Scoping review of research on self-managed medication abortion in low-income and middle-income countries

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ABSTRACT

Background We undertook a scoping review of recent studies on self-managed medical abortion (MA) or abortion where some or all of the process is led independently by the person having the abortion, in low-income and middle-income countries (LMICs) to uncover evidence gaps and help stakeholders leverage existing evidence.

Methods We searched five bibliographic databases for all articles published on MA between 2007 and July 2020 in LMICs. The search yielded 1294 articles. We identified 107 articles in which one or more of the three WHO-defined subtasks for MA was self-led outside of a clinic setting, and use of drugs that are part of safe, evidence-based regimens was related to the study exposure or outcome. We classified these studies by subject area, study design, country, legal context, gestational age and other categories.

Results The 107 studies covered research in 44 countries, of which 18 have liberal abortion laws. Seventy-four articles reported on quantitative research methods, of which 14 were randomised controlled trials. Fifty-two studies focused on MA in the first trimester. Sixty-two focused on WHO subtask two (drug administration) and 32 focused on subtask three (assessing and managing abortion completion). We found little research on self-management of the entire MA process, innovative approaches to supporting self-managed MA or the needs of underserved populations.

Conclusion We recommend syntheses of evidence on safety and efficacy of self-managed MA and preferences of people undergoing self-managed MA. We also encourage new research on topics including self-management of the entire process, the needs and experiences of underserved populations and innovative approaches to supporting people undertaking self-managed MA. The time is opportune for amplifying and expanding evidence to inform programmes and policies on self-care.

Key questions

What is already known?
► Self-management of medical abortion (MA) can afford people autonomy and privacy, particularly where abortion services are not readily available.
► Research on self-led use of MA in low-income and middle-income countries is important for an understanding of the experiences and needs of people who undertake self-managed abortions.

What are the new findings?
► Research on self-managed abortion has become more common in recent years.
► Most of the research on self-managed abortion has taken place in countries with liberal abortion laws, and much of it has focused on the administration of abortion drugs.
► There has been little research on self-management of the entire MA process, innovative approaches to supporting self-managed MA or the needs of underserved populations.

What do the new findings imply?
► A systematic review of the evidence on safety, efficacy and feasibility of self-managed MA in legally permissive settings; safety, efficacy and feasibility of self-managed drug administration without clinic support; and people's experiences and preferences related to MA self-management are warranted to help stakeholders make use of this evidence.
► Self-managed abortion may well land on a spectrum characterised by the extent to which abortions are self-managed; service delivery options across this spectrum should be explored and evaluated.
► Research on self-managed MA is all the more urgent in light of the COVID-19 pandemic.

INTRODUCTION

Medical abortion (MA), the combination of mifepristone and misoprostol or the use of misoprostol alone, in the recommended doses, is a safe and effective intervention for the termination of pregnancy.[1] The process is simple and can be administered with support from a wide range of trained non-physician health professionals even outside of a health facility. Moreover, unlike surgical procedures, MA can also be administered by people themselves with the appropriate information.[2]

In May 2019, the *British Medical Journal*, in collaboration with the WHO, published a series of articles on self-care interventions for sexual and reproductive health (SRH). Public health experts noted that self-care in SRH

is a promising avenue for increasing access, autonomy, affordability and choice, and self-management of MA is a potential strategy for improving health.[3 4] Self-managed MA is a form of self-care in SRH, which can afford people independence and privacy, particularly where health system-based services are not readily available. For people in settings where abortion is highly legally restricted, self-managed MA is sometimes the only option for safe termination of pregnancy.[5] However, people's access to pills and high-quality information for self-managed MA is often constrained by government regulations and medical guidelines even in settings with liberal abortion laws.

A proposed roadmap for research on self-managed abortion in the USA highlighted the need to better understand how people who are accessing self-managed MA are doing so, to determine whether they are self-managing safely and document and develop alternative mechanisms of service delivery.[6] A recent scoping review of the evidence on self-managed abortion in high-income countries concluded that future research studies should focus on mechanisms for providing MA that would allow for greater access.[7] There is evidence of widespread self-led use of MA, whereby the person having the abortion independently manages some or all of the process, in low-income and middle-income countries (LMICs), both formally and informally. A mapping of the existing evidence and roadmap for future research in these contexts is important for a deeper understanding of how people are independently accessing, administering and managing the side effects and complications associated with MA, and their preferences for self-management, to inform recommendations in safe abortion guidelines and shape MA service delivery globally. The WHO's consolidated guidelines on self-care interventions for SRH also highlight the need for a broader review of the evidence on self-management of SRH care, including self-managed abortion.[8]

Scoping reviews provide an overview of evidence by mapping the volume and nature of research in a broad subject area. Scoping reviews do not synthesise the findings of specific studies, rather they help identify topics for which the volume of existing research is extensive enough to warrant a synthesis of findings and topics for which new primary research is needed.[9] In contrast to typical systematic reviews, scoping reviews include research using a range of study designs. As scoping reviews are not designed to assess a set of synthesised findings, an evaluation of methodological quality or risk of bias is not typically included.[10] Recent advances in support for self-care, availability of recommended medications and necessity of access to abortion that involves limited interaction among individuals, have drawn attention to the need for understanding the scope of evidence on MA. A recently published scoping review by Moseson et al explored evidence on all forms of self-managed abortion occurring globally, including unsafe procedures.[11] The majority of papers identified in that review document people using unsafe abortion methods.

We undertook a scoping review of the recent studies on self-managed MA in LMICs. In contrast to the review by Moseson et al, we focus exclusively on studies where people self-managed MA using WHO recommended drugs and regimens in LMICs, to inform safe abortion and self-care guideline and programmes, and employ broader search criteria in order to capture more studies that address self-managed MA. Also, in contrast to the prior review, we classify studies according to the study design employed, the legal context in which they took place and the phase of the abortion process that was self-managed. These phases align with the WHO's subtasks of the MA process. These classifications are used to help identify research gaps relevant to policies, programmes and guidelines. The aim of this review was to assess the volume and types of existing research on self-managed MA in LMICs in order to identify knowledge gaps and facilitate the use of existing evidence to support policies, programmes and advocacy.

METHODS

We conducted a search of five bibliographic databases (online supplemental appendix 1): PubMed, POPLINE, Embase, Global Health and Web of Science, to identify all articles published related to MA between 2007 and July 2020 in LMICs, as defined by the World Bank.[12] The search strategies were developed by an experienced librarian and based on team discussion. This search yielded 1294 unique articles (figure 1).

A team of four researchers employed a two-stage screening process to determine whether studies were relevant for inclusion in the scoping review. In the first stage, we reviewed titles and abstracts of all 1294 articles and used the following criteria to determine which full texts to retrieve: the study focused primarily on induced medication abortion, data were collected from at least one LMIC, the article was written in English and it was published between January 2007 and July 2020. We did
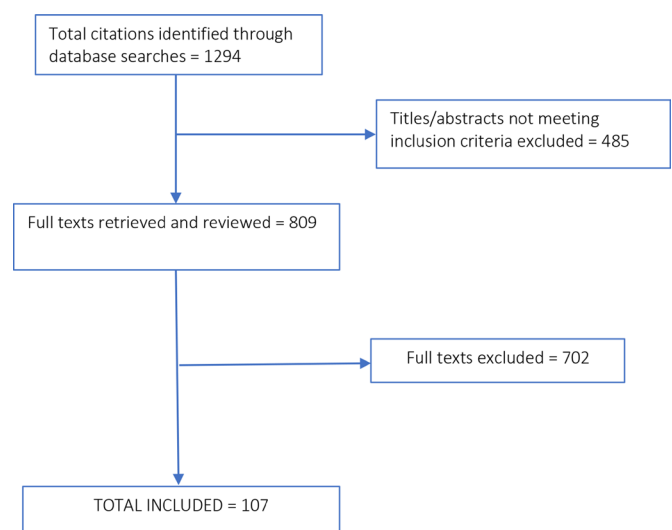

Figure 1 Scoping review screening process.

not retrieve full texts if it was clear from the abstract that the study focused exclusively on spontaneous abortion, surgically induced abortion or abortion using unsafe methods.[13] Titles and abstracts were also excluded if the article represented a review of other research, correction, commentary, editorial, letter, case report, guideline, announcement, endorsement, news/current affair, trial and review protocol or duplication. We retrieved and reviewed 809 full texts meeting the inclusion criteria above.

In the second stage, we reviewed the 809 full texts to identify studies on self-managed MA. We included articles on self-managed MA that employed any research design and met all the following additional criteria: one or more of the steps in the MA process was self-led outside of a clinic setting, self-management was explicitly related to some aspect of study exposure or outcome, the study focused on induced, elective abortions, and the study documented the use of evidence-based safe abortion drugs, such as mifepristone–misoprostol or misoprostol-only.[1] Full texts of articles were excluded if the study focused on the mechanism of action of MA (how the drugs produce an effect in the body), or if it was clear on closer examination that the study did not meet the inclusion criteria set out in the first stage. Where there were queries about judgements at any stage of the review process, researchers conferred with one another and came to agreement. The final search results were exported into EndNote, where duplicates were removed.

In all, we identified 107 articles describing studies that met the criteria for this review (figure 1, online supplemental appendix 2). We classified these studies according to study design employed, gestational age of pregnancies in the sample and the legal status of abortion in the study country.[14] We also categorised studies according to the steps in the process that were self-managed, using WHO subtasks for MA.[2] Self-care in SRH is challenging to define, document and measure[4] and the WHO subtasks provided us with a broadly recognised framework specific to MA. These subtasks are:

Subtask 1: assessing eligibility for MA.

Subtask 2: administering the medications and managing the process and common side effects.

Subtask 3: assessing completion of the abortion and whether there is a need for further clinic-based follow-up.

A data-charting form was jointly developed by two reviewers to determine which variables to extract. The two reviewers independently charted the data, discussed the results and continuously updated the data-charting form in an iterative process. Within each of these subtasks for MA, we developed subcategories based on themes emerging from the included studies (table 1). Because some studies explored topics beyond what was classifiable in the subtasks, we developed a set of additional categories: studies of knowledge about and attitudes toward self-managed abortion among partners, providers and others; people's preferences and general experiences with self-management of MA (not specific to a subtask);

the cost-effectiveness of self-managed MA and prevalence of self-managed MA. Several of the studies covered more than one topic area or study design. For example, some clinical trials conducted secondary analysis in which the data were treated as arising from a cohort study. We categorised papers into all the topic areas they covered, and the primary study design employed.

To determine countries' legal context for abortion, we referred to the Guttmacher Institute's classification[14] and collapsed the classification into three categories: restrictive, moderately restrictive and liberal. Countries classified as 'restrictive' prohibit abortion altogether or permit abortion only to save the life of the woman, or in cases of rape, incest or fetal anomaly (this sums to 45 because of the inclusion of Mexico City). Countries classified as 'moderately restrictive' permit abortion to preserve the physical or mental health of the person. Countries classified as 'liberal' further permit abortion on socioeconomic grounds or have no restrictions as to reason. However, liberal countries may impose gestational age limits or require authorisations.

Patient and public involvement in research

Neither patients or the public were involved in developing any aspect of this research.

RESULTS

Of the 107 studies included, 10 studies focused on WHO subtask one, assessed people's ability to determine gestational eligibility for MA (figure 2). Of the 62 papers that focused on subtask two, 50 focused on where people obtained the MA drugs themselves. In 25 of these 50 studies, people obtained drugs from a pharmacy, in 23, they obtained drugs from a healthcare facility, and in three, they obtained drugs online.

Overall, the 107 included studies identified in this review covered 44 countries. Nearly half (18) of these countries had liberal abortion laws, 11 had moderately restrictive laws and 16 had restrictive laws (this sums to 45 because of the inclusion of Mexico City). Forty-six of the 107 studies took place in just three countries: India (n=19), South Africa (n=12) and Nepal (n=15) (figure 3). Nine studies covered more than one country; 25 countries were represented in multiple studies.

Three-fourths (n=74) of the articles reported on quantitative research methods (table 2). Of these, 14 were randomised controlled trials (RCTs). Another 22 were cohort studies and 38 were cross-sectional studies. Twenty-six articles reported on qualitative research, and seven studies employed a mix of quantitative and qualitative methodologies. Fifty-two studies focused on MA in the first trimester (table 3). Three studies considered the second trimester. Ten examined self-management of MA in both the first and second trimesters. Forty-two did not specify any gestational age. Notably, no RCTs included abortions in the second trimester. This review also detected an upward trend in the publication of

Table 1 Predefined and inductively defined categories of analysis

| Category	Definition
Subtask 1: Assessing eligibility for medical abortion	
Eligibility assessment	Any assessment of self-controlled methods of determining eligibility
Subtask 2: Administering the medications and managing the process and common side-effects	
Information and counselling	Provision or receipt of information from non-provider sources, such as pamphlets, hotlines or websites (lay sources of information) about how to procure and administer MA
Feasibility	Feasibility of administration of all or part of an MA regimen by an individual at home or elsewhere outside of a health facility
Safety and efficacy	Clinical outcomes (including completion and complications) related to administration of MA by an individual at home
Management of side effects and complications	Self-management of pain, bleeding, expulsion of the products of conception and self-identification of the need to seek formal healthcare for potential complications
Sources of medicine	
Pharmacy provision	Documentation of sourcing of MA from pharmacists or pharmacies
Facility	Documentation of sourcing of MA from a health worker in a health facility
Online provision and telemedicine	Provision or acquisition of MA pills and/or information about the process via website or via telemedicine, that is, providers using telecommunications technology to interact with patients remotely
Location of drug administration	
Home and facility	Administration of part of the regimen at home and part of the regimen at a health facility
Home only	Administration the entire drug regimen at home
Subtask 3: Assessing completion of the process and the need for further clinic-based follow-up	
Approaches to self-assessment of completion	Approaches to determining completion of process, such as checklists, β-hCG, other technologies
Post-MA contraception	Self-led take up, safety and acceptability of contraceptive methods after MA
Failure and adverse events related to self-use	Prevalence and characteristics of adverse events, including the need for surgical intervention, hospital admission, blood transfusion, emergency department treatment, intravenous antibiotics administration, infection and death, as follow-on events from cases of self-administration of combined regimen and/or misoprostol-only induced abortions
Other	
Knowledge, attitudes and practices	Measure of awareness and opinions regarding MA self-use among partners, providers and relevant others
Preferences and experiences with self-use	Measure of preferences regarding self-use of MA from people taking the drugs
Cost-effectiveness	Documentation of the degree to which a specific aspect of MA self-use is good value for the resources required
Prevalence	Documentation of measurement of the number of cases experiencing a specific aspect of MA self-use in a particular population at a given time

MA, medical abortion.
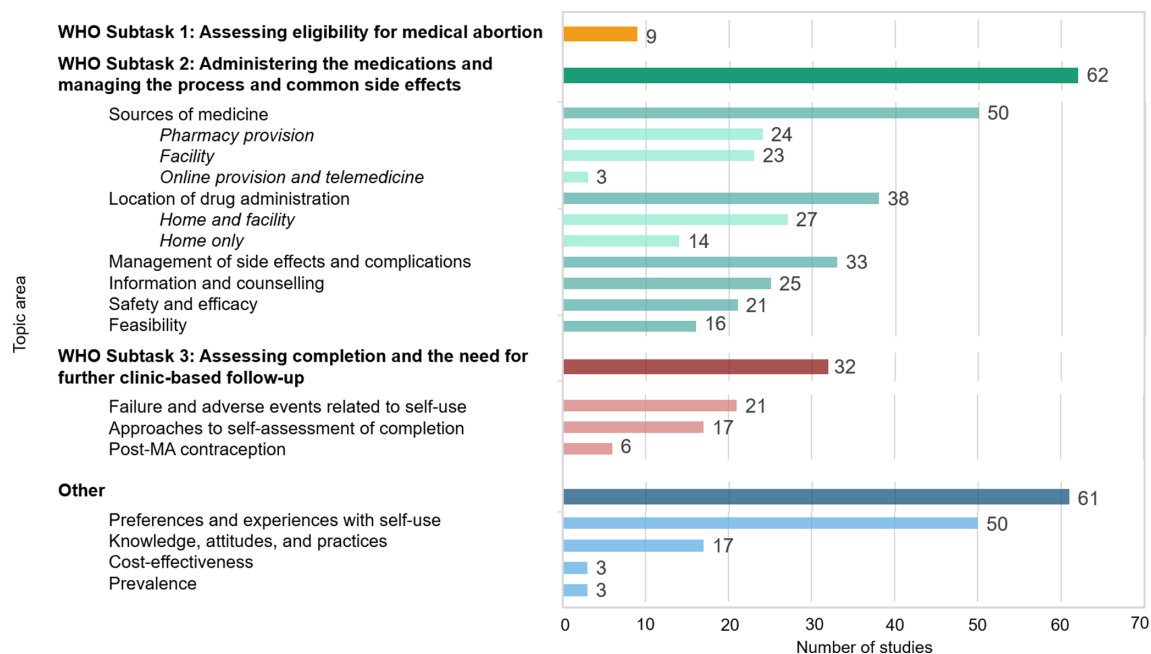
Figure 2 Included articles by topic area*. *Studies could be classified into more than one subtask or other topic area.

research on MA over the study period; with just one study published in 2007 and 2008 and as many as 18 published in 2018 (figure 4).

Thirty-eight studies reported on the location of administration. In 27 of these studies, people took drugs both at home and at the health facility. Many people took a regimen of mifepristone and misoprostol, administering the first dose in a clinic or hospital and the second dose later at home. In all 38 studies, people had some sort of support from or interaction with a health facility. In 14 studies, all drugs were administered at home (figure 2).

Thirty-three of the 62 studies that focused on subtask two examined people's ability to manage side effects and complications, 25 focused on modes of information and counselling, 21 studied the safety and efficacy of the process and 16 examined the feasibility of self-managing this subtask (figure 2).

Of the 32 studies that focused on the third subtask, 21 examined failure and adverse outcomes related to self-managing MA and 17 focused on approaches to self-assessment of completion of MA. Only six studies directly addressed self-management of post-MA contraception (figure 2).

Fifty studies documented people's preferences and general experiences with self-management of MA. Seventeen studies examined the knowledge of and/or attitudes toward self-management among partners, providers or others and three explored the cost of self-managed MA. Three included studies documented the prevalence of self-management of MA (figure 2).
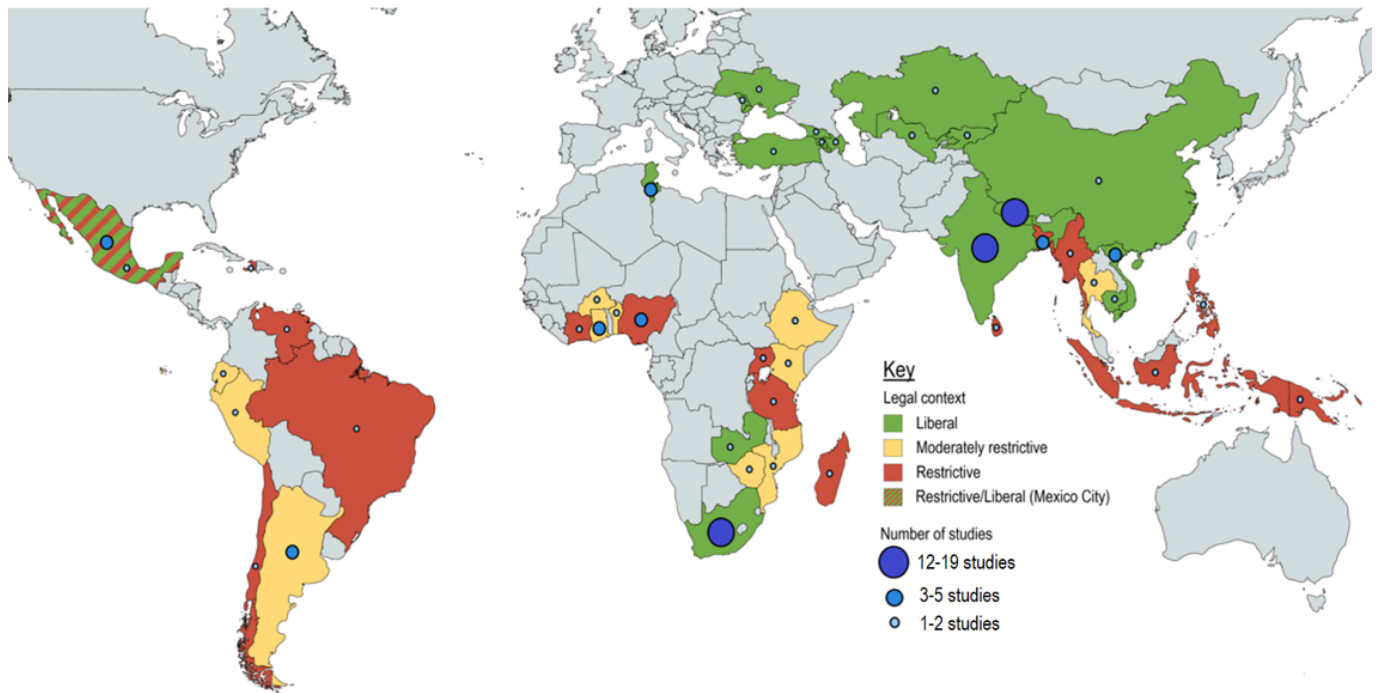
DISCUSSION

We identified a substantial body of research on self-managed MA in LMICs from the past decade. We have identified research gaps as well as topic areas for which

syntheses of existing evidence could raise the visibility of key findings and make them more accessible to other researchers, as well as to policy-makers and programme planners.

The dearth of research on self-managed MA in legally restrictive settings, including on how people access and use evidence-based safe drugs in these settings is notable. We suspect this shortage is related to practical challenges to studying this topic in such settings, such as obtaining necessary approvals for the research protocol and enrolling subjects willing to admit to their abortions. More research in legally restrictive settings is warranted to the extent that it can be done without putting people and providers at risk, as the practice of self-managed MA and people's experiences is likely to be markedly different from liberal contexts.

Innovative approaches, or approaches involving new or rarely used technologies or procedures, for providing medications and supporting self-managed MA, such as web-based services and telemedicine, also stand out as a topic warranting further research and evaluation. Innovative mechanisms for providing information to people were also considered a priority research area for the advancement of MA self-use in the USA.[6 7] Digital and web-based health interventions align closely with the movement towards self-care in many areas of global health, and WHO recently issued guidelines on digital health interventions.[15] While only two papers on this topic met the inclusion criteria for this review, we have identified others that do not specify whether they took place in LMICs.[16 17] We also identified a literature review on mHealth strategies for a range of health issues, not limited to abortion.[18] More research on the feasibility and effectiveness of these strategies is needed to establish their role in supporting self-managed MA. We expect that

Liberal		Moderately Restrictive		Restrictive	
Country	**# of studies**	**Country**	**# of studies**	**Country**	**# of studies**
India	19	Ghana	4	Bangladesh	5
Nepal	15	Argentina	3	Nigeria	4
South Africa	12	Burkina Faso	2	Mexico	4
Tunisia	3	Kenya	2	Brazil	2
Vietnam	3	Peru	2	Burma (Myanmar)	2
Armenia	2	Thailand	2	Haiti	2
Georgia	2			Papua New Guinea	2
Mexico City	2			Tanzania	2
Moldova	2				
Uzbekistan	2				
Zambia	2				
One study took place in each of the following countries: Azerbaijan, Cambodia, China, Kazakhstan, Kyrgyzstan, Turkey, Ukraine.		One study took place in each of the following countries: Benin, Ecuador, Ethiopia, Mozambique, Zimbabwe.		One study took place in each of the following countries: Chile, Cote d'Ivoire, Indonesia, Madagascar, Philippines, Sri Lanka, Uganda, Venezuela.	
TOTAL	71		20		31

Figure 3 Legal context by number of studies. Nine papers covered more than one country and were counted once for each country they were set in. Two papers describing results from Mexico City have been counted separately, as Mexico City has a more liberal legal context than the rest of Mexico. One study took place on the Thailand-Burma border; we have counted it once toward each country. (We use the terminology 'Burma' as used by the authors of the two papers that took place there.) One paper described the global abortion context, it is not counted it here. One study covered Moldova, Mexico and USA, but we have excluded USA from the LMIC country counts. LMIC, low-income and middle-income countries.

research of this nature has ramped up significantly in the wake of the COVID-19 pandemic.[5 19]

The studies we found did little to acknowledge that people's needs pertaining to self-management might vary according to their circumstances. Underserved people, including people living in rural areas or in conflict or postconflict settings, and young people and poor people, might be most in need of access to self-managed MA. At the same time, they might lack access to services, facilities (such as plumbing) and supplies (such as sanitary napkins) that they would need in order to complete an abortion on their own safely and in privacy. We encourage research on the needs, preferences and experiences with self-managed MA of people in underserved populations. We would underscore, as others have noted, that 'when self-care is not a positive choice but born out of fear or because there is no alternative, it can increase vulnerabilities'.[4 20] Self-managed abortion in

Table 2	Distribution of articles by study design
Study design	Number of studies
Cross-sectional/observational	38
Qualitative	26
Cohort	22
Randomised controlled trial	14
Mixed methods	7
Total	**107**

Figure 4 Number of included articles, by year over the study period.

these settings should be a choice, not a reflection of a lack of options.

We found little research on people's ability to ascertain whether they are eligible for MA in low resource settings, and on ways to help them make this assessment. Other topics for which the evidence base is weak include the costs of self-managed MA and effective means of providing postabortion contraceptive services following self-managed MA.

We did not find any research on self-management of the entire MA process. This should not be taken to mean that fully self-managed MA is rare; rather this might be because documenting self-management of the entire process for research is methodologically challenging. Most of the studies observed people whose abortions were partly supported by a health facility and/or a trained health worker because it may be difficult to recruit people seeking abortions outside of health facility settings into research. People who sought drugs from a pharmacy might have fully self-managed abortions without clinic support, but typically they were not followed-up. Studies that examine the safety, efficacy, acceptability and feasibility of a fully self-managed abortion are needed, though this would require investment in appropriate, and potentially expensive, study designs.

We recommend syntheses of existing evidence using systematic reviews, meta-analyses or literature reviews, to help policy-makers, programme planners, donors and other stakeholders take advantage of the substantial research that has been done on the following topics: safety, efficacy and feasibility of self-managed MA in legally permissive settings; safety, efficacy and feasibility of self-managed drug administration without clinic support (subtask two); and people's experiences and preferences related to MA self-management. These syntheses could inform programmes and policies and could help

Table 3	Distribution of articles by gestational age
Trimester studied	Number of studies
First	52
Second	3
Both first and second trimesters	10
Not stated	42
Total	**107**
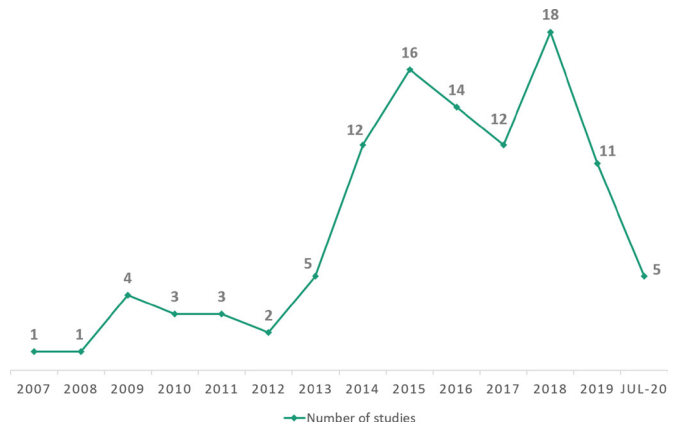
investigators identify new research priorities in these topic areas.

Some of the literature on the location of drug administration has already been reviewed. One review found consistent evidence that self-administering misoprostol with clinic support was as effective as clinic administration.[21] In a more recent review, authors noted that more evidence is still needed on whether clinical supervision is necessary for self-use of mifepristone as part of a combined mifepristone–misoprostol regimen.[22]

Moseson *et al* conducted a systematic scoping review of both safe and unsafe self-managed abortions, covering research published by early 2019. Though they did not limit their search to studies in LMICs or studies done since 2007, they identified fewer studies using WHO-recommended drugs than we found in this review (64 vs 107). In addition, they did not classify abortions by the subtask that was self-managed. But because they conducted a systematic review in addition to a scoping review, the authors were able to identify a lack of consistency in the definitions of abortion safety and effectiveness, and a wide range of observations with respect to the severity of complications and adverse events that people experienced. The authors also observed that most self-managed abortions are still done using unsafe methods.

Following a regional conference on safe abortion in sub-Saharan Africa in 2016, a panel of experts proposed a research agenda on self-managed abortion.[23] Like us, they noted a dearth of studies that followed people through multiple steps in the abortion process. The experts also called for more research on people's preferences and experiences with self-use of MA. By contrast, we found that much research has been done on this topic. This underscores the need for syntheses of the evidence to help stakeholders better leverage existing research.

There is likely a great deal to be learnt from programmes in the field that have already been supporting self-managed MA. Raising the visibility of these lessons through programme evaluations could further accelerate progress in expanding access to safe, self-managed MA. Indeed, a recent review of evidence on interventions to

improve quality of pharmacy and drug shop provision of MA in LMICs found only three published studies on this topic.[24] Evaluations of programmes that test new ways, including mHealth strategies, to provide information and counselling and postabortion contraceptive counselling to people seeking self-managed MA can both leverage and add to the evidence based on self-managed MA.

This review has some limitations. We only searched five bibliographic databases and may have overlooked studies reported in databases, such as ClinicalTrials.gov and others. As our strategy was designed to search for articles published in specific LMIC countries, any literature only naming regions would have been missed. We only included peer-reviewed, published research and have likely missed relevant grey literature, including unpublished programme evaluations. We only included abortions in which people were known to use drugs that are supported by evidence-based guidelines (ie, WHO Safe Abortion Guidelines).[1] It is also possible we excluded some articles that were eligible for inclusion in our search. For example, we excluded papers if abstracts indicated that they focused on unsafe abortions and did not mention misoprostol, but some of these might have included people who used safe drugs under unsafe circumstances. We may also have missed relevant findings from studies in which self-managed MA was not an exposure or outcome of interest. Finally, we did not conduct a hand search of articles in relevant journals or contact experts in the field for key literature. Therefore, we may have missed papers indexed or published after the date we conducted our database searches.

Defining and measuring self-management are common challenges to studying it.[4] Researchers have not all employed the same definition of a self-managed abortion. For example, Kapp *et al* defined self-managed abortion as provision of 'drugs from pharmacies, drug sellers or through online services or other outlets, without a prescription from a clinician, followed by a woman's self-management of the abortion process, including care-seeking for any complications'.[23] Moseson *et al* classify an abortion as self-managed 'any action a person takes to end a pregnancy without clinical supervision'.[11] We suggest that self-managed abortion lands on a spectrum, characterised, for example, by the number of subtasks that are self-managed and the extent to which people are supported by trained providers. Rather than classifying MA as either self-led or provider-led, it might be more appropriate to characterise the extent to which abortions were self-managed. In order to capture self-managed abortions that fall across the spectrum, we employed a broad definition in which the abortion is defined as self-managed if any of the WHO abortion subtasks occurred outside a clinic setting. Our approach to defining self-managed abortion and classifying articles aligns with WHO guidelines on health workers roles in providing self-abortion care, which make separate recommendations for each subtask of the abortion process.[2]

Self-care in SRH is a promising avenue for increasing access, autonomy, affordability, choice and health. The current context of the novel coronavirus disease 2019 pandemic is one example of how access to MA without interaction with a healthcare provider may not simply be a preference but a necessity for people wanting to end a pregnancy and remain safe from contracting COVID-19. The UK government decided to temporarily allow home use of both mifepristone and misoprostol for early MA as a precaution during this pandemic.[25 26] The time is opportune for taking stock of the evidence and considering how it can be synthesised and amplified to persuade governments to make such policies permanent and widespread.

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