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Community Education and Engagement in Family Planning: Updated Systematic Review

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Abstract

Context: Community education and engagement are important for informing family planning projects. The objective of this study was to update two prior systematic reviews assessing the impact of community education and engagement interventions on family planning outcomes.

Evidence acquisition: Sixteen electronic databases were searched for studies relevant to a priori determined inclusion/exclusion criteria in high development settings, published from March 2011 through April 2016, updating two reviews that included studies from 1985 through February 2011.

Evidence synthesis: Nine relevant studies were included in this updated review related to community education, in addition to 17 from the prior review. No new community engagement studies met inclusion criteria, as occurred in the prior review. Of new studies, community education modalities included mass media, print/mail, web-based, text messaging, and interpersonal interventions. One study on mass media intervention demonstrated a positive impact on reducing teen and unintended pregnancies. Three of four studies on interpersonal interventions demonstrated positive impacts on medium-term family planning outcomes, such as contraception and condom use. Three new studies demonstrated mostly positive, but inconsistent, results on short-term family planning outcomes.

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THEME NOTE

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SUPPLEMENTAL MATERIAL

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Conclusions: Findings from this systematic review update are in line with a previous review showing the positive impact of community education using traditional modalities on short-term family planning outcomes, identifying additional impacts on long-term outcomes, and highlighting new evidence for education using modern modalities, such as text messaging and web-based education. More research is necessary to provide a stronger evidence base for directing community education and engagement efforts in family planning contexts.

Theme information: This article is part of a theme issue entitled Updating the Systematic Reviews Used to Develop the U.S. Recommendations for Providing Quality Family Planning Services, which is sponsored by the Office of Population Affairs, U.S. Department of Health and Human Services.

CONTEXT

Family planning decision making is a complex process, involving knowledge and attitudes, personal preferences and beliefs, and social, peer, and community-based networks. As factors affecting family planning decisions often occur outside the clinic or hospital settings, community-based interventions are important avenues to promote knowledge, awareness, and understanding of family planning services and options on a broader scale. This systematic review assesses the impact of community education and engagement interventions on family planning outcomes in high development settings.

Community education is the use of media and interpersonal approaches to promote the understanding and utilization of family planning services.[1] In the current era, “media” comprises TV, radio, print, mail, and e-mail, social networks and text messaging. Interpersonal community education entails one-on-one educational services outside of traditional healthcare settings. Community education uses communication to disseminate information pertaining to family planning. In contrast, community engagement is the process of collaboration with groups of people affiliated by shared geography, identity, location, or shared interests.[2–4] Healthcare engagement with communities spans activities from town halls or focus groups with community leaders, to ongoing partnerships where interventions are conducted using participatory methods to address community priorities. Particularly in underserved and primary care settings, community engagement has been part of an ethical imperative to allow for more equitable healthcare delivery.[5] Community engagement is well suited for family planning interventions to ensure programs are patient centered, protect participant autonomy, and respect community norms.

Title X, the federal grant program supporting comprehensive family planning and related preventive health services, mandates the inclusion of both community education and engagement. All funded projects or programs must “provide for informational and educational programs designed to achieve community understanding of the objectives of the program; inform the community of the availability of services; and promote continued participation in the project by persons to whom family planning services may be beneficial.”[6] Entities receiving Title X funding are required to incorporate community feedback within their interventions.[6] These mandates ensure that members of marginalized

or historically vulnerable populations have opportunities to participate in the planning and delivery of family planning services for their communities.

Two prior systematic reviews assessed the impact of community education and engagement interventions on family planning outcomes from 1985 through 2011, among highly developed nations relevant to Title X populations.[1,7] The prior community education review found 17 studies of mixed quality, showing positive outcomes on family planning knowledge, awareness, and use of services. The community engagement review found no studies meeting inclusion criteria, but summarized 11 qualitative studies describing benefits of community engagement, such as tailored educational materials, and barriers to community engagement, such as time and resources required.

With newer modalities of community-based education and engagement growing in popularity, such as Internet-based and text messaging—based interventions, it is important to revisit the literature in this area. To inform programmatic decisions about how family planning programs should conduct community education and engagement, the authors conducted an update of the prior systematic reviews assessing the impact of community education and engagement interventions on family planning outcomes.

EVIDENCE ACQUISITION

The previous reviews covered studies published from January 1, 1985 to February 28, 2011.[1,7] This update expanded upon the protocol for the original review, described elsewhere,[8] and covered studies between March 1, 2011, and April 30, 2016. This review relied on a set of five key questions (KQs) and an analytic framework based on methodology used by the U.S. Preventive Services Task Force (USPSTF), which was also used to guide other systematic reviews in this series (Figure 1). KQ1 assessed the impact of community education and engagement interventions on long-term health outcomes (e.g., reducing unintended pregnancies). KQ2 assessed the impact on medium-term behavioral outcomes (e.g., contraception use). KQ3 assessed for impact on (1) client experience and (2) improved psychosocial outcomes (e.g., increased knowledge) with family planning services. KQ4 assessed barriers and facilitators for implementation of community education or engagement. KQ5 assessed unintended consequences of these interventions. Data collection and analysis was performed from the end of 2016 through January 2018.

Study authors identified relevant studies by searching 16 electronic databases, using a search strategy developed within PubMed and adapted for other databases (search strategy and databases searched available in Appendix A, available online). Retrieval and inclusion criteria were developed a priori based on the inclusion criteria used in the previous reviews and applied to the search results by master's degree—level analysts. Eligible study countries included the U.S., Canada, Australia, New Zealand, and European countries categorized as "very high" on the Human Development Index.[9] Japan, which was included in the previous review of community education, was not included for the updated review. The team utilized the Population, Interventions, Comparators, Outcomes, Time (PICOT) framework to designate inclusion/exclusion criteria (Table 1). The study population of interest included individuals of reproductive age (13–45 years) who were part of a community or population

seeking family planning services. Relevant study interventions included community-based services, strategies, programs, practices, activities, sets of materials, or campaigns implemented to improve quality family planning–related processes or outcomes. Studies had to include a comparator or control group. Studies assessing clinic- or practice-based interventions or focused solely on sexually transmitted infection (STI) prevention were excluded; however, interventions addressing STI prevention in addition to family planning were included.

Study team members abstracted relevant data from included studies using a structured, Excel-based abstraction form (Appendix C, available online). To support consistency and validity, a senior reviewer evaluated the accuracy and completeness of the abstractions and addressed any discrepancies. The included studies were assessed for quality using the USPSTF level of evidence ratings.[8] Specifically, individual studies were characterized by level of evidence and risk for bias to determine internal validity, and generalizability to Title X clients for external validity. Findings reported in the prior systematic reviews on community education and community engagement were re-reviewed for this analysis. Outcomes reported from the final papers in this updated review were synthesized with outcomes from the prior systematic reviews.

EVIDENCE SYNTHESIS

The literature search strategies yielded 21,872 articles. Prior to the title and abstract screening phase, 13,954 articles were excluded as duplicates or time frame outliers. Of the remaining articles, 7,861 were excluded, because they were conducted outside the U.S. or similar settings, were unrelated to family planning, or did not describe community-based interventions. In total, 57 articles were identified; of these, 54 full-text articles were available for review. Of these, 45 were excluded after full-text review, primarily because they were conducted outside of a relevant study setting. The evidence base described comprises the nine studies meeting all inclusion criteria as outlined in Table 1 in this updated review, in addition to the 17 papers identified in the prior community education systematic review. A PRISMA diagram of all inclusions and exclusions is available in Figure 2.

All of the nine new studies in this updated review described community education interventions. Three studies addressed KQ1 (long-term health outcomes); seven studies addressed KQ2 (medium-term behavioral outcomes); and three studies addressed KQ3 (client experience and short-term psychosocial outcomes). One study addressed KQ4 (implementation outcomes), and no studies addressed KQ5 (unintended consequences). Key characteristics of included studies can be found in Appendix B (available online). No new community engagement intervention studies met inclusion criteria.

The objectives of included studies from this updated review varied: Three aimed to prevent alcohol-exposed pregnancies[10–12]; one involved school-based family planning education[13]; one encouraged parent–teen communication about safe sex[14]; one promoted condom use[15]; one promoted oral contraceptives[16]; one promoted contraception, condoms, and abstinence[17]; and one aimed to prevent repeat teen pregnancy.[18] One study assessed a mass

media campaign[14]; three studies assessed print media/mailing campaigns.[11,14,16] One study assessed web-based education.[11] One study assessed text messaging.[15] Five studies assessed interpersonal community education interventions.[10,12,13,17,18] Some studies included multiple education modalities.

Among studies from the updated review, there were five RCTs,[10,12,15–17] one meta-analysis,[18] and three quasi-experimental studies.[11,13,14] Of the 26 total studies, nine had a USPSTF level of evidence rating I (properly powered and conducted RCT): One had low risk for bias, three had low-to-moderate risk for bias, and five had moderate risk for bias. Eight studies had a USPSTF level of evidence rating II-2 (evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one site): Six had moderate risk for bias, one had high-moderate risk for bias, and one had high risk for bias. Nine studies had a USPSTF level of evidence rating II-3 (evidence obtained from multiple time series with or without the intervention, or dramatic results in uncontrolled trials): Two had moderate risk for bias and seven had high risk for bias.

The following results synthesize findings from the updated systematic review in addition to the prior systematic reviews conducted separately on community education and engagement, grouped by family planning outcome and by education modality: traditional media (e.g., mass media, print); modern media (e.g., text messaging, e-mail); and interpersonal-based approaches. These outcomes are shown in Table 2.

Key Question 1: Long-term Health Outcomes

One mass media intervention[14] and one interpersonal community education intervention[18] in this updated review aimed to reduce teen and unintended pregnancies. The new mass media intervention reported positive impacts. Gauster et al.[14] conducted an ecologic study involving a mass media and print-based publicity campaign aimed to reduce a seasonal increase in teen pregnancies observed during the school's spring break. Pregnancy rates in teens aged ≤ 18 years were significantly lower in the spring following the intervention compared with the previous two springs (RR=0.53, 95% CI=0.32, 0.88, p=0.013), although this was not observed among individuals aged 19 years.

One interpersonal educational study found mixed results regarding teen and unintended pregnancies. Kan and colleagues[18] conducted a meta-analysis on the effectiveness of 12 demonstration projects supported by the Title XX Adolescent Family Life program. The projects served pregnant and parenting teens, offering services like pregnancy testing, family planning counseling, and referrals for family planning services. Odds of a repeat pregnancy were lower among intervention group participants than comparison group participants within 12 months of intake (OR=0.39), but there was no difference at 12- to 24-month follow-up.

The prior review identified three studies—one mass media, one print media, and one interpersonal education—providing limited evidence of positive effects on some long-term outcomes.[20,30,34] These findings were not previously reported, as that paper presented only the evidence related to medium- and short-term outcomes.

Key Question 2: Medium-term Behavioral Outcomes

Seven studies in this update, and ten from the prior review, reported medium-term behavioral outcomes relevant to KQ2, including hormonal contraceptive use, condom use, and use of family planning services.

Contraceptive use.—Four new studies from this updated review[10–12,18] and two from the prior review assessed contraception use[23,34]; of these six studies, five demonstrated a positive impact[10–12,18,23] and one demonstrated null results.[34]

One new study examined contraceptive use among participants receiving web-based and mail-based community education. Tenkku et al.[11] assessed alcohol-exposed pregnancy risk among women participating in a self-guided, web-based educational intervention versus a mailed version; all participants at entry had used alcohol in the past 30 days and were pregnant or at risk of becoming pregnant because they were presumably fertile, sexually active, and using ineffective or no contraception. Of enrolled women, 58.0% (n=185) were no longer at risk for having an alcohol-exposed pregnancy (defined as participants having quit drinking, began using effective contraception, or both) at 4-month follow-up, which is a percentage of 43% greater than the 15% hypothesized a priori (p<0.001), with no significant difference in risk reduction between web versus mail.

Three new studies[10,12,18] and one prior study[34] examined contraceptive use among participants after the implementation of interpersonal interventions; three of which demonstrated positive outcomes.[10,12,18] The meta-analysis by Kan and colleagues[18] of interpersonal community-based interventions for pregnant and parenting teens found a significant increase in the use of long-acting reversible contraception in the intervention group (OR=1.58, 95% CI=1.16, 2.14). Ingersoll et al.[10] assessed unprotected sex among women at risk for an alcohol-exposed pregnancy after participation in an individual education session compared with watching a video or receiving a brochure, and found intervention participants reported significant decreases in “ineffective contraception rate,” defined as unprotected sexual encounters, from baseline to 6 months (from 74.6% to 44.7%, Cohen’s d=0.78, 95% CI=0.4, 1.17); however, this was not significantly different from decreases observed in the video and brochure groups. Wilton and colleagues[12] compared telephone versus in-person delivery of an interpersonal-based approach to reduce the risk of alcohol-exposed pregnancy among at-risk women. Both groups of study participants showed significant increases in effective contraceptive use (from zero to 64%), with no difference in outcomes between the two delivery methods.

The prior review identified one mass media study demonstrating a positive impact on emergency contraception use[23] and one peer-educator intervention demonstrating a null effect on contraception use.[34]

Condom use.—Two studies from the updated systematic review[15,17] and five from the prior review assessed community education for condom use[19,26,31,32,34]; one of these six studies found a positive effect.[15]

Gold et al.[15] reported an intervention assessing condom use after a text messaging intervention. This RCT was conducted among 7,606 mobile phone carriers residing in Victoria, Australia; intervention arm participants received safe sex educational texts whereas the control group received texts about sun safety. Among individuals in the intervention arm, there were no significant differences in overall condom use at 6 months; however, they were more likely to report always using condoms specifically with new partners in the prior 3 months (AOR=2.2, 95% CI=1.1,4.2).

Gold and colleagues[17] assessed unprotected sex among study participants after implementation of a computer-assisted counselor-led motivational intervention and found no significant differences in condom use between intervention and comparison group participants in the intent-to-treat analysis, although they did find a reduction in unprotected sex in per-protocol analysis.

The prior review identified five studies[19,26,31,32,34]; none of which showed a positive impact on condom use. Interventions included mass media,[19] print media,[26] e-mail plus text,[31] and interpersonal education.[34]

Use of family planning and related services.—Two new studies from the updated review[14,15] and eight from the prior review[22–24,28,31–34] addressed the use of family planning or related services, such as STI testing; of these ten studies, eight demonstrated a positive impact from community education interventions.[22–24,28,31–34]

Gauster et al.[14] assessed a month-long mass media and targeted print media campaign and found no difference in the number of family planning clinic visits over the month of the campaign and the month following.

Three studies (one new[15] and two from the prior review,[31,32] all from the same research group) assessed the impact of text messaging either alone or in combination with e-mail. All three were based in Australia studying interventions focused on attendants at music festivals. Gold and colleagues[15] (described above) assessed use of family planning services among Australian mobile carrier users who received text messages for sexual health versus sun safety (control) and found no difference in STI testing. In the prior review, one e-mail plus text intervention showed a positive benefit on use of services,[31] one text-only intervention showed a positive effect.[32]

In the prior systematic review, in addition to the two text messaging interventions discussed above, three mass media studies,[22–24] one print media,[28] and two interpersonal interventions[33,34] showed a positive effect on use of family planning services.

Key Question 3: Short-term Psychosocial Outcomes and Client Experience

Three studies from the updated review reported on outcomes related to KQ3,[13,15,16] assessing the effect on family planning knowledge and attitudes toward or satisfaction with family planning services. These add to 14 identified in the prior review.[19–22,24–32,35] Results for these outcomes were mixed. Additional details from these studies can be found in the evidence summary in Table 2.

Awareness and knowledge.—Thirteen studies assessed community education on family planning knowledge and awareness; three were identified in this updated review[13,15,16] and ten were from the prior review.[20,24,26–32,35] Of these 12 studies, ten demonstrated a positive effect.[13,15,16,24,27,28,30–32,35]

Attitudes supporting use of contraception/condoms.—Six studies assessed the impact of community education affecting attitudes and intentions supporting the use of contraception/condoms; one was identified in this updated review[16] and five from the prior review.[25,26,28,29,35] Of the six studies, two demonstrated positive impact after the intervention,[16,35] and one demonstrated a positive effect during the intervention but not after.[25]

Intentions to use services.—Six studies assessed the impact of community education affecting intentions to use family planning services; of these, two were new from the updated review[15,16] and four were from the prior review.[19,27,29,35] Of these six studies, three showed a positive effect.[16,27,35]

Reproductive health—based communication.—Six studies, all from the previous review, assessed promotion of the outcome of reproductive health—based communication (e.g., encouraging parent—child communication about sexual health behaviors[20–22,35] or communication with a clinician about family planning topics[27,31]) via community education modalities.[20–22,27,31,35] Of these six studies, five demonstrated a positive effect for either willingness to communicate[35] or self-reported communication.[21,22,27,31,35]

Key Questions 4 and 5: Facilitators, Barriers, and Unintended Consequences

One study in the updated review pertained to KQs 4 and 5, which included barriers, facilitators, and unintended consequences of interventions.[15] Gold et al. assessed text messages promoting sexual health versus sun safety; the study found participants in the intervention group were significantly more likely to report that the text messages were annoying (AOR=1.9, 95% CI=1.1, 3.2, p=0.01), compared with control group participants.

In the prior review, nine studies addressed qualitative barriers and facilitators to community education interventions for patients and staff[20,23,24,28,32]; given their descriptive nature, they are summarized here but not in Table 2. Facilitators included a participatory research approach[19,20,23,24,26] utilizing relationships with local organizations[33]; cost-saving mechanisms, such as probono advertising,[19,20,26] and low-cost interventions, such as text and mail[28,31,32]; and catchy, positive messaging.[32] Barriers included political or legal restrictions on specific messaging (e.g., barring the mention of emergency contraception).[19,23,24] No studies in the prior systematic review reported unintended consequences of community education interventions.

COMMUNITY ENGAGEMENT

Similar to the prior review, this update identified no new studies describing the impact of community engagement on key family planning outcomes meeting inclusion criteria.

The prior community engagement review deviated from the original KQs to describe relevant literature.[7] It summarized 11 papers related to community engagement in family planning; all reporting of the engagement activity was qualitative and descriptive.[19,36–45] Engagement strategies involved various methods for developing educational materials, program development, or program evaluation. All described benefits to implementation or the populations served by gaining community input, but without quantitative assessment of family planning outcomes.

DISCUSSION

This systematic review provides an updated assessment of the evidence base for community-based education and engagement for family planning services, which are mandated for programs receiving funding through the Title X Family Planning Program, administered by the Office of Population Affairs.

The nine papers identified in this updated review, along with seventeen from the prior review, focused on the impact of community education initiatives, with intervention modalities spanning from traditional forms, such as mass media and print, to modern media, such as text-and web-based, as well as interpersonal education.

Both mass media studies specifically targeted adolescents and demonstrated a positive impact on long-term family planning outcomes including teen and unintended pregnancies.[14,20] Though often resource intensive, widespread school and community-based mass media educational approaches can be effective for fostering significant behavior change in large audiences of young people resulting in reduced unintended pregnancies.

This synthesis finds that community education approaches show a positive benefit across a number of modalities to promote contraception use, though studies focused on condom use in particular were mixed. Mass media,[26] print and web based,[11] and three of four interpersonal interventions[10,12,18] showed a positive impact on contraception use. However, identified studies of web, text messaging, and interpersonal interventions did not show a benefit for condom use, other than one text messaging intervention showing increased condom use with new partners only in the prior 3 months.[15] The decision to utilize condoms consistently is a complex behavioral process, often dependent on communication between partners,[46,47] and may require unique educational messaging or approaches compared with other family planning methods.

Findings for short-term psychosocial outcomes of increased knowledge, attitudes, and intention related to family planning were largely positive regardless of modality of community education, but also were limited, making it challenging to draw larger conclusions for future implementation planning. Targeted, print-based educational modalities[16,27,28,30] (four of six) and text messaging interventions[15,31,32] (all three) showed consistent benefits for improving knowledge and awareness of family planning options. Mass media; print (e.g., brochures, mailings); and text messaging—based approaches, being unilateral but accessible means of spreading information, can be effective means to improve some short-term outcomes.

For adolescents and young adults, text messaging, web, and social media—based communication are clearly increasing in use and were of particular interest for this updated review. Text message—based interventions may be a low-cost means to improve knowledge/awareness about family planning, but this modality requires further research to verify its generalizability, as all included studies involved a similar study population. The Gold study from the updated review also showed downsides to text messaging, such as being annoying to participants.[15] The two web-based interventions identified were conducted in combination with other modalities but showed positive effects in contraception use[11] and use of family planning services.[31] Surprisingly, no social media—based interventions were identified either in the prior or current review. Given the widespread use of Facebook, Twitter, and other platforms, more research is needed to understand how these means can be utilized to effectively promote reproductive health while protecting confidentiality.

Although community engagement is a promising avenue for planning and prioritizing family planning health promotion, this approach often entails iterative input or participation from community groups without a rigorous, quantitative assessment of what impact that involvement may have. Future work is necessary to establish whether community engagement is primarily an ethical consideration to ensure public health interventions are equitable, versus a means to also ensure interventions are more accessible, user friendly, and effective. There is a small but growing evidence base that patient or consumer involvement can help elicit more patient-centered priorities, educational materials, and communication strategies for general primary care[48–52]; these assessment methodologies could be adapted to future family planning initiatives.

Limitations

There are a number of limitations to this study. First, because of the range of study quality and risk for bias as well as range of reported interventions and outcomes, the evidence is not tiered by level of study quality. All studies meeting inclusion criteria were presented with equal weight. Like all systematic reviews, this review was beholden to literature published in peer-reviewed journals; therefore, its findings are prone to publication bias. It is possible some studies were missed in the systematic review process, despite authors' efforts to be comprehensive. Also, to preserve the relevance of this review to the Office of Population Affairs Title X regulations about community education and engagement, the review focused on interventions conducted in community settings for primary family planning outcomes. Studies of education or outreach conducted in clinical settings or those focused only on STI prevention were excluded, though the results of such interventions are likely of interest to family planning practitioners.

CONCLUSIONS

Given the small number of findings for each outcome intervention modality, overall takeaways from the 26 included studies are tentative. Although the impact of community-based family planning education is mixed, there were positive results demonstrated for mass media, print, and web-based media, text messaging, and interpersonal educational approaches. Community education remains an important means of reaching underserved

communities who may experience more barriers accessing family planning services. Despite the absence of standard measures of evidence for or against community engagement in family planning, it remains an important principle and merits additional research. Future family planning research should assess community interests in the modalities of family planning education, and consider forms of engagement in family planning services that are the highest priorities for Title X populations.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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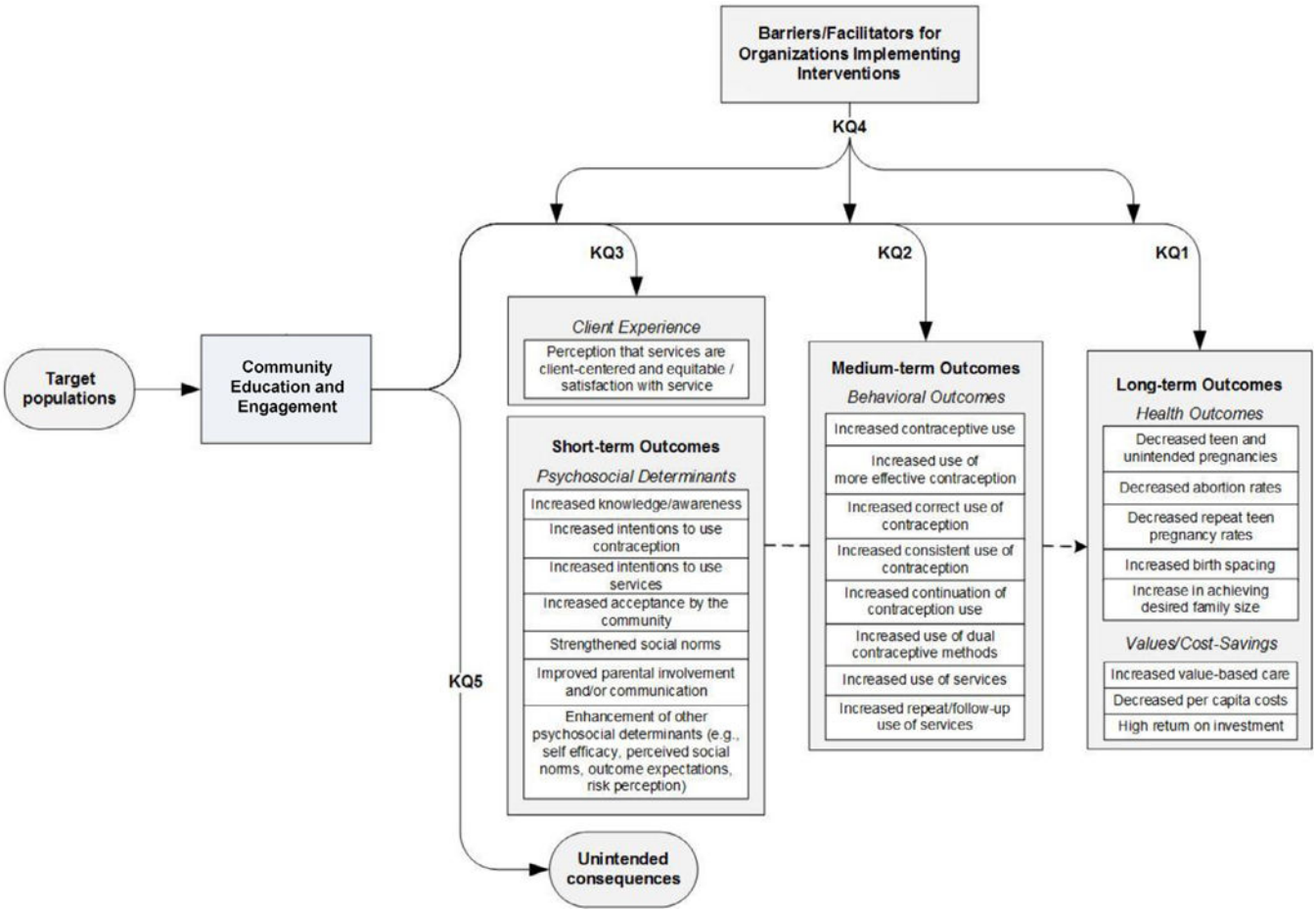

Figure 1.
Community education and engagement systematic review analytic framework. KQ, key question.

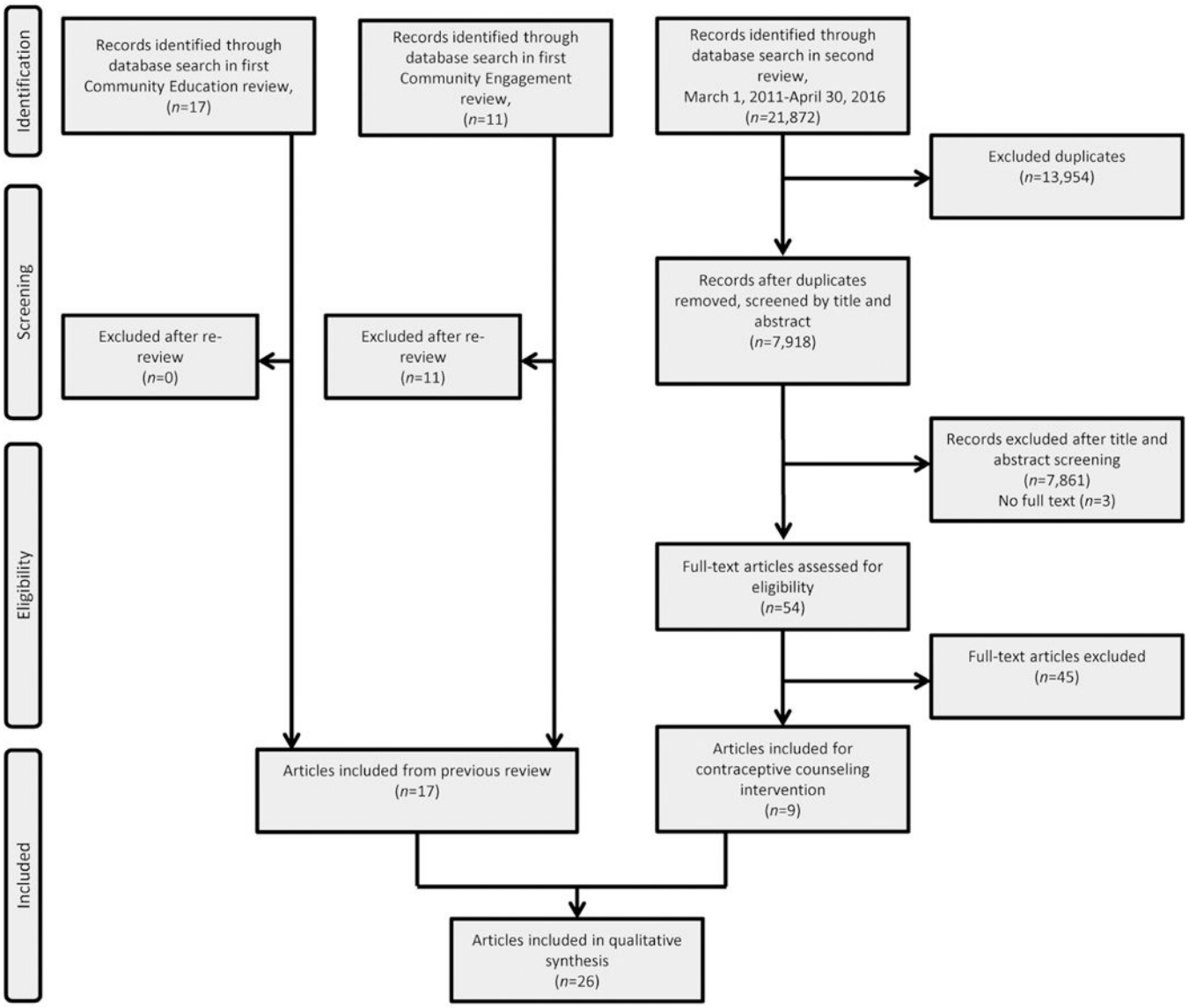

Figure2.
PRISMA diagram.

Table 1.

Inclusion and Exclusion Criteria for the Community Education and Engagement Systematic Review, According to PICOT Framework

Area	Inclusion criteria	Exclusion criteria
Populations		
KQ1–5	Individuals of reproductive age that are part of a community or population and may be seeking quality family planning services, in high-development settings	Other populations that fall outside of the population identified for inclusion (such as animal studies, healthcare providers, or women above reproductive age)
Interventions		
KQ1–5	A clinical (for community engagement only) or community-based service, strategy, program, practice, activity, set of materials, or campaign implemented to improve quality family planning-related processes or outcomes within communities	Other interventions that fall outside of those identified for inclusion
Comparators		
KQ1–5	A comparator or control group to which the above strategy, service, intervention, etc. is compared. This can consist of no intervention, usual care,[a] or a different strategy, service, intervention, etc. to increase intended consequences and/or reduce unintended consequences relative to the topic areas of community engagement/education and quality family planning services	Studies with no comparison or control groups to which the targeted intervention can be compared for efficacy or effectiveness
Outcomes		Studies that either assess the outcomes of non-community populations (such as exclusively within clinical sites or involving healthcare providers) or do not assess effects of intervention on relevant outcomes
KQ 1	Long-term health outcomes of a community or communities	
KQ 2	Medium-term behavioral outcomes of a community or communities	
KQ3	Patient/client experience and/or short-term psychosocial outcomes of a community or communities	
KQ4	Outcomes related to barriers and facilitators for clinics implementing interventions to strengthen quality family planning	
KQ5	Outcomes related to unintended consequences associated with implementing interventions	
Time frames		
KQ1–5	Published between March 1, 2011, and April 30, 2016	Studies that fall outside of the predetermined date range; studies that do not meet the predetermined length of study duration

[a]Usual care is defined as the current standard of care for a particular population or setting before implementation of an intervention designed to increase intended consequences or reduce unintended consequences in the topic area of quality family planning.

PICOT, Population, Interventions, Comparators, Outcomes, Time; KQ, key question.

Table 2.

Community Education and Engagement Systematic Review: Synthesis of FindingsAU: References in Table 2 were renumbered to appear in numerical order, and reference list and other in-text citations were updated accordingly. Please check citations against reference list for accuracy.

	Primary mode of community education					
Outcomes of interest	**Mass media (TV/ radio/billboards)**	**Targeted print media/ mail**	**Web-based**	**Text messaging**	**Interpersonal**	**Skit/theater**
Studies where mode of outreach was primary mode[a]	Gauster 2015[14] (media+mail) [Alstead 1999[19]] [Doniger 2001[20]] [DuRant 2006[21]] [Evans 2009[22]] [Hall 1996[23]] [Trussell 2001[24]] [Zimmerman 2007[25]]	Gauster 2015[14] (media + mail) Tenkku 2011[11] (mail +online) Vogt and Schaefer 2012[16] [Bull 2008[26]] [Gee 2007[27]] [Kirby (mass mail)1989[28]] [Larsson 2004[29]] [Larsson 2006[30]]	Tenkku 2011[11] (mail + online) [Lim 2012[31] (e-mail +text)]	Gold 2011[15] [Gold 2011[32]] [Lim 2012[31] (e-mail +text)]	Bretelle 2014[13] Gold 2016[17] Ingersoll 2013[10] Kan 2012[18] Wilton 2013[12] [Baraitser 2002[33]] [Brindis 2005[34]]	[Hillman 1991[35]]
KQ 1: Long-term health outcomes						
Reduce teen and unintended pregnancies	Gauster 2015[14] ↑ [Doniger 2001[20]] ↑	Gauster 2015[14] ↑ [Larsson 2006[30]] ↑			Kan 2012[18] ↑ up to 12 months, ↔ >12 months [Brindis 2005[34]] ↑	
KQ 2: Medium-term behavioral outcomes						
Use of contraception	[Hall 1996[23]] ↑	Tenkku 2011[11] ↑	Tenkku 2011[11] ↑		Ingersoll 2013[10] ↑ Kan 2012[18] ↑ Wilton 2013[12] ↑ [Brindis 2005[34]] ↔	
Use of condoms specifically	[Alstead 1999[19]] ↔	[Bull 2008[26]] ↔	[Lim 2012[31]] ↔	Gold 2011[15] ↔ overall after 6 months, ↑ for condom use with new partners [Lim 2012[31]] ↔ [Gold 2011[32]] ↓	Gold 2016[17] ↔ [Brindis 2005[34]] ↔	
Use of family planning and/or sexually transmitted infection services	Gauster 2015[14] ↔ [Hall 1996[23]] ↑ [Evans 2009[22]] ↑ [Trussell 2001[24]] ↑	Gauster 2015[14] ↔ [Kirby 1989[28]] ↑	[Lim 2012[31]] ↑	Gold 2011[15] ↔ [Gold 2011[32]] ↑ [Lim 2012[31]] ↑	[Baraitser 2002[33]] ↑ [Brindis 2005[34]] ↑	
KQ 3: Client/patient satisfaction with services and/or short-term psychosocial outcomes						
Awareness and knowledge	[Trussell 2001[24]] ↑	Vogt and Schaefer 2012[16] ↑	[Lim 2012[31]] ↑	Gold 2011[15] ↑	Bretelle 2014[13] ↑	[Hillman 1991[35]] ↑

Outcomes of interest	Primary mode of community education					
	Mass media (TV/ radio/billboards)	**Targeted print media/ mail**	**Web-based**	**Text messaging**	**Interpersonal**	**Skit/theater**
	[Doniger 2001[20]] ↑	[Kirby 1989[28]] ↑ [Larsson 2004[29]] ↔ [Larsson 2006[30]] ↑ [Gee 2007[27]] ↑ [Bull 2008[26]] ↔		[Gold 2011[32]] ↑ [Lim 2012[31]] ↑		
Attitudes supporting use of contraception/ condoms	[Zimmerman 2007[25]] ↑ during campaign, ↔ afterwards	Vogt and Schaefer 2012[16] ↑ [Kirby 1989[28]] ↔ [Larsson 2004[29]] ↔ [Bull 2008[26]] ↔				[Hillman 1991[35]] ↑ contraception, ↔ condoms
Intentions to use services	[Alstead 1999[19]] ↔	Vogt and Schaefer 2012[16] ↑ [Larsson 2004[29]] ↔ [Gee 2007[27]] ↑		Gold 2011[15] ↔		[Hillman 1991[35]] ↑
Reproductive health-based communication	[Doniger 2001[20]] ↔ [DuRant 2006[21]] ↑ [Evans 2009[22]] ↑	[Gee 2007[27]] ↑	[Lim 2012[31]] ↑	[Lim 2012[31]] ↑		[Hillman 1991[35]] ↑
KQs 4 and 5: Barriers, facilitators, and unintended consequences of interventions						
Satisfaction with intervention				Gold 2011[15] ↓		

Note:

↑ Community education had a positive impact on this outcome.

↓ Community education had a negative impact on this outcome.

↔ Community education had neither positive nor negative impact on this outcome.

[a] Papersfrom the prior systematic review are listed in square brackets.

KQ, key question.