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Interventions to support contraceptive choice and use: a global systematic map of systematic reviews

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ABSTRACT

Background: To review the highest level of available evidence, a systematic map identified systematic reviews that evaluated the effectiveness of interventions to improve contraception choice and increase contraception use.

Methods: Systematic reviews published since 2000 were identified from searches of nine databases. Data were extracted using a coding tool developed for this systematic map. Methodological quality of included reviews was assessed using AMSTAR 2 criteria.

Findings and conclusion: Fifty systematic reviews reported evaluations of interventions for contraception choice and use addressing three domains (individual, couples, community); Meta-analyses in 11 of the reviews mostly addressed interventions for individuals. We identified 26 reviews covering High Income Countries, 12 reviews covering Low Middle-Income Countries and the rest a mix of both. Most reviews (15) focussed on psychosocial interventions, followed by incentives (6) and m-health interventions (6). The strongest evidence from meta-analyses is for the effectiveness of motivational interviewing, contraceptive counselling, psychosocial interventions, school-based education, and interventions promoting contraceptive access, demand-generation interventions (community and facility based, financial mechanisms and mass media), and mobile phone message interventions. Even in resource constrained settings, community-based interventions can increase contraceptive use. There are gaps in the evidence on interventions for contraception choice and use, and limitations in study designs and lack of representativeness. Most approaches focus on individual women rather than couples or wider socio-cultural influences on contraception and fertility. This review identifies interventions which work to increase contraception choice and use, and these could be implemented in school, healthcare or community settings.

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Contraception; interventions; systematic map; reproductive health; intervention effectiveness; contraception use; contraception choice; global evidence

Background

The world is undergoing a demographic transition which is core to most of the major social, spatial, economic, and political developments that have occurred in the modern world. The demographic transition brings about remarkable changes in human society with substantial reductions in mortality rates that set off population explosions, followed by reductions in fertility that lead to stable or declining population numbers [1]. The global fertility rate declined from 3.2 live births per woman in 1990 to 2.5 in 2019 [2] and there are about 1.9 billion women of reproductive age (15–49 years) living in the world. Among them 1.1 billion have a need for family planning, that is, they are either current users of contraceptives – (842 million use modern methods of contraception, and 80 million use traditional methods) or they have unmet needs for family planning. About 190 million women want to avoid pregnancy and do not use any contraceptive methods [3].

Unmet needs for family planning and unplanned pregnancy are still global public health priorities. Approximately 40% of the pregnancies worldwide, or 85 million pregnancies out of the 213.4 million pregnancies, were unintended in 2012 [4]. In 2010, 146 million (130–166 million) women worldwide aged 15–49 years, who were married or were in a union had unmet needs for family planning. The number of married women who either use contraception or who have an unmet need for family planning grew from 900 million (876–922 million) in 2010 to 962 million (927–992 million) in 2015 with most of the increase in developing countries. It is also estimated that there are 153 million women who want to avoid or delay pregnancy, but do not have access to contraception [5]. The 2030 agenda for Sustainable Development calls for expanding access to contraception and ensuring that demand for family planning is satisfied using effective contraceptive methods for achieving universal access to reproductive health-care services [6]. This is linked to human rights, gender equality,

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and empowerment and also has impact on maternal, newborn, child and adolescent health as well as a role in shaping economic development, environmental and political futures. Thus, contraception and control of fertility is critical for achievement of the Sustainable Developmental Goals [7].

Women who need contraception, or their male partners, may not use a method for numerous reasons, including poor geographical access, financial difficulties, health concerns or side effects, and limited control over decision-making [8]. Unmet needs for family planning are also attributed to inadequate knowledge and access to family planning services. Many women who want to avoid pregnancy do not use contemporary contraceptive methods due to inadequate or inaccurate knowledge about the side effects of contraceptives or the misperception that conception is not possible while breastfeeding or during certain times of the menstrual cycle [9]. Unplanned pregnancies are more common among vulnerable groups, including adolescents and low socioeconomic groups. They are associated with higher maternal and child morbidity and mortality as well as adverse economic outcomes with far-reaching consequences for individuals and populations that relate to almost all the SDGs [10]. The use of modern contraception brings many health and economic benefits, widespread access to contraception since the 1960s has played a major role in transforming women's livelihoods and driving economic development by enabling women to have fewer children with better health and greater opportunity for education and paid employment [11].

Contraception has belatedly received more investment in the last decade, for example, to address the family planning 2020 goal of enabling more than 120 million women and girls to access contraceptives [12], and the WHO action plan for Europe, which includes universal access to contraceptives by 2030 [13]. There are multiple steps and processes involved in accessing and acceptance of a suitable contraceptive method followed by correct and consistent use to avoid unplanned pregnancy [14]. Interventions are needed to address obstacles to contraception access, choice, and use.

We aimed to consolidate existing knowledge by systematically mapping evidence at review level to inform the design of new interventions and/or underpin the implementation of existing interventions. This approach would be beneficial to identify the current evidence base and research gaps, which would inform policy and practice.

The research questions were

What is the nature, extent and findings of systematic review literature on interventions for contraceptive choice and use?

What are the gaps in the systematic review literature evidence base and priorities for new evidence synthesis and primary research?

Methods

We employed a systematic map method to provide an overview of the topic due to the availability of several published systematic reviews [15,16]. We do not intend to produce a

meta-synthesis of findings from systematic reviews, rather an account of mapping the evidence from various interventions. We focussed on recent, high-quality reviews to prioritise the most methodologically robust evidence. We included systematic reviews of interventions and outcomes of choice and use of contraceptive methods, published in English after the year 2000 that reported inclusion criteria and search methods. The review protocol was registered in PROSPERO (Registration CRD42017082126). This mapping review adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidance. The PRISMA guidance has been adapted to accommodate the systematic map approach. We used the term 'review' for systematic reviews and 'studies' for primary studies included in the systematic reviews.

Search strategy

We searched PubMed, CDSR, Epistemonikos, DoPHER, DARE, NHS Economic Evaluation Database, Campbell Library, NIHR Health Technology Assessment, and Health Evidence Canada specifically for systematic reviews.

The search terms were:

Contraception OR Contracepti* OR "Contraceptive methods" OR "Contraceptive devices" OR "Family planning" OR "Planned parenthood" OR "Birth control" AND Knowledge OR Awareness OR attitudes OR Beliefs OR theories OR perceptions OR Factors OR views OR Education OR Communication OR Counselling OR Intervention OR Use OR uptake OR "Behavioural Intervention" OR "Information dissemination" OR choice

An initial search was carried out in 2016 with three updates, the latest being 2021. The search was limited to reviews published since 2000 but included older primary studies. Systematic reviews on the effectiveness of interventions for contraceptive choice and use in adolescents and adult populations across the world were included. We excluded reviews focussed on sexual health or reproductive health without contraceptive outcomes to prevent unwanted pregnancy. We also excluded systematic reviews conducted in specific population groups in which contraception is used for reasons other than preventing pregnancies (e.g., HIV/AIDS prevention). We limited to reviews published in English language due to resource constraints for translation.

Selection and appraisal of reviews

Titles and abstracts were screened by a single reviewer. All full-text references were screened by two reviewers independently and differences resolved by discussion. We applied the AMSTAR 2 [17] tool to assess the methodological quality of systematic reviews. Quality assessment was conducted by two review authors and the differences were resolved in discussion with a third author. For the quality of primary studies included within systematic reviews, we relied upon the systematic review authors' assessment of quality.

Data extraction and synthesis

Interventions for contraception uptake are designed to act at one or more levels (e.g., individual, couple, family,

community), and we developed a theoretical framework to categorise systematic reviews. The framework was derived from Dahlgren and Whitehead's ecological framework for social determinants of health [18], adapted to reflect the complexity of contraceptive decision-making.

Data were described by categorising and clustering reviews on taxonomy of interventions based on domains in the ecological framework. This involved five steps: tabulating review summaries of evidence; categorising evidence by types of intervention and outcomes; identifying effective interventions; mapping the review conclusions according to the ecological theoretical framework; and constructing synthesis statements within these theoretical domains. We derived synthesis statements of effective interventions based on the pooled effect size (meta-analysis) results of outcomes with a definitive conclusion from moderate and high-quality reviews. We have not attempted to meta-synthesize findings from systematic reviews. Interventions within reviews often addressed more than one domain or type of intervention; however, we assigned reviews based on the focus of most studies. Where there were two similar reviews, we drew on reviews that were higher quality and/or more up to date. We extracted data using EPPI-ReviewerTM software using a pre-tested data extraction tool (supplemental Appendix 1). Results of all contraceptive-related outcomes from included reviews were extracted. Where available, meta-analyses of pooled effect sizes or a range of effect sizes were reported and results were described in general terms as effective, ineffective, or mixed/unclear.

Results

Searches yielded 8005 citation records after de-duplication. After screening of titles and abstracts, 223 full text papers were assessed. Fifty systematic reviews of interventions for contraception choice were selected for data extraction (supplemental Appendix 2). Our findings are based on 50 systematic reviews comprising 877 primary studies of interventions to support choice and use of contraception from 72 countries.

Characteristics of included reviews

Out of 50 reviews, 26 of them were from High Income Countries (HICs), 12 reviews were from Low Middle-Income

Countries (LMIC) countries, 11 reviews had a mix of both HIC and LMIC countries and 1 review didn't specify the geographical location of the primary studies. Most of these primary studies (50%) were from North America followed by Africa (14%) and Asia (12%). Table 1 lists meta-analyses, and systematic reviews of effects without pooling effect sizes, of interventions addressing three domains (individual, couples, community). Statistical meta-analyses more often address the individual domain, and least often address the couples domain (although there may not be so much demand for evidence about the couples domain). They are also more common in schools than community or humanitarian settings (where long-term outcomes are more difficult to assess prospectively). Of the included reviews, we judged 16 to be of high methodological quality, 26 were of moderate quality and eight were of low quality (supplemental Appendix 3).

Contraceptive choice and use at the individual, couples and community domains was addressed by several types of interventions. Fifteen reviews focussed on psychosocial interventions [19–33], nine reviews were school-based interventions [34–42], six reviews focussed on incentive-based interventions [43–48], six on m-Health interventions [49–54], five on educational interventions [55–59], three on social marketing [60–62], three on design of services [63–65], two reviews were community-based interventions [66–67], and one review focussed specifically on interventions in humanitarian settings [68].

Reviews of psychosocial interventions (9 out of 15) and school-based interventions (8 out of 9) were predominantly from high-income countries. Reviews of social marketing and design of services were from high-income countries as well. All the reviews that were incentive-based and community-based were conducted in LMICs. The other reviews (of mHealth interventions, educational interventions, and peer-led interventions) had equal representation from both HIC and LMICs.

Table 2 lists interventions addressing each domain, whether the evidence indicates a positive effect, no effect or an effect that is unclear, and the synthesis statements resulting from the meta-analyses. Much of this evidence is unclear, either because the primary studies provide unclear or mixed findings, or because the reviews are low quality (low AMSTAR score, high risk of bias, or the authors express reservations about the evidence). Even when

Table 1. Types of systematic review addressing each domain.

Domain or setting	Meta-analyses	Reviews with effect sizes not pooled
Individual domain	<i>Psychosocial interventions:</i> Arrowsmith (2012); Wilson (2015); Stewart (2016); Aslam (2017); Mack (2019); Riedel (2020) <i>Incentives/ financial interventions:</i> Belaid (2016) <i>mHealth interventions:</i> Zulu (2020)	<i>Psychosocial interventions:</i> Moos (2003); Ferreira (2009); Lopez (2013); Lopez (2014); Zapata (2015); Hindin (2016); Frederiksen (2018); Halpern (2013); <i>Service delivery:</i> Kirby (2008); Brittain (2018); Desrosiers (2018) <i>Incentives/ financial interventions:</i> Khan (2016); Bellows (2016); Blacklock (2016); Karra (2016); Korachais (2016) <i>mHealth:</i> DeNicola (2020) <i>Education interventions:</i> Lopez (2015; 2016); Dewart (2019); Pazol (2018) <i>Community based interventions:</i> Scott (2015)
Couples domain		<i>Psychosocial interventions:</i> Smith (2015); Zapata (2018); Cavallaro (2019); Rousseau (2019); Aung (2020). <i>Service delivery:</i> Harding (2020) <i>Community based interventions:</i> Sarkar (2015)
Community domain	<i>School based & Peer led interventions:</i> DiCenso (2002); Kim (2008); Oranganje (2016)	<i>School based & Peer led interventions:</i> Bennett (2005); Owen (2010); Blank (2012); Tolli (2012); Lopez (2016); Mason-Jones (2012) <i>School based education:</i> Lopez LM (2016) <i>Education in humanitarian settings:</i> Desrosiers (2020) <i>Community based education:</i> Sharma (2018) <i>Community based interventions:</i> Sarkar (2015) <i>Social marketing:</i> Wakhisi (2011); Carter (2015); Jawad A (2019)

Table 2. Effectiveness of interventions addressing each domain.

Domain or setting	Effective		Unclear/ineffective Reviews
	Synthesis statements	Reviews	
Individual domain	<p><i>Psychosocial interventions:</i></p> <ol style="list-style-type: none"> Motivational interviewing is effective for increasing contraceptive use in the short term for women (Wilson, 2015) Contraceptive counselling is effective in increasing the uptake of IUD among intervention groups (Arrowsmith, 2012) Psychosocial interventions have the potential to increase contraceptive use (including condoms) in LMICs (Riedel, 2020) <p><i>Incentives/ financial interventions</i></p> <ol style="list-style-type: none"> Demand generation and financial interventions improved contraceptive use, and use of contraceptive methods in the post-partum period (Belaid, 2016) <p><i>mHealth interventions</i></p> <ol style="list-style-type: none"> Mobile phone message interventions utilising a behavioural change technique increase contraceptive use among men and women of reproductive age in low- and middle-income countries (Zulu, 2020) 	<p><i>Psychosocial interventions:</i></p> <p>Arrowsmith (2012); Wilson (2015); Riedel (2020)</p> <p><i>Incentives/ financial interventions:</i></p> <p>Belaid (2016); Khan (2016).</p> <p><i>mHealth interventions</i></p> <p>DeNicola (2020); Zulu (2020)</p> <p><i>Community health workers:</i> Scott (2015)</p>	<p>UNCLEAR</p> <p><i>Psychosocial interventions:</i> Moos (2003); Ferreira (2009); Lopez (2013); Halpern (2013); Lopez (2014); Zapata (2015); Hindin (2016); Stewart (2016); Aslam (2017); Frederiksen (2018); Cavallaro (2019); Mack (2019).</p> <p><i>Service delivery:</i> Kirby (2008); Brittain (2018); Harding (2020)</p> <p><i>Incentives/ financial interventions:</i> Bellows (2016); Blacklock (2016); Karra (2016); Korachais (2016)</p> <p><i>Education interventions:</i> Lopez (2015); Dewart (2019); Pazol (2018);</p> <p><i>Community based interventions:</i> Sakar (2015);</p> <p><i>Youth friendly services in humanitarian settings:</i> Desrosiers (2020)</p>
Couples domain			<p>UNCLEAR</p> <p><i>Psychosocial interventions:</i> Smith (2015); Zapata (2018); Rousseau (2019); Aung (2020).</p> <p><i>Community based interventions:</i> Sarkar (2015)</p>
Community domain	<p><i>School based & Peer led interventions</i></p> <ol style="list-style-type: none"> Multicomponent interventions combining educational and contraceptive-promoting interventions were effective in lowering the risk of unintended pregnancy among adolescents (Oringanje, 2016) 	<p><i>School based & Peer led interventions:</i> Bennett (2005); Blank (2012); Oringanje (2016)</p> <p><i>Education interventions:</i> Sharma (2018)</p> <p><i>Community based interventions:</i> Sarkar (2015)</p>	<p>UNCLEAR</p> <p><i>School based & Peer led interventions:</i> Kim (2008); Owen (2010); Lopez (2016); Mason-Jones (2012);</p> <p><i>Education interventions:</i> Lopez LM (2016);</p> <p><i>Social marketing:</i> Wakhisi (2011); Carter (2015); Jawad A (2019)</p> <p><i>Education in humanitarian settings:</i> Desrosiers (2020)</p> <p>INEFFECTIVE</p> <p><i>School based & Peer led interventions:</i> DiCenso (2002); Tolli (2012);</p>

evidence is clear, there are apparent discrepancies between different reviews addressing school based, peer led interventions. Understanding the reasons for these differences requires scrutinising the differences in the design of the reviews and their constituent studies (e.g., differences in populations, interventions, comparisons, outcomes or context).

We synthesised statements about the effects of different types of interventions where evidence of is based on pooled effect sizes (meta-analyses).

Effective interventions

Psychosocial interventions (domains -individual, couple)

Fifteen reviews (Table 1 and supplemental Appendix 3) addressing psychosocial interventions varied in their focus, on women, men, couples and young people. The types of psychosocial intervention described in these reviews include contraceptive counselling, motivational interviewing, information provision, decision aids, group motivation, multicomponent counselling, and behavioural strategies.

Synthesis statement 1: motivational interviewing is effective for increasing contraceptive use in the short term for women. Wilson et al. [20], synthesised evidence

on motivational Interviewing, with a meta-analysis of eight RCTs that had a total of 3424 women with high-risk pregnancies from the United States and South Africa. Although studies were conducted in heterogeneous ways, the review found that motivational interviewing significantly increased effective contraceptive use, immediately after and up to 4 months post-intervention (RR 1.32 95%CI 1.11, 1.56: $p = 0.002$). However, no difference in contraceptive use was shown at 4–8 months or 8–12 months and there was no reduction in subsequent pregnancies or births at 12–24 months.

Synthesis statement 2: contraceptive counselling is effective in increasing the uptake of IUD among intervention groups.

A high methodological quality review by Arrowsmith [22] found three studies on contraceptive counselling (OR =2.00 (1.40–2.85) and two studies on antenatal contraceptive counselling that increased the uptake of IUD [OR =2.33 (1.39–3.91)].

Synthesis statement 3: psychosocial interventions have the potential to increase contraceptive use (including condoms) in LMICs.

A review [26] conducted in 2020 showed that psychosocial interventions were effective for condom use and other contraception use in LMIC settings.

The pooled risk ratios of 31 studies showed psychosocial interventions increased condom use (6% at post-test and 8% at follow-up) and other contraceptive use (14% at post-test). This finding is also supported by two narrative reviews. One found that Community Health Workers increased women's use of contraceptives [66]. Another found contraceptive counselling increased women's use of contraceptives in four studies [32].

However, many reviews offered less conclusive evidence about psychosocial interventions. For instance, findings from a narrative review of psychosocial interventions for preventing repeat pregnancies in teenagers [25] were less clear. Similarly, reviews of peri-abortion contraceptive counselling [28] and intensive counselling for adherence and continuation of contraceptive use [30] found no evidence of effect and low certainty of evidence respectively.

Educational interventions – (domains -Individual, community)

In the absence of a meta-analysis, we provide no synthesis statement about educational interventions. There were five reviews (supplemental Appendix 3) on educational interventions [55–59] that highlight strategies on communicating contraceptive information to consumers, postpartum contraceptive education, electronic interventions for contraception, video/computer-based applications, community education interventions, mass media, web-based and theatre-based interventions. None of the reviews reported pooled effect sizes.

Results found that educational interventions (provider-independent, provider enhanced) improved knowledge ($n=10$ interventions) and attitudes (2 interventions) on method of contraception used [55]. Community education and engagement in family planning interventions were found to be effective for contraceptive use, awareness, and knowledge [58].

Social marketing interventions (domain – community)

Three narrative reviews [60–62] (supplemental Appendix 3) focussed on social marketing interventions, which included community education related to family planning, mass media, theatre, social networking sites and websites. None of the three reviews had pooled findings related to outcomes of interest. Seven studies were effective in improving the knowledge of contraception and reproductive health in adolescents using social marketing interventions [60]. Four studies found community education interventions to be effective in increasing intention to use or attitude about family planning outcomes [61].

Service delivery (domain -individual)

Three reviews [63–65] (supplemental Appendix 3) focussed on the design of services for specific populations. All three had narrative description of results. These interventions were Youth-Friendly Family Planning Services for Young People, policies or programs designed to increase contraceptive use or reduce pregnancy and programs to support aspects of teen parents' self-sufficiency. Four studies were effective in improving emergency contraceptive use [63]. We found 3 studies each to be effective improving

contraceptive use and in enhancing satisfaction or knowledge [64].

Incentives/financial (domain -individual)

Six reviews were of incentive-based interventions [43–48] (supplemental Appendix 3), evaluating interventions such as family planning vouchers, user fees, paying for performance to improve the delivery and uptake of family planning, conditional and unconditional cash transfers to improve use of contraception, financing programs such as credit program, insurance, micro-finance, short-term credit and loans and demand generation interventions. All the reviews, except one [48] did not pool the effect sizes.

Synthesis statement 4: demand generation and financial interventions improved contraceptive use, and use of contraceptive methods in the post-partum period.

Belaid et al. [48] found demand generation interventions (including community – and facility-based interventions, financial mechanisms and mass media campaigns in nine studies increased the current use of contraceptives (pooled OR 1.57; 95% CI: 1.46–1.69) [47]. It also improved knowledge (pooled OR 1.02; 95% CI 0.63–1.64) and attitudes towards family planning and improved discussion with partners/husbands around modern contraceptive methods. Use of modern contraceptive methods increased with financial intervention (pooled OR 2.16; 95% CI: 1.91–2.45).

Mhealth interventions (domain -individual)

The six reviews on mHealth interventions (supplemental Appendix 3) included mobile phone-based interventions, family planning reminder systems and telehealth interventions [49–54].

Synthesis statement 5: mobile phone message interventions utilising a behavioural change technique increase contraceptive use among men and women of reproductive age in low- and middle-income countries. A high-quality review from seven studies reported that phone message interventions are effective in increasing modern contraceptive use (OR 1.22; 95% CI 1.01–1.47) among men and women in low- and middle-income countries though the effect is small [54].

Reviews categorised by setting

School based & peer led interventions (domain – community)

There were seven reviews (supplemental Appendix 3) on school based and two reviews on peer-led interventions for adolescents. The interventions had components of sex education, contraceptive promotion, school-based services, curriculum interventions, skill development, active learning strategies, psychosocial components and peer education.

Synthesis statement 6: multicomponent interventions combining educational and contraceptive-promoting interventions were effective in lowering the risk of unintended pregnancy among adolescents. The review contributing to synthesis statement is a moderate quality review reporting that multi-component interventions were

effective in lowering the risk of unintended pregnancy among adolescents (RR 0.66, 95% CI 0.50–0.87). This is from four RCTs comprising 1905 participants [36].

Other findings

One review found that sex education was effective in improving contraceptive knowledge and use in five studies [35]. Some positive effect was found on contraceptive use, condom use and provision of emergency hormonal contraception in the narrative synthesis of review by Blank [37]. Three studies from a review with school-based interventions were found effective in improving contraceptive use [40]. The two reviews [41–42] on peer led interventions were found to have mixed effect findings on contraceptive outcomes. However, these reviews did not report pooled effect size.

Community based interventions (domain-individual, couples)

Two reviews [66–67] reported community-based interventions (supplemental Appendix 3), however, they did not pool the results. The interventions included community health workers providing family planning services in an in-home setting where multicomponent interventions were delivered by community workers to married couples, and adolescents.

Fifty of 54 studies (93%) in a systematic review found Community Health Workers in LMIC were effective in improving contraceptive use [66]. Similarly, 19 of 23 studies (83%) found that knowledge and attitudes towards family planning improved with intervention. Six studies in the review conducted in resource constrained settings found effectiveness of community-based interventions for contraceptive use [67].

Interventions for humanitarian settings

A narrative review on sexual and reproductive health interventions found contraception and condom use education improved condom knowledge, attitudes, and contraceptive use for young people in humanitarian and LMIC settings [68].

Discussion

There have been hundreds of studies of interventions for contraception use (877 studies reported in 50 reviews). Most studies were in North America, most interventions addressed individual-level contraception choice and use, and most studies showed non-significant findings. We highlight the types of interventions which are effective for contraception choice and use. Of the 877 primary studies in 50 included reviews, 446 studies were from North America. There were a good number of studies from Africa (125), Asia (111) and Europe (64). Out of the 50 reviews, six reviews contributed to each of the six synthesis statements. Among these six reviews, four reviews [20,22,26,54] were of high quality and two reviews [36,48] were of moderate quality. The most common intervention used was psychosocial, followed by school-based, incentive-based, m-health applications and educational interventions.

Effective interventions

Interventions shown to be effective are psychosocial interventions including motivational interviewing and contraceptive counselling, school-based education and contraceptive promoting interventions, demand-generation interventions (community and facility based, financial mechanisms and mass media) and m-Health interventions (specifically mobile phone messaging). Motivational interviewing is effective in increasing contraceptive use in women with high-risk pregnancies [20]. Other psychosocial interventions such as contraceptive counselling, (including community-based counselling and behavioural strategies) resulted in increases in contraceptive use, choosing a more effective contraceptive method and uptake of Intra Uterine Devices (IUDs) [22]. Another recent review found condom use increased with psychosocial interventions in LMICs. This review reported low heterogeneity among the studies but found limited evidence for other contraceptive outcomes [26].

The evidence on other interventions and populations is generally more equivocal, although there are some positive findings. For instance, a review of school-based interventions (a combination of educational and contraceptive-promoting interventions) lowered the unintended pregnancy risk of adolescents [36]. The authors cautioned careful interpretation of results due to the lack of biological outcomes and possible self-report bias. However, the methodological strengths include relatively large sample size and statistical control for baseline differences.

Demand generation interventions increased the use of modern contraceptive methods. The review authors cautioned about the low-quality of the contributing studies and suggested the need for robust study designs to identify the most effective demand generation interventions to increase acceptance of modern contraceptive methods and have suggested to have more studies done on implementation, costs and cost-effectiveness [48]. Among the m-Health interventions, mobile phone message increased modern contraceptive use among men and women of reproductive age in LMICs, though the effect was small [54].

Social determinants of health

The reviews were mapped to various domains of the ecological framework for social determinants of health such as individual, partner, family, community and the wider society. Overall, the reviews, which had effective interventions included in the five synthesis statements were targeted to individual domain and one synthesis statement pertains to social and community network domain.

School-based and peer-led interventions fall in the domain of social and community network, which is an important influential factor in decision-making on contraception [14]. However, among seven reviews, only one review reported a meta-analysis of effective school-based interventions [36]. Three reviews were based on the domain of wider community that comprises of social marketing interventions and did not pool the findings to demonstrate the impact of intervention. One review, which evaluated social networking sites (SNSs) which is popular

and is a promising platform to address the unmet need for contraception found little scientific evidence to improve contraceptive use or adherence among women [62]. Among the different types of interventions, psychosocial interventions constitute the most effective type of intervention, which cuts across the domains of individual, couple and community. Another three reviews [20,22,26], which had meta-analysis of effective interventions that contributed to synthesis statements were focussed on the individual domain and targeted towards women. Another individual domain intervention, which was found to be effective was incentive/financial based intervention [48]. A review on m-Health intervention, which was effective also belonged to the individual domain [54].

Gaps in evidence

Our findings indicate some important gaps in the evidence. Most outcomes were psychosocial and relied on self-report measurements rather than biological outcomes. Most interventions included female participants; however, some interventions were directed towards both male and female participants and did not mention clearly whether the participants were couples. There was very limited evidence available concerning social marketing, educational and community-based interventions.

Strengths and limitations of this overview

This systematic map of reviews gave us an overall picture of the effectiveness of different types of interventions in improving use of various contraceptive measures and observed important patterns from which we could draw conclusions. It allows interventions to be compared, providing policymakers with the evidence they need to make better decisions related to contraceptive choice and use. With the upsurge in the number of systematic reviews, a vital next step to provide policymakers with the evidence they require through mapping systematic reviews. To our knowledge, this systematic map is unique in synthesising many systematic reviews on interventions to support choice and use of contraceptives.

We were thorough in our search for locating systematic reviews from databases mentioned in the methods section; however, our search strategy may have missed reviews indexed in other primary research databases and unpublished sources. We found a large body of evidence lies in studies conducted in HICs. This may lead to skewing of the data, which limits the generalisability of the findings. This may also throw light to the need of primary research in LMICs. We also found reporting of outcomes across studies done by the review authors in different ways, hence it is necessary to have a uniform approach in reporting outcomes across studies for comparability of the studies. Most of the studies had self-report outcomes rather than biological outcomes. We have assessed the quality at review level and not assessed quality at individual study level. We have used reviews with high and medium quality, which have meta-analysis of pooled effect sizes to derive synthesis statements of effectiveness.

The methodology used for this review has some limitations. We did not check if primary studies were repeated in

the reviews, which may involve some double counting of primary studies. Given the high-level nature of the synthesis, it is unlikely to have a major impact on the interpretation of findings. Some of the intervention categories are very broad and the findings are also partly dependent on review authors' categorisation of the interventions. Hence, results should be interpreted with caution.

Conclusions

This systematic map presents evidence from 50 reviews that synthesised 877 studies evaluating the effects of interventions to increase use of contraception. The most promising evidence of effectiveness relates to motivational interviewing, contraceptive counselling, psychosocial interventions, school-based interventions (a combination of educational and contraception-promoting interventions), demand generation interventions and mobile phone messages. Even in resource constrained settings in LMIC, community-based interventions can increase contraceptive use. There is evidence of good enough quality to guide the choice of interventions for contraception to implement in school, healthcare or community settings.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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