0.04	0.292	1.78 (0.32)	1.13, 2.42	0.000	-0.002	0.01	-0.25
Attitude toward condom use	0.65 (0.23)	0.19, 1.10	0.005	0.003 (0.01)	-0.02, 0.03	0.814	1.70 (0.33)	1.05, 2.35	0.000	[-0.07, 0.05]	[-0.01, 0.08]	[-0.68, 0.02]
Attitude toward condom use when barriers exist	0.49 (0.20)	0.09, 0.90	0.015	0.03 (0.01)	0.001, 0.07	0.041	1.69 (0.33)	1.04, 2.34	0.000	[-0.01, 0.14]	[-0.02, 0.05]	[-0.69, -0.01]
Sexual risk perception	0.24 (0.18)	-0.11, 0.60	0.188	0.04 (0.02)	0.003, 0.08	0.033	1.71 (0.33)	1.06, 2.36	0.000	0.04	0.03	-0.30
Self-efficacy	4.06 (1.42)	1.26, 6.85	0.004	0.005 (0.002)	0.00, 0.01	0.048	1.70 (0.33)	1.04, 2.35	0.000	[-0.008, 0.15]	[0.002, 0.12]	[-0.71, -0.04]
Perceived norms	-0.13 (0.08)	-0.28, 0.02	0.109	-0.14 (0.04)	-0.23, -0.05	0.002	1.69 (0.33)	1.04, 2.33	0.001	-0.01	0.01	-0.26
										[-0.08, 0.01]	[-0.005, 0.09]	[-0.68, 0.02]
										-0.04	0.03	-0.28
										[-0.08, 0.07]	[0.002, 0.12]	[-0.70, -0.008]
										-0.001	0.03	-0.26
										[-0.05, 0.03]	[-0.004, 0.11]	[-0.69, -0.01]

Statistically significant results are given in bold

^a The α path is the COMPAS's effect on each potential mediator

^b The β path is the effect of the potential mediator on condom use intention

^c the c path represents each potential mediator's relation to the outcome, controlling for the intervention effect

^d Ind 1 = X - M1 - Y

^e Ind 2 = X - M1 - M2 - Y

^f Ind 3 = X - M2 - Y

^g Asymmetric Confidence Interval based on Bootstrap method with 5000 replicates. The mediation analyses were adjusted for baseline differences between COMPAS and the control group, gender, age, baseline value of the mediator and school

the participants' perception of peers' condom use remained over time [25]. The inclusion in the program of specific activities to modify perceived norms, such as group dynamics that encourage participants' expressions and opinions about condom use, could contribute to improve the participants' perception of peers' condom use [29]. Unlike the TPB—which indicates that self-efficacy/perceived control may have a direct/indirect impact on the behavior—the variables analyzed were not directly related with consistent condom use after 24 months without mediating through the intention.

Mediation analyses show that self-efficacy and the attitude towards condoms when barriers exist mediate the relationship between the COMPAS program, the intention to use condoms, and consistent condom use 24 months after application of the program. A large number of studies that analyze the effect of the theoretical constructs as mediators of the effectiveness of sexual risk reduction interventions highlight self-efficacy as one of the main variables involved in the success of the intervention [25, 30–33]. These results are consistent with the TPB [12], which shows the perception of control—equivalent to the concept of self-efficacy by Bandura [22]—as a precursor of the intention and with a direct effect on the final behavior. In one recent study, the perceived control shows to be the best predictor of the intention to use condoms (effect coefficient = 0.36; $p < 0.01$) [34]. In this study, the attitude towards condom use when there are obstacles to use and self-efficacy were the variables with the greatest indirect effect on consistent condom use through intention. However, the results suggest that the impact of the intervention on the intention would be sufficient to produce a change in behavior.

The suitability of the activities that promote the intention to use condoms, self-efficacy, and the attitude to promote condom use is confirmed, especially when barriers exist for their use (for example, having a sexual partner who refuses to use condoms, the unavailability of condoms at the time of the sexual activity, etc.). However, we recommend reviewing the content of COMPAS in order to strengthen the components of perceived norm and perception of risk due to their contribution to increasing the intention of using condoms. Mackinnon [15] recommends assessing the variables more precisely in order to identify the real changes resulting from the intervention. Studies like that of Jemmott [29] point to the importance of the perceived norm to produce a change in behavior; this is despite the intervention that they test not having a significant effect on this variable, just like our results show. Jemmott proposes including close friends of the participants in the study to achieve a significant change in the perceived norm.

No indirect effect was observed between the level of knowledge about HIV and other STIs on condom use, nor

through the intention towards using condoms. This explains the ineffectiveness of programs whose objectives are directed exclusively at increasing the level of information in the sexual field [35]. These results suggest that knowledge is not sufficient for producing a long-term behavioral change [36].

This study has important implications for the promotion of sexual health in adolescents. Its results permit identifying the mechanisms involved in the effectiveness of COMPAS for increasing consistent condom use 24 months subsequent to its application. In Spain, COMPAS is the only school intervention promoting sexual health whose effectiveness has been proven in different controlled studies with samples from different geographical areas [8, 9], and its effects have been evaluated at 12 [10] and 24 months [Espada et al., unpublished]. To our knowledge, this is the first study to identify the indirect effects of a school intervention—directed at Spanish adolescents—to promote consistent condom use from the theoretical approach of the TPB.

The present study has some limitations. The intervention's effect was basically assessed with a self-report. Using biological measures, such as the serostatus for HIV, syphilis, or gonorrhoea might have strengthened confidence in the results. Although the study involved a large sample from a varied geographical origin with the experimental conditions assigned randomly, the participating schools were not recruited by representative sampling, so generalizations must be made with caution. Another limitation is that mediation analyses imply correlation; experimental studies with manipulation of the variables under study would be necessary to be able to conclude causality [15].

It is concluded that the attitudes adolescents hold about condom use when barriers exist for using them, self-efficacy, and the intention to use condoms are key elements in the effectiveness of the COMPAS program for increasing the consistency in using condoms in Spanish adolescents. The intention to use condoms is the most relevant variable, since it by itself mediates the effect of the intervention on consistent condom use 24 months after the application of the intervention. Therefore, all efforts should be directed at strengthening activities that promote the intention of using condoms, as a positive impact on this variable is sufficient to demonstrate more long-term consistent condom use in Spanish adolescents.

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DISCUSIÓN





Discusión

El *primer objetivo* responde a la necesidad de analizar la situación de los últimos años respecto a las conductas sexuales de riesgo en los adolescentes y jóvenes para contraer una ITS o tener un embarazo no planificado, así como sus variables precursoras - según modelos teóricos de conductas de salud (Ajzen, 1991; Fisher & Fisher, 1992) -, como el nivel de conocimiento y la actitud; además de analizar las diferencias de género. Es necesario conocer la situación de los factores protectores y de riesgo sexual de los adolescentes para diseñar intervenciones eficaces, que reduzcan la incidencia de ITS y de embarazos no planificados. Para este propósito se llevó a cabo un estudio en diferentes zonas geográficas de España donde se compararon dos cohortes evaluadas en 2006 ($n = 1,222$) y 2012 ($n = 910$). Se hipotetizó que, respecto a la cohorte de 2012, los adolescentes de la cohorte más reciente tendrían mayor nivel de conocimientos, una actitud más favorable y un comportamiento sexual de protección hacia las ITS, debido principalmente al aumento de actividades y programas sobre promoción de la salud sexual en el ámbito escolar y comunitario (Secretaría del Plan Nacional sobre el Sida y Ministerio de Sanidad, Servicios Sociales e Igualdad, 2010; ONUSIDA, 2012). Por otro lado, se esperaba encontrar diferencias de género, concretamente puntuaciones más favorables por parte de las mujeres en las variables actitud hacia el VIH/sida y conducta sexual en general, excepto un menor uso del preservativo y nivel de conocimientos, como indican estudios recientes (Bermúdez et al., 2012; Faílde, Lameiras, & Bimbela, 2008; Muñoz-Silva et al., 2009; Teva et al., 2009).

Los resultados muestran un aumento de los factores sexuales que ponen en riesgo para contraer una ITS y/o embarazo no planificado. Se observa un menor nivel de conocimientos sobre el VIH y otras ITS en la cohorte más reciente, concretamente en los

contenidos que hacen referencia a las vías de transmisión del VIH y los métodos de prevención. Con respecto a la actitud hacia el VIH, los datos muestran una disminución de manera general y para la mayoría de las dimensiones evaluadas – actitud hacia el uso del preservativo con y sin obstáculos, y hacia las personas que viven con el VIH –, con independencia del género. Esta tendencia decreciente también la encontraron otros estudios del entorno europeo, como el de Ramiro, Reis, de Matos y Diniz (2013), que evalúa la evolución de comportamiento sexual en 10,587 adolescentes y jóvenes portugueses entre 2002 y 2010. El modelo IMB de Fisher y Fisher, (1992) concluye que el conocimiento y la motivación, estando este último factor motivado por las actitudes, son determinantes del comportamiento por medio de las habilidades conductuales. Por su parte, la TCP de Ajzen (1991) afirma que la conducta final está modulada, entre otras variables, por la actitud, que a su vez está influida por la información que posee el individuo y sus creencias.

En relación a las variables comportamentales, cabe prestar atención a una disminución en el debut sexual para ambos sexos y una mayor proporción de adolescentes refieren tener varias parejas sexuales, en consonancia con las conclusiones aportadas a nivel europeo por Calatrava et al. (2012) en una revisión sistemática que evalúa el periodo 2007-2010. Ambas conductas están directamente relacionadas entre ellas y con una mayor probabilidad de contraer una ITS (de Sanjosé et al., 2008; Espada, Morales, & Orgilés, 2014; Olesen et al., 2012; Shrestha, Karki, & Copenhaver, 2016). Los hallazgos del estudio de Espada et al., (2014) con muestra española, sugieren que un debut sexual temprano constituye un factor relacionado con el riesgo sexual, explicado por un déficit en el uso del preservativo y la exposición a las relaciones sexuales durante un periodo más extenso.

Con respecto a los métodos de prevención, es preciso analizar la evolución de las cohortes con una perspectiva de género. Por un lado, se observa en la cohorte más reciente,

un mayor porcentaje del uso del preservativo en el grupo de chicos con respecto a la cohorte de 2006; sin embargo, las chicas mantienen estable sus métodos de prevención a lo largo del tiempo. Por otro lado, cuando se evalúan las diferencias por sexo en diferentes momentos temporales, los datos reflejan que las chicas utilizan menos el preservativo a favor de métodos anticonceptivos, como la píldora, en la cohorte más reciente; mientras que en la cohorte 2006 no se presentaban esas diferencias. Estos resultados son congruentes con los datos actuales de la literatura internacional, que informan de un menor porcentaje de uso del preservativo y un mayor uso de métodos anticonceptivos hormonales en las mujeres (Kann et al., 2016). Por ello, es conveniente prestar atención a la mayor vulnerabilidad que presentan las chicas ante cualquier ITS, siendo necesario continuar analizando las barreras que interfieren en el uso del preservativo en los chicos y las chicas. Faílde et al. (2008) sugieren que las mujeres tienden a sustituir el preservativo por otros métodos anticonceptivos, al disminuir la percepción de riesgo ante una mayor proporción de relaciones con parejas estables.

Este primer estudio identifica una tendencia creciente al riesgo sexual en los adolescentes españoles relacionada con un menor nivel de conocimientos y actitud hacia el VIH, un debut sexual más temprano y mayor promiscuidad sexual. Estos resultados destacan la necesidad de tener en cuenta los factores protectores y de riesgo actuales para diseñar intervenciones de promoción de la salud sexual eficaces.

Sin embargo, hasta donde llega nuestro conocimiento, no se han analizado de manera cuantitativa la eficacia de los programas de promoción de hábitos sexuales saludables desde el año 2008 a nivel internacional, con el fin de conocer cuáles son los factores protectores del riesgo sexual que logran un impacto tras implementar las intervenciones. Es de gran utilidad contar con nuevas evidencias que nos guíen para lograr la mayor efectividad entorno

a los programas de prevención. Por ello, el *segundo objetivo* de la presente tesis consistió en evaluar el impacto global de las intervenciones de promoción de hábitos sexuales saludables dirigidas a los adolescentes, y examinar los moderadores que influyen en el incremento del uso del preservativo a largo plazo, como indicador de eficacia de las intervenciones. Para este objetivo se llevó a cabo un meta-análisis a nivel internacional durante el periodo 2008-2016, en el que se evaluaron a corto y largo plazo variables psicosociales – conocimiento relacionado con la salud sexual, actitud hacia el preservativo y métodos de protección, norma subjetiva, autoeficacia hacia el uso del preservativo, comunicación sobre sexualidad con la familia y la pareja sexual e intención del uso del preservativo y rechazo de mantener relaciones sexuales –, conductuales – uso del preservativo –, y biológicas como la incidencia de ITS y embarazos.

A partir de los datos se puede concluir que las intervenciones de prevención del riesgo sexual tienen efecto en todas las variables evaluadas a corto plazo, excepto en norma subjetiva. Esto sugiere que la norma subjetiva es un elemento que necesita ser revisado y mejorado para lograr efecto a través de la aplicación de intervenciones, debido a su importancia como precursor de la conducta a través de la intención, de acuerdo con la evidencia que muestran meta-análisis que evalúan los modelos teóricos para predecir el uso del preservativo (Albarracín, Johnson, Fishbein, & Muellerleile, 2001; Van den Putee, Hoogstraten, & Meertens, 1991).

Los efectos a largo plazo observados en la mayoría de las variables evaluadas no se mantienen a lo largo del tiempo, excepto en conocimiento y el uso del preservativo. Esto sugiere que las variables precursoras del uso del preservativo decaen con el paso del tiempo (Johnson et al., 2011; Noar et al., 2009), incluso para el nivel de conocimiento, debido a que se observa una disminución del tamaño del efecto para esta variable. Sin embargo, no se

pueden obtener datos concluyentes acerca del impacto a largo plazo de las intervenciones por el déficit de su monitorización – 26 de los 64 estudios informan de los efectos a largo plazo –, la ausencia de medidas unificadas, así como los bajos porcentajes de participantes que informan ser sexualmente activos (entorno al 37% de la muestra aproximadamente). Consistentemente, von Sadovszky et al. (2014) en su revisión de meta-análisis concluye que no es posible obtener conclusiones claras con respecto a los efectos a largo plazo. Malow, Kershaw, Sipsma, Rosenberg y Dévieux (2007), en una revisión de intervenciones preventivas del VIH en adolescentes, indican que los estudios suelen limitarse a la evaluación a corto plazo por las bajas tasas de retención de los participantes que dificultan el seguimiento de los efectos. Además, también ponen de manifiesto la ausencia de medidas biológicas como indicadores objetivos de la eficacia de los programas, coincidiendo con los resultados hallados en nuestro estudio. Por otro lado, según nuestro meta-análisis, que incluye intervenciones disponibles entre 2008 y 2016, se observa que el tamaño del efecto sobre la promoción del uso del preservativo es mayor en las intervenciones aplicadas más recientemente. Esto podría sugerir que se han mejorado en la época actual los componentes abordados en las intervenciones y que están directamente relacionados con el uso del preservativo.

Se puede concluir que las intervenciones son eficaces para aumentar el uso del preservativo a largo plazo, estando moderado su impacto por las características de la muestra y de la intervención, y de la metodología de la evaluación. En cuanto a las características de la muestra y la intervención, las intervenciones muestran mayor eficacia cuando: 1) el país tiene un mayor índice de desarrollo humano (HDI), 2) el centro educativo es el contexto de aplicación, resultados que coinciden con otros estudios (Llivana, Suelves, & Puegdollers, 2008; Monsalve, 2012), 3) las intervenciones utilizan metodología participativa frente a

métodos pasivos de aprendizaje del uso del preservativo, como concluyen diversos meta-análisis (von Sadvoszky et al., 2014; Petrova & García-Retamero, 2015; Protogerou & Johnson, 2014;), 4) se aplica una doble estrategia: el retraso de la edad de inicio en las relaciones sexuales y la promoción del uso del preservativo, y 5) los padres no están incluidos en la aplicación del programa. von Sadvoszky et al. (2014) concluyeron que las intervenciones centradas únicamente en la abstinencia no fueron efectivas en promover comportamientos abstinentes. Nuestros resultados no deberían de considerarse contradictorios a la literatura científica, ya que los datos observados incluyen como más eficaces a aquellas intervenciones que incluyen doble estrategia, retrasar las relaciones sexuales en los que todavía no han debutado sexualmente y aumentar el uso del preservativo entre los activos sexualmente. Teniendo en cuenta la metodología, se observa una mayor eficacia en las intervenciones evaluadas en estudios: 1) que aleatorizan los participantes a las condiciones experimentales, como sugiere Protegerous y Johnson (2014), 2) que no incluyen grupo control (evaluación intragrupo) a diferencia de las conclusiones del meta-análisis de Protogerous y Johnson (2014), y 3) que aplican una intervención alternativa al grupo control no relacionada con la promoción de la salud sexual. El segundo punto mencionado puede explicarse por una sobreestimación de los efectos cuando sólo se realiza comparación intragrupal (evaluación pre-post). Los efectos observados antes y después de una intervención evaluada en un estudio no controlado no pueden ser atribuidos exclusivamente a la propia intervención, sino que pueden ser fruto de factores contextuales y madurativos de mejora espontánea de los participantes (Campbell & Stanley, 1966).

El *tercer objetivo* fue desarrollar un nuevo instrumento que evaluara las barreras percibidas por los adolescentes hacia el uso del preservativo, debido a la ausencia de herramientas específicas, con adecuadas propiedades psicométricas, para su evaluación en el

contexto español. El presente estudio se plantea a partir de los datos obtenidos en anteriores trabajos y la evidencia de vacío en la literatura sobre este tema que está relacionado con dos conceptos: el porcentaje del uso del preservativo y la actitud hacia el preservativo. En primer lugar, los estudios actuales conducidos en el contexto español informan de porcentajes de uso del preservativo mayores que los obtenidos en otros países europeos, tanto si se pregunta por su uso habitual como en el último encuentro sexual (Currie et al., 2012; Ramiro et al., 2015). Y según queda reflejado en el estudio de cohortes de la presente tesis, los datos de 2012 sobre el porcentaje de uso del preservativo en los últimos seis meses son mayores en comparación con la cohorte 2006; lo que puede ser explicado por un incremento del uso de este método de protección por parte de los chicos. Sin embargo, se hallan diferencias de género en la cohorte más reciente sobre los métodos de protección. Concretamente, las chicas utilizan un 13% menos el preservativo a favor de elegir la píldora o incluso no protegerse, cuando se compara con los chicos. Por otro lado, son alarmantes las cifras tan elevadas de uso inconsistente del preservativo en adolescentes españoles (Espada et al., 2015), lo que incrementa el riesgo de contraer ITS y embarazos no planificados. Mantener relaciones sexuales sin protección es la primera causa de los nuevos diagnósticos del VIH (Centro Nacional de Epidemiología, 2016).

Por otra parte, de acuerdo con los resultados del meta-análisis llevado a cabo en la presente tesis, las intervenciones logran mejorar la actitud hacia los métodos de protección a corto plazo, pero el efecto decrece a lo largo del tiempo. Y en la evaluación de la situación sobre las conductas sexuales de riesgo y sus factores relacionados, se observa una disminución de la actitud favorable hacia el uso del preservativo cuando se comparan los años 2006 y 2012, independientemente del género. Las creencias e ideas positivas hacia el preservativo son claves para la construcción de actitudes positivas hacia el mismo. Las

barreras que tienen los adolescentes y jóvenes hacia el uso del preservativo, definidas y evaluadas como creencias (Lameiras, Rodríguez, Calado, & González, 2003), debería ser consideradas como un componente importante a tener en cuenta en las intervenciones de prevención, debido a su relación con la construcción de las actitudes (Ajzen, 1991), y estas últimas a su vez con el porcentaje del uso del preservativo (Doyle et al., 2009; Stulhofer et al., 2007; Teva, Bermúdez, & Ramiro, 2014).

Por todo ello es necesario contar con instrumentos validados que evalúen las creencias y barreras hacia el preservativo en los más jóvenes, y así poder diseñar intervenciones que incidan sobre los motivos relacionados para no usar el preservativo y mejorar la actitud hacia los mismos. El instrumento final, la *Escala de Barreras hacia el uso del Preservativo para Adolescentes (CUBS-A)*, está compuesto por 15 ítems con una estructura de 4 factores extraídos mediante el método de extracción factorización de ejes principales y rotación oblimín: (1) habilidades de negociación, (2) factor sensaciones percibidas, (3) aspectos negativos del preservativo, e (4) interrupción de la experiencia sexual; estando todos interrelacionados entre sí. El análisis factorial confirmatorio reveló que la estructura inicial muestra un buen ajuste de los datos al modelo ($NNFI = 0.93$, $CFI = 0.95$, $IFI = 0.95$, $RMSEA = .04$). La consistencia interna fue elevada, con un alpha ordinal de 0.86 para la escala total y superiores a 0.7 en los factores, excepto para el factor 3 con una alpha ordinal de 0.63, explicado debido al bajo número de ítems incluidos en la dimensión (Lowe.

La validez concurrente del instrumento se evaluó con dos constructos: actitud hacia el uso del preservativo y el porcentaje de uso del preservativo, para el total de la muestra y por género. La variable actitudinal fue evaluada mediante la subescala “*Actitud hacia el uso del preservativo*” de la escala validada con población adolescente española “*Actitud hacia el*

VIH para adolescentes” (HIV-AS; Espada et al., 2013). Ambas variables muestran correlaciones positivas con el total de la escala, lo que sugiere que una menor percepción de barreras hacia el preservativo se relaciona con una mejor actitud hacia su uso y más probabilidad de usarlo durante la relación sexual, lo que confirma los resultados hallados en otros estudios (Doyle, et al., 2009; Stulhofer et al., 2007; Teva et al., 2014). En cambio, se observa una menor asociación de las dimensiones y la puntuación total de la escala con la variable actitudinal, que fue evaluada tanto en participantes que informaron ser sexualmente activos como los que no. Por ello, se concluye que la escala evalúa con mayor validez las barreras hacia el uso del preservativo en los adolescentes que ya son sexualmente activos, probablemente porque ya han podido experimentar las dificultades que presentan durante las relaciones sexuales.

Por último, se examinaron las barreras percibidas para el total de la muestra desde una perspectiva de género, hallándose diferencias en la mayoría de las dimensiones. Las chicas informan en mayor proporción de barreras hacia el uso del preservativo relacionadas con aspectos emocionales, como la vergüenza al comprarlos o utilizarlos con respecto a los chicos. No obstante, el factor sensaciones percibidas fue el único de las dimensiones que no estuvo relacionado con el uso del preservativo en las chicas. Esto puede ser explicado por los roles de género presentes en la sociedad en las cuestiones de sexualidad, donde las chicas no suelen responsabilizarse de comprar preservativos y colocárselos a su pareja (García-Vega, Menéndez, Fernández, & Cuesta, 2012). Otros estudios reflejan también un menor empoderamiento de la mujer en la toma de decisiones con respecto al uso del preservativo (Lee, Cintron, & Kocher, 2014; Teitelman, Tennille, Bohinski, Jemmott, & Jemmott, 2011); siendo congruentes estos resultados con nuestro estudio, debido a la relación entre un menor uso del preservativo de las chicas cuando perciben las habilidades de negociación como una

barrera. Por otro lado, los chicos utilizan en menor porcentaje el preservativo cuando identifican aspectos negativos del preservativo y/o cuando este método de protección interfiere con el placer. Es imprescindible atender a las diferencias de género en los programas de promoción de la salud sexual con el fin solventar las dificultades que perciben de manera diferente chicos y chicas hacia el uso del preservativo, y así mejorar su porcentaje de utilización en las relaciones sexuales. Protogerou y Johnson (2014) encuentran que las intervenciones son más eficaces cuando son adaptadas al género, y para ello es necesario conocer previamente las desigualdades de género antes de intervenir específicamente. Por lo que los resultados de nuestro estudio pueden ser valiosos para el diseño de intervenciones de promoción de la salud dirigidas por un lado a las chicas, y por otro lado a los chicos.

Queda reflejada tras la revisión de la literatura española la escasez de evaluaciones rigurosas y controladas de intervenciones de promoción de hábitos sexuales saludables y/o de prevención del VIH (Espada, Morales, et al., 2013). Por ello, el *cuarto objetivo* se centró en aportar evidencia sobre la eficacia del programa *Competencias para adolescentes con una sexualidad saludable* (COMPAS) a largo plazo, así como otros aspectos relacionados con el proceso de evaluación de la intervención: las variables mediadoras de sus efectos a largo plazo y la relación entre la fidelidad de la implementación y su eficacia.

El cuarto estudio consistió en examinar el mantenimiento de los efectos a los 24 meses tras la intervención en comparación con otro programa, *¡Cuidate!*, –diseñado y validado en población adolescente latina (Villarruel, Jemmott, & Jemmott, 2005; Villarruel, Jemmott, & Jemmott, 2006) y considerado de eficacia probada por los Centers for Disease Control and Prevention (2013)–, y un grupo control sin intervención. El programa COMPAS ha demostrado ser eficaz a corto plazo para incrementar el nivel de conocimientos sobre VIH y otras ITS, promover una actitud más favorable hacia el VIH en general, mejorar la

autoeficacia y la percepción de riesgo sexual y mantener una elevada intención de usar el preservativo si se mantienen relaciones sexuales (Espada et al., 2015). Tras 12 meses de su aplicación, se mantuvieron los efectos observados a corto plazo (postest) en las variables de conocimientos y actitudinales (Morales et al., 2015). Además, se observaron también efectos sobre la percepción normativa y un aumento de la edad media de inicio en las relaciones sexuales con penetración vaginal, efectos no observados a corto plazo (Espada et al., 2015). A partir de los resultados observados en el meta-análisis de la presente tesis y la evaluación de otras intervenciones (Peragallo, Gonzalez-Guarda, McCabe, & Cianelli, 2012) se hipotetizó que habría una disminución del efecto en las variables no conductuales a largo plazo y una mejora de los comportamientos sexuales saludables. Según sugieren Shepherd et al. (2010), las evaluaciones a corto plazo pueden recoger información sobre comportamientos que coinciden con el inicio de las relaciones sexuales, pudiendo producirse cambios a largo plazo cuando se estabiliza la actividad sexual. Por ello, es prioritario monitorizar los efectos de las intervenciones, y así poder obtener conclusiones más firmes sobre la eficacia a largo plazo. Hasta donde llega nuestro conocimiento, no hay estudios acerca de los efectos posteriores a los 12 meses tras la implementación del programa COMPAS. Por todo ello, se examinó el seguimiento de la eficacia de COMPAS, – un programa escolar de promoción de la sexualidad saludable dirigido a adolescentes españoles entre los 15 y 18 años –, tras 24 meses de su aplicación. Éste es el primer estudio en el ámbito español que evalúa los efectos a largo plazo (24 meses) de una intervención escolar de promoción de la salud sexual mediante un estudio controlado y que aleatoriza los grupos a las condiciones experimentales: COMPAS, *¡Cuidate!* y grupo control.

Los resultados hallados muestran que COMPAS incrementa el nivel de conocimientos sobre las ITS en general, y promueve una actitud favorable hacia las personas

que viven con VIH a largo plazo cuando se compara con el grupo control; ambos efectos han perdurado en el tiempo según los datos de las evaluaciones realizadas tras la intervención (Espada et al., 2015) y a los 12 meses (Morales et al., 2015). No se observa efecto en ninguna otra variable precursora y/o conductual. Cuando se analizan los efectos del programa *¡Cuidate!*, se observa únicamente incremento en la variable nivel de conocimientos – sobre el uso del preservativo, las ITS y de la escala total – en comparación con el grupo control. Con respecto a COMPAS, los participantes de *¡Cuidate!* muestran mejores resultados en la actitud hacia las personas con VIH y mayor retraso en la edad a la que inician relaciones sexuales orales. Esta mejora en la variable comportamental puede ser explicada, debido a que una de las estrategias de *¡Cuidate!* es promover la abstinencia sexual, a diferencia del programa COMPAS que promociona exclusivamente el uso del preservativo (Espada et al., 2015). A partir de los resultados obtenidos, se puede concluir que la mayoría de los efectos no han perdurado a lo largo del tiempo en ambos programas preventivos; no solo en las variables precursoras como cabría esperar según el meta-análisis de la presente tesis, sino también en las conductuales, como la conducta del preservativo. Teniendo en cuenta la disminución del efecto de ambos programas, se propone la inclusión de sesiones de refuerzo realizadas con cierta periodicidad como una estrategia que puede ser efectiva para mantener los efectos a largo plazo (Malow et al., 2007; Pedlow & Carey, 2004; von Sadvoszky et al., 2014).

El quinto estudio evaluó la eficacia de COMPAS atendiendo al grado de fidelidad de la implementación del programa a través de las dimensiones dosis, adhesión y aceptación. La dosis hace referencia al número de sesiones que reciben del total del programa; la adhesión al grado de cumplimiento de objetivos y contenidos alcanzados; y la aceptación – motivación y participación de los individuos –, evaluadas por los aplicadores al final de las

sesiones. Se compararon tres grupos experimentales, dos de ellos recibieron el programa con diferente grado de fidelidad – alta y baja fidelidad –, y se incluyó un grupo control sin intervención. Se aleatorizó a los participantes al grupo experimental y control; sin embargo, los grupos de alta y baja fidelidad fueron seleccionados en función de su grado de fidelidad tras la implementación del programa. Los resultados muestran niveles elevados de fidelidad de la implementación en la muestra total en todas las dimensiones evaluadas, siendo clave la formación de los aplicadores y la asistencia técnica como facilitadores para lograr la máxima fidelidad y seguir el protocolo original (Mihalic et al., 2008).

Atendiendo al segundo objetivo del estudio, los datos muestran que existe una relación positiva entre la fidelidad de la implementación y la eficacia del programa. En comparación con el grupo con baja fidelidad, se observa un incremento del nivel de conocimientos sobre el VIH y las ITS a los 12 meses tras la aplicación en aquellos participantes que reciben la intervención con alta fidelidad, además de tener una mayor intención de implicarse en conductas sexuales seguras a los 3 meses tras la intervención. De acuerdo con la TCP (Ajzen, 1991), la intención es un predictor directo de la conducta final. En congruencia con estos datos, los resultados del análisis de mediación del programa COMPAS (estudio 6), destacan la intención como la variable con mayor peso sobre el efecto indirecto entre la intervención y el uso del preservativo. No se observaron cambios en las variables comportamentales. A pesar de ello, pueden considerarse estos resultados de elevada relevancia. A diferencia de las variables conductuales, la intención es evaluada con independencia de si los participantes informan ser sexualmente activos o no. Por ello, a través de la evaluación de las variables precursoras, se pueden obtener datos del impacto del programa sobre toda la muestra, cuando el porcentaje de participantes que informan ser sexualmente activos es bajo como es el caso del presente trabajo. Por todo ello, y

centrándose en los efectos de la fidelidad sobre la eficacia del programa, se concluye que es prioritario implementar los programas con la máxima fidelidad al protocolo diseñado con la finalidad de asegurar su máximo impacto (Wang et al., 2017). Sin embargo, si no es posible su aplicación con la máxima fidelidad, menor grado de fidelidad de la implementación presenta mejores resultados – en los constructos nivel de conocimientos y actitudes – que el no realizar ninguna intervención. Estos resultados son congruentes con otros estudios que confirman que es mejor aplicar una intervención que no aplicarla (Ariza, Villalbí, Sánchez-Martínez, & Nebot, 2011; Ballester, Gil, Giménez, & Kalichman, 2014).

El sexto estudio tuvo como objetivo identificar las variables mediadoras de la eficacia de COMPAS, un programa de promoción de una sexualidad saludable, para promover el uso consistente del preservativo a largo plazo. Mediante análisis de mediación múltiple en serie (Hayes, 2013) se analizó el efecto del programa sobre los mediadores potenciales a corto plazo (postest), la influencia de éstos sobre la intención de usar el preservativo (evaluación de seguimiento a los 12 meses), y a su vez la relación entre la intención y el comportamiento final esperado, el uso consistente del preservativo (evaluación de seguimiento a los 24 meses); con el fin de identificar factores implicados en el efecto de la intervención sobre la conducta a los 24 meses post-implementación. Hasta donde llega nuestro conocimiento, éste es el primer estudio que estudia las variables mediadoras de la eficacia de una intervención de promoción de una sexualidad saludable para reducir los comportamientos sexuales de riesgo en España. A menudo se evalúa el efecto que tienen las intervenciones sobre las variables que se pretende incidir, pero son escasos los estudios que identifican qué factores contribuyen a que las intervenciones logren los objetivos que se proponen.

Este estudio estuvo guiado por la TCP (Ajzen, 1991) y los contenidos del programa,

por lo que las variables consideradas como potenciales mediadores fueron: conocimiento sobre el VIH y otras ITS, la actitud hacia el uso del preservativo con y sin obstáculos que interfieran en su utilización, la percepción del riesgo sexual, la autoeficacia, la norma percibida y la intención hacia el uso del preservativo. Todos los mediadores potenciales (M1) fueron evaluados en el postest, excepto la intención (M2) que fue evaluada a los 12 meses, entendiéndose como una variable intermedia entre los M1 y la conducta final.

Los resultados indicaron un aumento en el nivel de conocimientos sobre el VIH y otras ITS, en las variables actitudinales y en la autoeficacia tras la implementación del programa. Estos resultados son consistentes con los hallados en estudios previos que evaluaban los efectos del programa COMPAS (Espada et al., 2012; Espada et al., 2015). No se halló un efecto significativo sobre la percepción normativa, en consonancia con la evaluación de otras intervenciones preventivas (Jemmott et al., 2015; O'Leary et al., 2015) y de los resultados del meta-análisis realizado en esta tesis. Es esperable que la intervención no logre efecto sobre este constructo debido a que no se incluyen actividades específicas que aborden las percepciones y comportamientos de sus iguales. Estos autores (Jemmott et al., 2015; O'Leary et al., 2015) sugieren que la participación de amigos cercanos en los programas es clave para abordar la percepción normativa.

Cuando se evalúan los efectos de los M1 sobre el M2 – denominado path b –, se observa que los adolescentes que tienen una actitud positiva hacia el preservativo cuando existen barreras para usarlo, una mayor percepción de riesgo ante el sexo desprotegido, perciben que sus amigos usan el preservativo con mayor frecuencia en las relaciones sexuales, y se consideran más capaces para usar el preservativo, manifestaron mayor intención de usar el preservativo en los siguientes 12 meses. Esto tiene especial relevancia si tenemos en cuenta que la intención es la variable con mayor capacidad predictiva del uso

consistente del preservativo de acuerdo con la TCP (Ajzen, 1991). En base a estos resultados, sería necesario añadir y/o modificar elementos en las intervenciones que fortalezcan estas variables potenciadoras de la intención, como son la percepción normativa y la percepción de riesgo sexual.

La actitud hacia el uso del preservativo cuando se presentan obstáculos y la autoeficacia – en serie con la intención (M2) – fueron variables mediadoras de la relación entre el programa COMPAS y el efecto a largo plazo sobre el uso consistente del preservativo. Estudios realizados en el ámbito internacional que analizan la mediación de sus programas, destacan la autoeficacia como elemento clave de la eficacia de la intervención (Jemmott et al., 2014; O’ Leary, Jemmott, & Jemmott, 2008; O’Leary et al., 2012; Snead et al., 2014). Por ejemplo, Doyle et al. (2009) concluyeron que las actitudes positivas hacia el uso del preservativo, evaluadas con una escala de barreras percibidas (*Condom Barriers Scale (CBS)*; St. Lawrence et al., 1999), predicen el porcentaje del uso del preservativo en las relaciones sexuales.

Por todo ello, se recomienda hacer especial hincapié y fortalecer aquellas actividades del programa COMPAS que trabajen: a) las barreras percibidas hacia el uso del preservativo, con el objetivo de mejorar el constructo teórico de tipo actitudinal; b) las habilidades para colocar el preservativo durante las relaciones sexuales y así lograr una mayor autoeficacia; y c) mejorar los elementos que incrementan la intención de usar el preservativo, debido a que la variable intención es suficiente para lograr impacto sobre la consistencia del uso del preservativo, tal y como sugieren los resultados de este estudio.

En resumen, este trabajo muestra que los adolescentes se exponen a mayor riesgo sexual en la actualidad, lo que entraña un mayor riesgo de contraer una ITS o tener un embarazo no planificado. Con respecto a la cohorte evaluada en 2006, adolescentes

evaluados en 2012 presentan una disminución del nivel de conocimientos sobre el VIH y otras ITS, una actitud menos favorable hacia el uso del preservativo, se inician sexualmente a edades más tempranas, informan de un mayor número de parejas sexuales en general; en las chicas se observa un menor porcentaje del uso del preservativo. En segundo lugar, a través del meta-análisis, se observa que las intervenciones que promueven hábitos sexuales saludables son eficaces para promover el uso del preservativo, aunque se necesita de mayor evidencia para tener conclusiones firmes con respecto a los efectos a largo plazo. En tercer lugar, se desarrolló una escala con adecuadas propiedades psicométricas para evaluar las barreras percibidas hacia el preservativo (*CUBS-A*), un aspecto clave para conocer los motivos y creencias principales que interfieren en el uso del preservativo durante las relaciones sexuales. En cuarto lugar, se llevó a cabo una evaluación rigurosa y exhaustiva de un programa de promoción de la salud sexual y prevención de VIH en ámbito español. Se analiza su eficacia a largo plazo frente a un programa bien establecido, y un grupo control en un estudio con asignación aleatoria de los grupos a las condiciones experimentales. Se examinan las variables que median la eficacia de la intervención para lograr un uso consistente del uso del preservativo a largo plazo. La actitud hacia el uso del preservativo cuando existen obstáculos para su uso, la autoeficacia y la intención del uso del preservativo son los mediadores principales de la eficacia de la intervención. Por último, se evalúa la fidelidad de la implementación. A partir de los resultados se puede concluir que COMPAS logra un mayor efecto en las variables sobre las que pretende incidir cuando es aplicado con máxima fidelidad al diseño original.

Limitaciones y estrategias futuras

Los estudios presentados contribuyen a conocer la evolución de las variables precursoras y comportamientos que aumentan el riesgo para las ITS y el embarazo no

planificado, a los instrumentos válidos y fiables que mejoran la comprensión de los factores de riesgo, y la evaluación de la eficacia de los programas de promoción de conductas sexuales saludables dirigido a adolescentes españoles. Se identifican algunas limitaciones que deberían ser tenidas en cuenta a la hora de interpretar los resultados y se sugieren líneas de investigación futuras.

En primer lugar, las muestras de los estudios que componen esta tesis están formadas por adolescentes reclutados en el contexto escolar. Teniendo en cuenta que la educación secundaria es obligatoria en España, este grupo representa un porcentaje significativo de los adolescentes de nuestro país. A pesar de ello los resultados y conclusiones no son extrapolables a otros grupos de adolescentes con características especiales, como jóvenes institucionalizados y/o población clínica. Sería interesante poder adaptar y replicar los estudios a otros contextos específicos (Malow et al., 2007).

En segundo lugar, otra limitación a tener presente es el bajo porcentaje de participantes que informan haber mantenido relaciones sexuales (27-37%) en los estudios que analizan los comportamientos sexuales de riesgo. Sería necesario contar con una mayor muestra de adolescentes sexualmente experimentados –que hayan mantenido relaciones sexuales alguna vez – y activos, para incrementar la representatividad y validez externa de estos resultados.

En tercer lugar, sería conveniente incluir mediciones biológicas, – incidencia de VIH/sida, otras ITS y tasas de embarazos – y así complementar las mediciones auto – informadas acerca de los cambios comportamentales en la sexualidad, para lograr la máxima objetividad y validez de los análisis de la eficacia de los programas (DiClemente, 2016).

En cuarto lugar, en la evaluación de la eficacia del programa COMPAS a los 24 meses se observaron tasas de abandono elevadas (59% del total de los participantes). Por

ello sería conveniente aplicar estrategias eficaces en futuros estudios que permitan maximizar la retención de los participantes y así poder tener una mayor validez interna de los resultados obtenidos (Simkin et al., 2000).

En quinto lugar, los estudios sobre la situación actual española de los factores protectores y de riesgo para ITS y embarazos en adolescentes, han dejado patente la necesidad de incluir la perspectiva de género en los programas preventivos (Romero-Estudillo et al., 2014; Uribe, Amador, Zacarías, & Villarreal, 2012); sin embargo, COMPAS fue desarrollado para chicos y chicas indistintamente. Por ello, sería conveniente modificar e incluir en la medida de lo posible todas aquellas recomendaciones que han surgido a partir de los resultados de esta tesis. Es decir, se podrían incluir, no sólo cuestiones relacionados con las diferencias de género, sino además diseñar contenidos específicos que incrementen la percepción de la norma subjetiva (Jemmott et al., 2015), además de revisar las actividades que aborden las barreras hacia el uso del preservativo para tratar aquellas de mayor importancia y con ello favorecer una actitud más positiva hacia el uso del preservativo cuando existen obstáculos para su uso. Esto es explicado por el factor actitudinal, que junto con la autoeficacia y la intención del uso del preservativo, son los componentes clave en los programas para incrementar el uso consistente del preservativo.

Por último, con la finalidad de alcanzar un mantenimiento de los efectos de las intervenciones de promoción de la salud sexual a largo plazo, resultaría de gran utilidad realizar sesiones de refuerzo, como indica ampliamente la literatura relativa a los programas de prevención (Malow et al., 2007; von Sadovszky et al., 2014; Wang et al., 2017), y replicar de nuevo un proceso exhaustivo de evaluación.

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CONCLUSIONES





Conclusiones

En base a los resultados obtenidos de la presente tesis, se extraen las siguientes conclusiones:

- Los adolescentes de la cohorte 2012 tienen un menor nivel de conocimientos sobre conceptos relacionados con el VIH y otras ITS, una actitud menos favorable hacia aspectos relacionados con el VIH (incluyendo métodos de protección) en comparación con la cohorte 2006, independientemente del género. Los adolescentes cada vez se inician sexualmente a una edad más temprana y manifiestan tener en mayor proporción varias parejas sexuales, factores que pueden contribuir a un mayor riesgo de exposición a las ITS y embarazos no planeados.
- Los adolescentes informan de un mayor uso del preservativo en los últimos años. Sin embargo, en comparación con los chicos, las chicas se protegen menos en sus relaciones sexuales ante las ITS, por utilizar en menor medida el preservativo como método preventivo y más la píldora anticonceptiva.
- Los programas de promoción de hábitos sexuales saludables y reducción del riesgo sexual en adolescentes muestran ser eficaces a corto plazo, decayendo el impacto de las medidas precursoras de la conducta a largo plazo. Es necesario contar con más evaluaciones de seguimiento de las intervenciones preventivas para formular conclusiones más firmes al respecto.
- Las intervenciones han demostrado ser eficaces para aumentar el uso del preservativo a largo plazo, siendo mayor su impacto cuando: el país tiene un mayor índice de desarrollo humano, la intervención se aplica en el ámbito escolar, se utiliza una metodología participativa, no participan los padres en la aplicación, y sus objetivos son retrasar de la edad de inicio sexual y promocionar el uso del

preservativo. Con respecto a la metodología, el efecto de las intervenciones es mayor cuando son evaluadas mediante estudios aleatorizados y sin grupo control, o si se incluye grupo control, éste recibe una intervención alternativa a la intervención principal.

- La escala para evaluar las Barreras hacia el Uso del Preservativo en población adolescente (*CUBS-A*) presenta adecuadas propiedades psicométricas para evaluar los motivos que interfieren en uso del preservativo, y se relaciona con las actitudes hacia el uso del preservativo y con la frecuencia de su utilización en población adolescente.
- La eficacia del programa COMPAS disminuye tras 24 meses de su implementación. Sería recomendable incluir estrategias de mantenimiento, como sesiones de refuerzo para lograr mantener los resultados observados a corto plazo y al año de su aplicación en variables de conocimiento, actitudinales y conductuales.
- Los análisis de mediación múltiple en serie del programa COMPAS evidencian que las actitudes hacia el preservativo cuando existen obstáculos, la autoeficacia y la intención de usar el preservativo son los elementos clave que median la eficacia de la intervención para incrementar el uso del preservativo tras 24 meses de seguimiento.
- La evaluación de la fidelidad de la implementación muestra que aplicar los programas con máxima fidelidad facilita un mayor impacto. Aunque un menor grado de fidelidad de la implementación presenta mejores resultados que el no realizar ninguna intervención.

ANEXOS





Cuestionarios de Evaluación



Este cuestionario forma parte de una investigación realizada por varias universidades españolas.

El objetivo es conocer tus opiniones y comportamientos relacionados con la sexualidad.

Te agradecemos que participes cumplimentando este cuestionario. Tu participación es voluntaria y tus respuestas anónimas y confidenciales. Te pedimos que contestes con toda sinceridad. Es muy importante que respondas de forma individual sin compartir tus respuestas con los compañeros.

Si tienes alguna duda, por favor levanta la mano y la persona responsable se acercará para resolverla. Una vez hayas terminado, pincha en guardar y levanta la mano.



FICHA DE DATOS PERSONALES			
CÓDIGO PERSONAL *Pregúntale a tu monitor por el tuyo <div style="border: 2px solid black; width: 100%; height: 20px; margin-top: 5px;"></div>			
INICIALES <small>* nombre y apellidos</small>		FECHA DE HOY:	
NOMBRE		APELLIDOS	
SEXO <input type="checkbox"/> Hombre <input type="checkbox"/> Mujer			
DIRECCIÓN DEL DOMICILIO <small>(Calle/Avenida/Travesía/Carretera, Plaza)</small>			
NUMERO	PUERTA	COD. POSTAL	
CIUDAD	PROVINCIA	NACIONALIDAD	
FECHA NACIMIENTO		EDAD	
TELEFONO FIJO		MOVIL	
CORREO ELECTRONICO			
<small>Los datos por usted facilitados serán tratados con la máxima confidencialidad y secreto, cumpliendo en todo caso con las normas y estándares de seguridad que regula la normativa de protección de datos, siendo de aplicación el nivel de seguridad alto. Los datos facilitados por usted en los respectivos cuestionarios de evaluación, son veraces, reales y exactos, eximiéndonos por lo que los daños y perjuicios que el error u omisión pudieran ocasionar.</small>			
REDES SOCIALES Si tienes cuenta de Facebook o Tuenti, por favor, indica tu nombre de usuario.			
<input type="checkbox"/> facebook			
<input type="checkbox"/> tuenti			
Otras:			
PERSONAS DE CONTACTO			
Tu opinión es importante para nosotros. Tu participación en este estudio tiene el objetivo de reducir la tasa de infecciones de transmisión sexual y embarazos no deseados. Deseamos solicitar de nuevo tu colaboración dentro de uno y dos años. Por favor, indica al menos dos personas de confianza con las que podamos contactar para localizarte. Recuerda que tus datos son confidenciales.			
TIPO PARENTESCO <small>padre, madre, herman@, prim@, amigo@</small>	NOMBRE	TELÉFONO	CORREO ELECTRÓNICO
<small>El firmante se compromete a informar de los extremos de este documento a los terceros cuyos datos hayan sido cumplimentados en este formulario en el apartado de "personas de contacto", siendo los responsable en todo caso el firmante de este documento.</small>			
<small>CONFIDENCIALIDAD Y PROTECCIÓN DE DATOS, en cumplimiento del art. 5 de la Ley Orgánica 15/1999, de 13 de diciembre, de Protección de Datos de Carácter Personal, informa que los datos de Carácter Personal recogidos en el presente documento serán incorporados a ficheros debidamente inscritos en el Registro General de Protección de Datos, titularidad de la Universidad Miquel Hernández de Eliche (UMH), siendo el responsable del tratamiento del mismo el departamento de Psicología de la Salud de la UMH.</small>			
<small>La finalidad de dicho fichero es cuestionar los estudios y programas de investigación desarrollados por este departamento en el que los menores sean inscritos o participen, que incluirán, en su caso, las valoraciones de los facultativos correspondientes, para el seguimiento y posterior evaluación de sus conductas durante el tiempo que duren las acciones, así como, en su caso los tratamientos individualizados de seguimiento y evolución del menor. La finalidad de cada estudio será informada en cada alta al mismo. En cualquier caso, los derechos de Acceso, Cancelación, Rectificación y Oposición podrán ser ejercitados dirigiéndose a UMH, DEPARTAMENTO DE PSICOLOGIA DE LA SALUD.</small>			
Firmado: _____		¡GRACIAS POR TU COLABORACIÓN!	

DATOS SOCIODEMOGRÁFICOS

Centro educativo: _____

Curso: _____

Ciudad: _____

Edad: _____

Sexo: Hombre Mujer

Nacionalidad: _____

Situación familiar:

Padres casados

Padres separados o divorciados

Padres conviven juntos como pareja de hecho

Padre o madre soltero/a

Huérfano de un padre o de ambos

¿Qué edad tenías cuando tus padres se separaron? _____

¿Con qué personas vives habitualmente? _____

¿Cómo valoras la relación actual entre tus padres?

Muy buena Buena Regular Mala Muy mala Es inexistente

Nivel Socioeconómico:

¿Cuántos ordenadores hay en la casa donde vives habitualmente?

1 2 3 4 5 o más

¿Cuántos televisores hay en la casa donde vives habitualmente?

1 2 3 4 5 o más

¿Cuántas habitaciones tiene tu casa?

1 2 3 4 5 6 7 o más

* No se incluye cocina, baños, terrazas, salas, comedores.

* *The Family Affluence Scale (FAS; Boyce, Torsheim, Currie, & Zambon, 2006).*

ECI CONOCIMIENTOS

Por favor, señala en cada afirmación si es verdadera o falsa. Si desconoces la respuesta marca No lo sé.

	V	F	D
1. El sida es causado por un virus llamado "VIH"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. La principal vía de transmisión del VIH en España es a través de las relaciones sexuales.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. ¿Puede una mujer seropositiva embarazada transmitir el VIH a su bebé?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. El VIH se transmite por medio de secreciones vaginales y seminales, y la sangre.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. El VIH se transmite por el aire.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Es peligroso compartir alimentos o agua con personas seropositivas o enfermas de sida.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Lavar la ropa con la de un seropositivo o enfermo de sida implica riesgo de contraer la enfermedad... ..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Existe riesgo de contraer el VIH por compartir jeringuillas contaminadas.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. El VIH afecta al sistema inmunológico humano.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. El período ventana es el tiempo que tarda el cuerpo en producir anticuerpos tras la transmisión de VIH.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. El anillo vaginal o el DIU son métodos eficaces para evitar el sida.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Las píldoras anticonceptivas son eficaces para prevenir la transmisión del VIH en las relaciones sexuales.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. El preservativo es un método eficaz para evitar la transmisión del VIH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. El preservativo femenino es tan eficaz como el preservativo masculino para evitar la transmisión del virus del sida.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Dar un beso húmedo a una persona seropositiva es un riesgo para la transmisión del VIH.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Abrazar y besar en la mejilla a una persona seropositiva implica riesgo de transmisión del VIH.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Practicar el coito haciendo la "marcha atrás" es una forma segura de practicar sexo sin riesgo de infección por VIH.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. La prueba de detección del VIH se suele realizar mediante un análisis de sangre.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Cuando un chico/a tiene gonorrea o gonococia no es necesario tratar a la pareja.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. La gonorrea o gonococia se curan solas en la mayoría de los casos.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. La sífilis es una enfermedad prácticamente desaparecida.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. La sífilis puede dejar lesiones permanentes si no se trata precozmente	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. El contagio de la sífilis actualmente es muy difícil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. La hepatitis nunca deja secuelas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Escala de Conocimientos sobre el VIH y otras ITS (ECI; Espada et al., 2014).
Notas: V = Verdadero; F = Falso; D = No lo sé.

* En el estudio “Sexual risk behaviors increasing among adolescents over time: Comparison of two cohorts in Spain” se eligieron 27 preguntas de conocimientos del banco inicial de 40 preguntas con el que se desarrolló el cuestionario validado. El cuestionario administrado es el siguiente:

Por favor, señala en cada afirmación si es verdadera o falsa. Si desconoces la respuesta marca No lo sé.

	V	F	D
1. El sida es causado por un virus llamado “VIH”	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. España es uno de los países europeos más afectados por el sida	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. La principal vía de transmisión del VIH en España es a través de las relaciones sexuales.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Los animales domésticos pueden transmitir el virus del sida	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. ¿Puede una mujer seropositiva embarazada transmitir el VIH a su bebé?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Las personas seropositivas pueden transmitir el virus del sida aunque no estén Enfermas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. El VIH se transmite por medio de secreciones vaginales y seminales, y la sangre.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. El VIH se transmite por el aire.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Es peligroso compartir alimentos o agua con personas seropositivas o enfermas de sida.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Lavar la ropa con la de un seropositivo o enfermo de sida implica riesgo de contraer la enfermedad... ..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Los mosquitos pueden transmitir el virus del sida	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Existe riesgo de contraer el VIH por compartir jeringuillas contaminadas.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. El VIH afecta a todas las células del organismo.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. El período ventana es el tiempo que tarda el cuerpo en producir anticuerpos tras la transmisión de VIH.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. El anillo vaginal o el DIU son métodos eficaces para evitar el sida.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Las píldoras anticonceptivas son eficaces para prevenir la transmisión del VIH en las relaciones sexuales.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. El preservativo es un método eficaz para evitar la transmisión del VIH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. El preservativo femenino es tan eficaz como el preservativo masculino para evitar la transmisión del virus del sida.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Dar un beso húmedo a una persona seropositiva es un riesgo para la transmisión del VIH.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Abrazar y besar en la mejilla a una persona seropositiva implica riesgo de transmisión del VIH.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Practicar el coito haciendo la “marcha atrás” es una forma segura de practicar sexo sin riesgo de infección por VIH.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. La prueba de detección del VIH se suele realizar mediante un análisis de sangre.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Es posible saber si hay infección con el VIH al día siguiente de una práctica de riesgo ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Los tratamientos médicos actuales pueden reducir la cantidad de VIH en el organismo ..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Actualmente existe una vacuna contra la infección del VIH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Las infecciones y enfermedades que aparecen debido al debilitamiento del sistema Inmune por el VIH se llaman oportunistas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. La gonorrea y la clamidia son dos enfermedades de transmisión sexual comunes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Notas: V = Verdadero; F = Falso; D= No lo sé.

HIV-AS ACTITUDES HACIA EL VIH

Lee cada una de las siguientes frases y elige la opción que corresponda con tu opinión. No hay respuestas correctas ni incorrectas.

1	2	3	4
Totalmente en desacuerdo	En desacuerdo	De acuerdo	Totalmente de acuerdo

1. Si mi pareja quisiera practicar sexo sin protección, me negaría a tener una relación sexual.....	1	2	3	4
2. Si mi pareja quisiera prescindir del preservativo, yo trataría de convencerlo/la para usarlo.....	1	2	3	4
3. Si fuera a tener una relación sexual y me doy cuenta de que no tenemos preservativos, esperarí a tenerlos para mantener el contacto sexual.....	1	2	3	4
4. Estaría dispuesta a realizarme las pruebas del sida si tuviera prácticas de riesgo.....	1	2	3	4
5. Recomendaría a un amigo/a hacerse las pruebas de detección del VIH.....	1	2	3	4
6. Estaría dispuesto/a a usar el preservativo en una relación sexual con penetración.....	1	2	3	4
7. Estaría dispuesto a llevar preservativo para mi uso	1	2	3	4
8. Estaría dispuesto/a a mostrarme a favor del uso del preservativo ante mi grupo de amigos/as.....	1	2	3	4
9. Estaría dispuesto/a a defender en público el uso del preservativo	1	2	3	4
10. Estaría incómodo/a si en mi clase hubiese alguien con sida.	1	2	3	4
11. Estaría dispuesto/a a besar en la mejilla a una persona seropositiva.	1	2	3	4
12. Si un amigo/a se infectara con el VIH, probablemente me distanciaría de él.....	1	2	3	4

**Escala de Actitudes hacia el VIH/sida para Adolescentes (HIV-AS; Espada, Ballester et al., 2013).*

CS CONDUCTA SEXUAL

1. ¿Has mantenido alguna vez ...		¿A qué edad fue la primera vez?
D1. Caricias íntimas con otra persona	<input type="checkbox"/> SI <input type="checkbox"/> NO	
D2. Coito/penetración vaginal *Consiste en la introducción del pene dentro de la vagina.	<input type="checkbox"/> SI <input type="checkbox"/> NO	
D3. Coito/penetración anal *Consiste en la introducción del pene dentro del ano (culo).	<input type="checkbox"/> SI <input type="checkbox"/> NO	
D4. Sexo oral *Consiste en caricias en los genitales (vagina y/o pene) hechas con la boca.	<input type="checkbox"/> SI <input type="checkbox"/> NO	
D5. Masturbación con otra persona *Consiste en estimularse (tocarse, acariciarse, rozarse...) sin que haya penetración (vaginal, anal u oral).	<input type="checkbox"/> SI <input type="checkbox"/> NO	

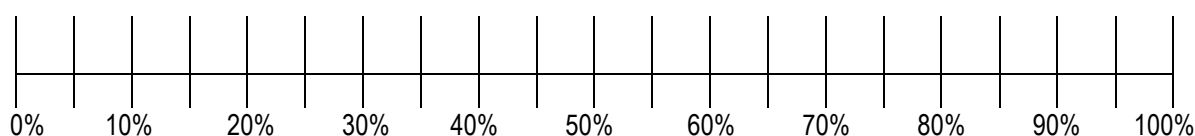
2. Respecto al preservativo:

¿Empleaste preservativo en tu primera relación con penetración?

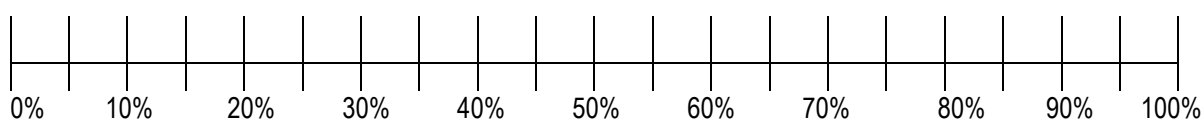
SI NO No recuerdo No he practicado el coito

3. ¿Con qué frecuencia has utilizado alguno de los siguientes métodos de protección en tus relaciones con penetración en los últimos 6 meses?

Preservativo. Si has marcado esta casilla, indica qué porcentaje de veces utilizas este método de protección en tus relaciones sexuales (rodea con un círculo el porcentaje más aproximado):



Píldora anticonceptiva. Si has marcado esta casilla, indica qué porcentaje de veces utilizas este método de protección en tus relaciones sexuales (rodea con un círculo el porcentaje más aproximado):



Otros métodos (Indica cuáles):

Ningún método de prevención de enfermedades o embarazos

4. ¿Con cuántas personas has tenido relaciones sexuales con penetración?

5. ¿Con cuántas personas has tenido relaciones sexuales con penetración durante los últimos 6 meses? _____

6. ¿Con qué frecuencia has mantenido relaciones sexuales en los últimos 6 meses?

1 vez al mes

2 ó 3 veces al mes

1 ó 2 veces / semana

3 ó 4 / semana

de 5 a 7 veces

No he mantenido relaciones sexuales en los últimos 6 meses

7. ¿Has mantenido relaciones sexuales con personas de tu mismo sexo?

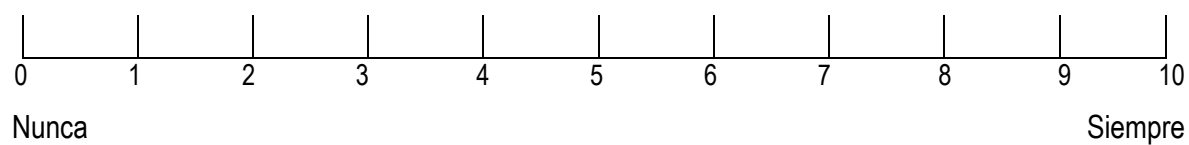
Siempre Bastantes veces Pocas veces Nunca

8. Te consideras:

Heterosexual Bisexual Homosexual

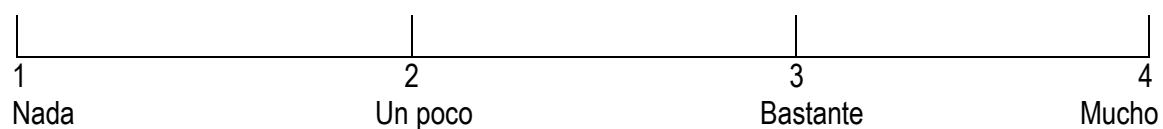
PERCEPCIÓN NORMATIVA

¿Con que frecuencia crees que tus compañeros utilizan el preservativo en sus relaciones sexuales?



PR
PERCEPCIÓN DE RIESGO

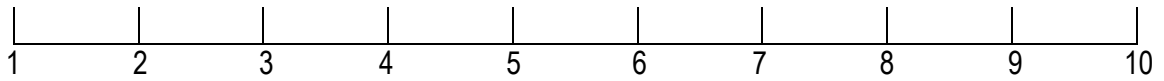
¿Cuánto riesgo piensas que existe en las siguientes actividades?:



	Riesgo para...											
	Embarazo no deseado				Transmisión de VIH				Transmisión de otras ITS			
1. Tener sexo oral sin preservativo	1	2	3	4	1	2	3	4	1	2	3	4
2. Practicar el coito sin preservativo	1	2	3	4	1	2	3	4	1	2	3	4

SE AUTOEFICACIA

Por favor, marca cada frase según tu opinión:



Totalmente en
desacuerdo

Totalmente
de acuerdo

-
- | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|----|
| 1. Puedo encontrar una forma de conseguir lo que quiero si alguien se opone..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 2. Puedo resolver problemas difíciles si me esfuerzo lo suficiente..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 3. Es fácil para mí persistir en lo que me propongo para lograr mis objetivos..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 4. Confío en que puedo manejar con eficacia situaciones inesperadas..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 5. Gracias a mis cualidades y recursos puedo superar situaciones imprevistas..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 6. Cuando tengo un problema puedo estar tranquilo porque tengo las habilidades necesarias para manejar situaciones difíciles..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 7. Venga lo que venga, por lo general soy capaz de manejarlo..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 8. Puedo solucionar la mayoría de problemas si me esfuerzo lo suficiente..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 9. Si estoy en una situación difícil, normalmente sé qué hacer..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 10. Al tener que hacer frente a un problema, generalmente se me ocurren varias alternativas de cómo resolverlo..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
-

*Escala General de Autoeficacia para Adolescentes (Espada, González, Orgilés, & Carballo, 2012).

CUESTIONARIO DE FIDELIDAD DE LA IMPLEMENTACIÓN DEL PROGRAMA COMPÁS

A continuación te planteamos una serie de cuestiones acerca de la aplicación del programa “COMPÁS”. Con el fin de conocer todas las incidencias que hayan podido surgir durante el tiempo de aplicación del programa, te pedimos, por favor, que respondas con la mayor sinceridad y exactitud posibles. Muchas gracias por tu colaboración.

NOMBRE DEL MONITOR:

PROVINCIA:

CENTRO:

GRUPO EXPERIMENTAL: COMPÁS

CURSO:

SESIÓN 1: SIDA Y SALUD

Se han realizado todas las actividades que incluye la sesión. Sí No

Se ha contado con todos los materiales previstos para la sesión. Sí No

¿Hubo alguna otra persona presente durante la sesión? (Indicar quién). Sí No

Se han cumplido los contenidos previstos en cada una de las actividades. 1 2 3 4 5 6 7 8 9 10

Se ha cumplido la metodología prevista para cada una de las actividades. 1 2 3 4 5 6 7 8 9 10

Se ha cumplido la duración prevista para cada una de las actividades. 1 2 3 4 5 6 7 8 9 10

Valoración del grado de cumplimiento del protocolo de la sesión. 1 2 3 4 5 6 7 8 9 10

Estimación del grado de adecuación del lenguaje empleado. 1 2 3 4 5 6 7 8 9 10

Estimación del grado de cumplimiento de los objetivos de la sesión. 1 2 3 4 5 6 7 8 9 10

Estimación del grado de motivación del grupo en la sesión. 1 2 3 4 5 6 7 8 9 10

Estimación del grado de participación del grupo en la sesión. 1 2 3 4 5 6 7 8 9 10

¿Hubo alguna otra incidencia en el transcurso de la sesión?

¿Hay alguna actividad en el protocolo del programa que requiera una explicación más detallada?

Observaciones y sugerencias sobre la sesión:

SESIÓN 2: CONOCIENDO MEJOR EL SIDA

Se han realizado todas las actividades que incluye la sesión.											Sí	No
Se ha contado con todos los materiales previstos para la sesión.											Sí	No
¿Hubo alguna otra persona presente durante la sesión? (Indicar quién).											Sí	No
Se han cumplido los contenidos previstos en cada una de las actividades.	1	2	3	4	5	6	7	8	9	10		
Se ha cumplido la metodología prevista para cada una de las actividades.	1	2	3	4	5	6	7	8	9	10		
Se ha cumplido la duración prevista para cada una de las actividades.	1	2	3	4	5	6	7	8	9	10		
Valoración del grado de cumplimiento del protocolo de la sesión.	1	2	3	4	5	6	7	8	9	10		
Estimación del grado de adecuación del lenguaje empleado.	1	2	3	4	5	6	7	8	9	10		
Estimación del grado de cumplimiento de los objetivos de la sesión.	1	2	3	4	5	6	7	8	9	10		
Estimación del grado de motivación del grupo en la sesión.	1	2	3	4	5	6	7	8	9	10		
Estimación del grado de participación del grupo en la sesión.	1	2	3	4	5	6	7	8	9	10		
¿Hubo alguna otra incidencia en el transcurso de la sesión?												

¿Hay alguna actividad en el protocolo del programa que requiera una explicación más detallada?

Observaciones y sugerencias sobre la sesión:

SESIÓN 3: TOMANDO DECISIONES

Se han realizado todas las actividades que incluye la sesión.											Sí	No
Se ha contado con todos los materiales previstos para la sesión.											Sí	No
¿Hubo alguna otra persona presente durante la sesión? (Indicar quién).											Sí	No
Se han cumplido los contenidos previstos en cada una de las actividades.	1	2	3	4	5	6	7	8	9	10		
Se ha cumplido la metodología prevista para cada una de las actividades.	1	2	3	4	5	6	7	8	9	10		
Se ha cumplido la duración prevista para cada una de las actividades.	1	2	3	4	5	6	7	8	9	10		
Valoración del grado de cumplimiento del protocolo de la sesión.	1	2	3	4	5	6	7	8	9	10		
Estimación del grado de adecuación del lenguaje empleado.	1	2	3	4	5	6	7	8	9	10		
Estimación del grado de cumplimiento de los objetivos de la sesión.	1	2	3	4	5	6	7	8	9	10		
Estimación del grado de motivación del grupo en la sesión.	1	2	3	4	5	6	7	8	9	10		
Estimación del grado de participación del grupo en la sesión.	1	2	3	4	5	6	7	8	9	10		

¿Hubo alguna otra incidencia en el transcurso de la sesión?

¿Hay alguna actividad en el protocolo del programa que requiera una explicación más detallada?

Observaciones y sugerencias sobre la sesión:

SESIÓN 4: MEJORANDO TU COMUNICACIÓN SOBRE SEXO

Se han realizado todas las actividades que incluye la sesión.											Sí	No
Se ha contado con todos los materiales previstos para la sesión.											Sí	No
¿Hubo alguna otra persona presente durante la sesión? (Indicar quién)											Sí	No
Se han cumplido los contenidos previstos en cada una de las actividades.	1	2	3	4	5	6	7	8	9	10		
Se ha cumplido la metodología prevista para cada una de las actividades.	1	2	3	4	5	6	7	8	9	10		
Se ha cumplido la duración prevista para cada una de las actividades.	1	2	3	4	5	6	7	8	9	10		
Valoración del grado de cumplimiento del protocolo de la sesión.	1	2	3	4	5	6	7	8	9	10		
Estimación del grado de adecuación del lenguaje empleado.	1	2	3	4	5	6	7	8	9	10		
Estimación del grado de cumplimiento de los objetivos de la sesión.	1	2	3	4	5	6	7	8	9	10		
Estimación del grado de motivación del grupo en la sesión.	1	2	3	4	5	6	7	8	9	10		
Estimación del grado de participación del grupo en la sesión.	1	2	3	4	5	6	7	8	9	10		
¿Hubo alguna otra incidencia en el transcurso de la sesión?												

¿Hay alguna actividad en el protocolo del programa que requiera una explicación más detallada?

Observaciones y sugerencias sobre la sesión:

SESIÓN 5: MANTENIENDO TUS DECISIONES

Se han realizado todas las actividades que incluye la sesión.										Sí	No
Se ha contado con todos los materiales previstos para la sesión.										Sí	No
¿Hubo alguna otra persona presente durante la sesión? (Indicar quién).										Sí	No

Se han cumplido los contenidos previstos en cada una de las actividades.	1	2	3	4	5	6	7	8	9	10
Se ha cumplido la metodología prevista para cada una de las actividades.	1	2	3	4	5	6	7	8	9	10
Se ha cumplido la duración prevista para cada una de las actividades.	1	2	3	4	5	6	7	8	9	10
Valoración del grado de cumplimiento del protocolo de la sesión.	1	2	3	4	5	6	7	8	9	10
Estimación del grado de adecuación del lenguaje empleado.	1	2	3	4	5	6	7	8	9	10
Estimación del grado de cumplimiento de los objetivos de la sesión.	1	2	3	4	5	6	7	8	9	10
Estimación del grado de motivación del grupo en la sesión.	1	2	3	4	5	6	7	8	9	10
Estimación del grado de participación del grupo en la sesión.	1	2	3	4	5	6	7	8	9	10

¿Hubo alguna otra incidencia en el transcurso de la sesión?

¿Hay alguna actividad en el protocolo del programa que requiera una explicación más detallada?

Observaciones y sugerencias sobre la sesión:
