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Data availability: All relevant data are accessible in an open repository hosted by the University of California (DASH) https://doi.org/10.7272/Q6XS5SKD. Links are provided as follows: S1: Table 3 - Sociodemographic and other characteristics about people who self-managed an abortion; S2: Table 4 – Reasons reported for self-managing an abortion; S3: Table 5 - Emotional experiences with self-managed abortion; S4: Appendix 1 - Systematic review search strategy.

Abstract

Self-managed abortion, when a person performs their own abortion without clinical supervision, is a model of abortion care used across a range of settings. To provide a comprehensive synthesis of the available literature on self-managed abortion, we conducted a systematic search for peer-reviewed research in April 2019 in PubMed, Embase, Web of Science, Popline, PsycINFO, Google Scholar, Scielo, and Redalyc. We included studies that had a research question focused on self-managed abortion; and were published in English or Spanish. The combined search returned 7,167 studies; after screening, 99 studies were included in the analysis. Included studies reported on methods, procurement, characteristics of those who self-managed, effectiveness, safety, reasons for self-managed abortion, and emotional and physical experiences. Numerous abortion methods were reported, most frequently abortion with pills and herbs. Studies reporting on self-managed medication abortion reported high-levels of effectiveness. We identify gaps in the research, and make recommendations to address those gaps.

Key words: abortion; misoprostol; self-administered abortion; self-induced abortion; self-managed abortion; self-sourced abortion; scoping review, systematic review

Introduction

Abortion is a common procedure worldwide, with approximately 56 million induced abortions occurring annually(1). Abortion occurs in every setting, regardless of whether the procedure is legal or illegal, safe or unsafe, widely available or difficult to access. Despite conclusive evidence that induced abortion is safe and effective(2), and is associated with a host of positive outcomes for the pregnant person[1] and their families (3-8), many countries continue to restrict access to abortion. Regardless of the legal climate, people may seek alternative models of abortion provision, such as self-managed abortion, when they cannot or do not want to access facility-based abortion care.

Self-managed abortion, also referred to as self-induced, self-sourced, self-administered, or, colloquially, "DIY" abortion, can be defined as when a person performs their own abortion outside of a medical setting. For the purposes of this review, we define self-managed abortion explicitly as any action a person takes to end a pregnancy without clinical supervision. This includes a wide array of experiences, including ingesting herbs, using misoprostol, inserting objects into the vagina, using medication under the guidance of a safe abortion hotline, a combination of these methods, or other methods. Because the topic of self-managed abortion is understudied and underrepresented in the academic literature on abortion, in our definition of self-managed abortion, we deliberately do not distinguish between "traditional" approaches that rely on herbs, tisanes, massage, etcetera, and approaches that rely on allopathic medication (e.g., mifepristone and misoprostol) used outside the confines of clinical supervision. Self-managed abortion occurs across settings, including where abortion is legally available on request and accessible(9) – and in some instances, may be a preferred option over clinic-based models of abortion

[1] To acknowledge that pregnancy is experienced by people of many genders, we endeavor to use the gender-inclusive term "people" in our discussion of pregnancy and abortion experiences generally. When referencing specific studies that included only "women", we will use the more specific "women" to be consistent with what was reported.

care, due, among other reasons, to considerations about autonomy, privacy, confidentiality and perceived mistreatment by formal health systems (10-13).

Although there is increasing awareness of self-managed abortion as both a method of preference and a method of last resort (14), self-managed abortion is not a new phenomenon. Documentation of the occurrence of self-managed abortion extends throughout history and across cultures, and continues in the present day. Despite evidence of its occurrence, much is still unknown about self-managed abortion—its global incidence, the experiences, outcomes, and characteristics of those who pursue it as an option, and more. There are challenges to studying self-managed abortion, such as obtaining ethical approval to study what is often an illegal practice, recruiting participants who are willing to disclose their experiences, and concerns about communicating results publically due to fear of placing participants and/or research partners at risk of criminalization. Of the research that has been done, particular attention has been paid to self-use of medication abortion, a promising avenue for safe, self-managed abortion (14, 15). Yet, much is still unknown about self-managed abortion more broadly– from the range of methods used, to safety, to effectiveness, to physical and emotional experiences, to reasons for this mode of abortion.

In an attempt to gather and synthesize the available evidence on self-managed abortion broadly, and to target future research toward gaps in this evidence base, we conducted a systematic scoping review(16-19) of the peer-reviewed scientific literature on self-managed abortion around the world. By design, this review focused on identifying studies that specifically described abortions that were self-managed (or a related term), and/or that made the conceptual distinction between a self-managed abortion and other types of abortion. We sought to identify gaps in this research base, and to provide suggestions for future research on self-managed abortion.

Methods

We used a scoping review methodology, informed by the Arksey & O'Malley and Levac frameworks(16, 17). The breadth of our research question and heterogeneity of study designs did not allow for a traditional systematic review which requires a focused research question and critical appraisal of studies. Instead, we utilized a scoping review framework to summarize the extent, range, and nature of research around self-managed abortion, identify gaps in the existing literature, and identify key research priorities in this field. Because our review was conducted according to PRISMA guidelines(20) using formal, explicit methods(18), we have labeled this work a systematic scoping review.

Search Strategy

Our study was registered on PROSPERO, the international prospective register of systematic reviews (ID number: CRD42018104048). We did not search for unpublished studies as they have not yet proceeded through peer-review; however, conference abstracts, a form of grey literature, were included to capture the most current peer-reviewed evidence available.

We employed a three-step search strategy for identifying published studies. First, we conducted a preliminary search of PubMed to identify key studies on our topic and begin the process of term harvesting, described herein. From these key studies, we extracted keywords and controlled vocabulary and built a comprehensive list of terms to inform our search strategy development. Next, we worked collaboratively with a medical librarian (JBW) to design our search strategy using an iterative process. Potential search terms were tested, with four reviewers (HM, SB, SF, SH) examining the first 50 unique results for each term in order to determine the term's relevance and subsequent inclusion in the search strategy. Several terms and concepts related to self-managed abortion were tested this way, including "medically supervised," "telemedicine", and "legally restricted". Finally, the reference lists of included

studies were searched to identify additional studies, search alerts were consulted regularly, and the reviewers contacted experts to ensure that major studies were included.

The search strategy combined two main concepts: abortion and self-management. Boolean logic was applied by combining similar keywords and controlled vocabulary with OR and using AND between the two concepts: for example, (abortion OR misoprostol) AND (self-managed OR self-administered). To capture the breadth of study on our topic, no date limits were used in the search. Language limits were used only in the two Spanish-language databases, Scielo and Redalyc, to eliminate studies in Portuguese as these comprised 30-40% of the overall results. A second librarian completed peer review of the final search strategy using the Peer Review of Electronic Search Strategies (PRESS) guidelines (17). The database search was conducted in PubMed, Embase, Web of Science, Popline, PsychINFO, Google Scholar, Scielo, and Redalyc on March 22, 2018 and updated on April 8, 2019. The complete search strategy for all databases can be found in S4: Appendix 1.

Study selection

Four reviewers (HM, SB, SF, SH) independently screened a random sample of 433 studies (10% of the March 2018 overall total) and collaboratively reviewed screening decisions to ensure inter-rater reliability. Studies were then divided among reviewers and screened based on title and abstract to determine if they met the inclusion criteria for full-text review. Criteria for inclusion were the following: (1) a research question focused on self-managed abortion; and (2) published in English or Spanish, inclusive of all publication years. Studies were excluded if they were not related to self-managed abortion, were not peer-reviewed, did not present original research, did not include data on human subjects, or presented individual clinical case results. Studies that were classified as potentially relevant at

this stage were then double-screened by all reviewers. Final screening was completed by three reviewers (HM, SF, SH) who independently reviewed the full text of each study.

Data extraction

A standardized form was created to extract data in the following areas: study setting, study type and methodology, characteristics of the intervention (e.g. intervention type, duration, and outcome measures used), and relevant findings, including safety, effectiveness, methods, procurement, physical experience, emotional experience, characteristics of those who self-managed, and reasons for pursuing a self-managed abortion. In accordance with scoping review methodology, critical appraisal was not conducted(16, 17). Data extraction was completed by three reviewers (HM, SF, SH).

Results

The literature search yielded 7,167 studies, including three studies added from additional sources. After excluding duplicates and identifying studies through additional sources, 4,690 studies were screened for inclusion based on title and abstract. The full text of 280 studies was assessed for eligibility, and 181 were eliminated based on previously established exclusion criteria. Ninety-nine studies were included in the final analysis as indicated by the PRISMA chart (Figure 1). Characteristics of the included studies are presented in Table 1. The earliest included study was published in 1974, and the most recent in 2019.

Methods of self-managed abortion and their procurement

A total of 92 studies reported findings related to the type of methods people use to self-manage an abortion – some effective, some not. Studies reported on data from 38 countries (one study reported on a

Latin American country that was anonymized). Methods reported fell into eight categories: (1) plants/herbs (ingestion), (2) toxic substances (ingestion), (3) intrauterine trauma, (4) physical trauma, (5) a combination of mifepristone and misoprostol (hereafter referred to as "mifepristone + misoprostol"), (6) misoprostol only (7) alcohol and drug abuse, and (8) other drugs, substances and mixtures. Forty-two studies reported on procurement of methods for self-managed abortion – some reported on procurement of information, while others reported on procurement of the actual methods themselves. Information was sourced primarily from the Internet, family and friends, informal vendors (people who are not physicians or trained in medicine who sell pills or other abortifacients on the black market or outside of the formal system), safe abortion hotlines or accompaniment groups(e.g., (21)); while methods were sourced from the above, as well as local herbalists or traditional healers, markets, pharmacists, and health professionals who are providing abortion care outside of legally sanctioned settings

Of the 11 included studies that were published before the year 2000, those that reported on methods indicated use of multiple methods of abortion self-management: eight (73%) reported on ingestion of plants or herbs(22-29); five (45%) reported physical trauma(22, 24, 28, 30, 31); five (45%) reported on intrauterine trauma(24, 28, 29, 31, 32); three (27%) reported on alcohol and drug abuse(29-31); ten (91%) reported on other drugs, substances, or mixtures(22-25, 27-32); one (9%) reported on ingestion of toxic substances(29); and two (18%) mentioned misoprostol only as a method of self-induction(25, 28) (Table 1). Out of a total of 88 included studies that were published during or after the year 2000, 34 (39%) reported on ingestion of plants or herbs; 14 (16%) on physical trauma; 21 (24%) on intrauterine trauma; 9 (10%) on alcohol and drug abuse; 6 (7%) on ingestion of toxic substances; and 40 (46%) on other drugs, substances, and mixtures; while 39 (44%) reported on misoprostol only and 23 (26%) on mifepristone + misoprostol (Table 1).

1. *Plants/herbs (ingestion)*

Forty-two studies provided information on specific types of plants and herbs used to self-manage an abortion, while many others mentioned herbs or herbal methods more broadly (e.g., (22, 33, 34)). Usually prepared as tisanes ("teas") or other infusions, a sampling of these included aloe(35), rue (11, 25, 36), sage (36), black and blue cohosh (36-39), savin, myrrh, mugwort, and ergot(11), parsley(40), pait(41), and different types of local roots (e.g., (26, 42)). Sources of procurement included local herbalists or traditional healers(26, 42-44), markets and shops(35, 42, 43, 45), and the Internet(45-47). Some studies also described friends or family members as sources of information or advice about which plants and herbs to use, and how to use them(42, 48-50).

2. Toxic substances (ingestion)

Seven studies described specific information about toxic substances, such as drinking acid(51), laundry detergent or fabric softener (42, 52, 53), cleaning products(29, 37, 44, 49), chemical solutions (51). One mentioned "toxins", but did not specify type(54). Only one study mentioned sources of information on toxic substances, and those included elders, grandparents and friends who had experience with abortions (42).

3. Intrauterine trauma

Fifty-two studies reported intrauterine trauma as a way to self-manage an abortion. Examples included inserting sharp objects into the body, such as hangers(37, 46, 55), bicycle spokes (28), needles (47, 56), and syringes (11). A number of studies also reported on insertion of plants and herbs, such as tree or plant roots (e.g., (24, 32, 42, 51, 57-59)), sharp plant leaves(31, 42, 60) (42, 60, 61), pencils(53), or bamboo sticks (62). One study mentioned potassium permanganate, which caused burns in the vagina and cervix (32). Other studies mentioned inserting lumps of sugar or salt (31), while another mentioned using seatangle tents(11).

4. Physical trauma

Nineteen studies reported on physical trauma as a method of self-management, including hitting oneself in or placing heavy weight or pressure on the abdomen(24, 28, 36, 41, 56, 59, 62-66), lifting heavy objects (11, 28, 31, 51, 56), undertaking strenuous exercise(11, 24, 29, 30, 36, 37, 40, 65, 66), jumping from a high place (11, 28, 31, 56) and taking hot baths (11, 30, 40). One article mentioned starvation(46).

5. Mifepristone + Misoprostol

Twenty-three studies described women using mifepristone + misoprostol to self-manage their abortion. Six studies reported detailed regimens(67-72): in two, recipients of the pills who had pregnancies less than 9 weeks gestation were advised to take 200mg mifepristone orally followed by 800mcg misoprostol buccally 24 hours later and a further 400mcg misoprostol buccally four hours later(71, 73). In another study of clients from the same online telemedicine service two years later, authors reported a slightly different regimen, specifically targeted to people with gestations of 9 weeks or less, who were advised to swallow 200 mg mifepristone, followed 24 hours later by *sublingual* application of 800mcg misoprostol and a repeat dose of 400mcg misoprostol sublingually four hours later (72). For those beyond 9 weeks, the regimen shifted to 200mg mifepristone, followed by vaginal application of 800mcg misoprostol 36 hours later, followed by sublingual use of 400mcg misoprostol three hours later, repeated up to five times(72). In yet another study of clients from the same online telemedicine service through 70 days gestation, people were advised to take 200mg mifepristone, followed 1-2 days later by 800mcg + 400mcg + 400mcg misoprostol to be administered sublingually; for those people approaching 9 weeks gestation, an additional four misoprostol tablets (200mcg each) were sent (67). In a study of people with pregnancies beyond 12 weeks' gestation, subjects were advised to take 200mg mifepristone administered orally, followed after 12-48 hours by 400mcg oral misoprostol, followed by 400mcg sublingual

misoprostol every three hours up to a maximum of five doses(69). Another study among individuals who purchased mifepristone + misoprostol at pharmacies in Bangladesh reported that 69% of participants took a regimen of "200 mcg mifepristone followed by 800 mcg misoprostol after a 24 h interval"(68). One study, which also reported on misoprostol only use but did not differentiate the regimens used for each method, described that abortifacients were primarily administered orally or as suppositories, but that dosages and routes of administration varied and were not in accordance with WHO recommended protocols(43). Other studies either did not report a regimen, or mentioned that participants were given advice to follow the "WHO recommended dosage regimen" (e.g., (74)).

Most of these studies described people obtaining the pills through online telemedicine services and other online vendors(10, 37, 40, 67, 70-72, 74-80), while others obtained them through their social networks or over the counter at pharmacies(43, 68, 81-84) One study mentions informal doctors ("non-allopath doctors") as sources of procurement (82). Studies reported fear of online procurement among some participants, including fear of being scammed and receiving fake pills (37), and worries that the pills might be confiscated at customs(10, 76). However, online pharmacies were also used as a source of information and advice during the medication abortion process, as were student collectives at local universities (78).

6. Misoprostol only

Thirty-nine studies described using misoprostol alone for abortion self-management. Six studies provided specifics of misoprostol only regimens(50, 68, 85-88). One study of misoprostol use among women along the Thailand/Burma border describes community health workers dispensing 12 misoprostol tablets (200mcg each), and instructing the woman to "vaginally take 800mcg followed 24 h later with another 800mcg dose and a third 800mcg dose one week after the initial administration, if needed," in accordance with evidence-based guidelines at that time(86). A study in Uruguay reported a majority of participants

administering one 800mcg dose of misoprostol vaginally (85). Another study reported details on misoprostol dosage among participants with pregnancies at or beyond 24 weeks gestation, which ranged from 400 to 1,200mcg almost all taken orally(88). Another two studies reported more generally on regimen, describing use of between one and eight misoprostol tablets, administered either vaginally or orally(87); and another described participants taking "four misoprostol pills, two or three vaginally and one or two orally"(50). Yet another study among participants who purchased misoprostol over the counter at pharmacies in Bangladesh reported receiving between 800-2400mcg of misoprostol(68).

Sources of procurement and/or information included online vendors (13, 39, 47, 50, 77, 78, 89), telephone vendors (47, 88), friends and relatives (13, 36, 47, 51, 61, 66, 78, 88-90), accompaniment groups(89), pharmacists (over the counter purchase with or without prescription) (13, 28, 36, 41, 43, 47, 51, 53, 66, 68, 78, 79, 90-97), doctors or nurses (13, 28, 39, 43, 47, 51, 53, 61, 66, 78, 88, 92), community health workers(86), and informal vendors (41, 43, 47, 50, 51, 55, 61, 87, 88, 91, 98, 99). Among those who procured misoprostol over the counter at pharmacies, some studies described this as an easier, faster, and often less expensive process than going to a clinic to obtain the same drug (43, 82, 93), while others found it difficult due to barriers such as needing a doctor's prescription (13, 51, 79).

7. Alcohol and drug abuse

Twelve studies reported on alcohol and drug abuse, such as drinking a bottle of vodka (40), gin(11, 29, 37), brandy or stout(44), Guinness(33, 49), Arak(31), smoking(35), or using cocaine (36), to self-manage an abortion.

8. Other drugs, substances and mixtures

Fifty studies reported on other methods of self-management that did not neatly fit within the above categories. For example, taking Vitamin C (36-40, 76), chloroquine (31, 42, 54), Plan B or emergency contraception (27, 35, 43, 45, 53, 95), laxatives (11, 23, 31, 35, 36, 44, 53), misoprostol mixed with other substances such as beer, plants, or injections (44, 98, 100), or unspecified drugs (11, 24, 30, 36, 38, 45, 46, 48, 53, 55, 57, 59, 63-65, 100-105). Other examples included receiving hormonal injections or oral contraceptives (24, 36, 51, 53, 95, 100, 103), drinking non-herbal infusions (27, 28, 33, 36, 49), including broken glass (e.g., (58)) and blood tonics (e.g., (33)), and taking over the counter medications such as paracetamol (41, 43, 49, 101) or aspirin, at times mixed with clear liquids such as 7-Up or Sprite(41). Procurement varied by method, and included pharmacies or drugstores (27, 31, 63, 65, 95, 97), elder and/or unrelated women in the community(53), and informal sellers (11, 49, 101). When describing the array of methods people used to self-manage their abortion, one study reported that women preferred methods that could be ingested rather than surgical methods, as the latter involved finding someone who would perform the procedure and higher risk of exposure(11). Not all studies mentioned where people procured methods or information about abortion self-management.

Effectiveness of self-managed abortion

Nearly 30 studies presented data from over 15 countries on the effectiveness of self-managed abortion by method. Included studies reported on effectiveness in varying ways, from the more specific "no longer pregnant and no surgical intervention" (e.g.,(75)), to the less specific: "successful" (e.g.,(43)) and "abortion ended satisfactorily" (e.g., (78)). Alternatively, some studies reported on effectiveness by quantifying failures of self-managed abortion, rather than successes – for instance, some studies reported on the occurrence of continuing pregnancy following abortion, but did not report in detail on other aspects of effectiveness (e.g., (70)) In nearly all studies, authors evaluated effectiveness of the self-managed abortion based on participant self-report. Thirteen studies reported on the effectiveness of self-managed abortion attempts only among people presenting to health care with concerns or complications (50, 51, 54,

60, 63, 81, 82, 88, 103, 104, 106-108). Given that all participants in these studies were only eligible for inclusion in the study because of their experience of warning signs of complications or actual complications that prompted their seeking of medical care, they are likely not a fair representation of outcomes among the full sample of people that self-manage their abortions. These studies, rather, provide information on the effectiveness of self-managed abortion among people that chose to seek health care as a result of their self-managed abortion, but do not provide information about the effectiveness of self-managed abortion among all people who self-manage. Thus, due to the selection bias inherent in these samples, we do not present effectiveness outcomes reported in these studies.

By method of self-managed abortion, eight studies reported on the effectiveness of the combined medication abortion regimen, mifepristone + misoprostol (68-70, 72, 73, 75, 77, 80); three on misoprostol only (68, 69, 86); and two on a range of other methods, such as ingestion of herbs and other substances (30, 36) (Table 2). Several studies reported on effectiveness of more than one method (30, 36, 64), but it was not always possible to separate effectiveness by method – in some instances, because the included study had only been published in abstract form at the time of publication which did not allow space for additional detail (e.g., (64)). Amongst the studies that provided information on effectiveness, the method of self-managed abortion with the highest reported effectiveness was mifepristone + misoprostol.

Safety of self-managed abortion

Over thirty studies reported data on the safety of self-managed abortion in 20 countries (and one reported on a dataset from over 80 countries). Several studies also made explicit mention of no occurrence of adverse events, (e.g., (86)). Safety outcomes presented included signs of potential complications (discharge, fever, heavy bleeding, pain, health facility visits), complications (hemorrhage, receipt of antibiotics, surgical intervention), and adverse events (blood transfusion, death, hysterectomy, uterine

rupture, multi-organ system failure). Due to the selection bias (described above in the "Effectiveness" section) inherent in reporting safety outcomes from studies that recruited only from patients presenting to a health facility after abortion, we do not report on safety outcomes from these 13 studies here, although list them in our references. Several other studies specifically reported no mortality due to self-managed abortion, but no other safety details (e.g., (80)).

Signs of potential complications. Seven studies among non-hospital based samples reported on the occurrence of heavy bleeding after self-managed abortion (36, 67-69, 72, 75, 94). Heavy bleeding was defined simply as "heavy bleeding" in two studies (36, 72), as "heavy, prolonged bleeding" in one study(68), and as a variation of "more than 2 maxi pads per hour for >2 hours" by three(67, 69, 75), and as "prolonged bleeding" in another(94). Among those who self-managed their abortions using medications after receiving evidence-based guidelines on how to administer mifepristone + misoprostol, or misoprostol alone, the proportion with heavy bleeding ranged from 5.2% (n=51) among women with pregnancies <9 weeks gestation in the Republic of Ireland and Northern Ireland(75), up to 12.2%% (n=11) of those who self-managed an abortion >12 weeks gestation in Indonesia(69). Among women who purchased medication abortion pills at pharmacies in Bangladesh, 13% (n=14) experienced "heavy, prolonged bleeding" (68); just as 13% (n=3) of women that self-managed an abortion of a confirmed pregnancy in the United States, using a variety of methods, reported heavy bleeding(36).

Signs of infection. Four studies reported on the occurrence of fever or abnormal discharge among those who self-managed an abortion (67, 68, 72, 75). Fever was sometimes defined as >39 degrees Celsius, and sometimes undefined. Discharge was at times defined as "abnormal vaginal discharge" or not mentioned. Among people that self-managed an abortion using mifepristone + misoprostol provided by an online telemedicine service, 1.7% (n=17) reported a fever or abnormal vaginal discharge in the Republic of

Ireland and Northern Ireland (75), similar to the 0.3%-2.4% in Poland that reported fever or abnormal discharge(67). Among women who purchased medication abortion at pharmacies in Bangladesh, 19.6% (n=22) reported a fever (68).

Pain. Three studies reported on pain as a sign of a potential complication (67, 72, 75). All three defined pain similarly as "persistent pain continuing several days after abortion" (75) or "pain that continued for several days after the abortion"(72) and "did not go away"(67). All three studies were conducted among participants that received medication abortion (mifepristone + misoprostol) from an online telemedicine service. Among all users of medication abortion, 2.4% (n=24) in the Republic of Ireland and Northern Ireland reported persistent pain (75), 5.1% of those <9 weeks gestation and 6.5% of those 9-14 weeks gestation in Poland (67) reported strong pain, while among those who had a surgical intervention in Brazil, 10.9% (n=7) reported pain (72).

Visited a health facility following self-managed abortion. Eight studies reported on participants seeking care at a health facility following a self-managed abortion (44, 67-69, 73, 75, 78, 86). Among women along the Thailand/Burma border who self-managed with misoprostol alone, 0.3% (n=3) sought care at a clinic after the absence of expected bleeding(86). Among women who were supported through self-managed abortion beyond the first trimester by a safe abortion hotline in Indonesia, 3% (n=3) visited a health facility, all for heavy bleeding(69). A similar proportion of women who purchased medication abortion pills from pharmacies in Bangladesh, 2% (n=2), visited a general practitioner at some point after taking the pills (68). Among users of mifepristone + misoprostol from an online telemedicine service, 9.3% of users in the Republic of Ireland and Northern Ireland were advised to seek care at a health facility by the web service, while 8.8% actually did visit a health facility(75). Comparatively, 3.3% of people ≤9 weeks gestation and 12.2% of people 10-14 weeks gestation visited a health facility within 0-1 days for a complaint following use of a telemedicine service in Poland(67). In an analysis of data for women from

88 countries who self-managed with mifepristone + misoprostol with support from an online telemedicine service, 24.9% (n=478) reported visiting a doctor or hospital for a potential complication – although over a longer time period than in the study in Poland (73). The percentage of women who visited a doctor or hospital, however, varied by region: from 16.7% in Middle East, to 29% in Latin American and Caribbean regions (73). A qualitative study of university students in Chile who self-managed abortion with mifepristone + misoprostol, or misoprostol alone, reported that 27 of 30 participants sought care at a health facility; although many explicitly stated that it was not for fear of a complication, rather to confirm completion(78). Not all studies specified whether health care was sought for medical necessity or for other reasons, including seeking confirmation that the self-managed abortion had been completed.

Surgical intervention. The occurrence of surgical intervention following self-managed abortion varied across studies, and by method of self-managed abortion. Among women in Poland that used mifepristone + misoprostol to self-manage their abortions using support from an online telemedicine service, 12.5% of those ≤9 weeks gestation, and 22.6% of those 10-14 weeks gestation, reported a surgical intervention (vacuum aspiration or dilation and curettage)(67). In a study of women in the Republic of Ireland and Northern Ireland with gestations ≤9 weeks that used mifepristone + misoprostol with online telemedicine support, 4.5% (n=45) reported a surgical intervention(75). In one study, two percent (n=2) of women who self-managed their abortion with medication beyond 12 weeks gestation had a dilation and curettage procedure at a health facility (69), while a harm-reduction program in Tanzania found that 5.6% (n=3) of users of misoprostol reported a Manual Vacuum Aspiration (MVA)(94). Studies on medication abortion users in Brazil, and data pooled from 88 countries, found that 11-21% of those who relied on online or friend support for information on how to self-manage their abortions reported a surgical intervention (70, 72, 73). A study in Uruguay where most participants administered a single 800mcg dose of misoprostol vaginally reported uterine evacuation for 26-40% of participants(85). A study among women in Egypt that used intra-vaginal methods to self-manage their abortions found that 56% (n=5) sought care and

413 received a dilation and curettage procedure (31). It is not always clear whether the surgical intervention
414 was medically necessary, or whether it was instead done to guarantee / hasten the completion of the
415 abortion. For instance, in Brazil, 40% of those that reported a surgical intervention had no signs or
416 symptoms of a complication(72).

417

418 *Adverse events*. Studies defined adverse events differently, including a range of events that necessitated
419 both minor and major health interventions, as well as death. Of four studies reporting on antibiotic
420 administration following abortion, estimates were 1.3% (n=5) of women who self-managed an abortion at
421 <9 weeks gestation with medications from an online telemedicine service across 88 countries(70), 2.6%
422 (n=26) of women who self-managed an abortion at <10 weeks gestation with medications from an online
423 telemedicine service in the Republic of Ireland and Northern Ireland(75), 8.1% (n=24) of women at 7-9
424 weeks gestation and 13.7% (n=17) among women 10-14 weeks gestation who self-managed with
425 medications with support from a telemedicine service in Poland(67), and 56% (n=5) of women who
426 inserted objects into the vagina and cervix in Egypt (31). Five studies reported blood transfusions among
427 participants: 0.7% (95%CI: 0.3-1.5%) of 1,000 women who self-managed an abortion with medications
428 from an online telemedicine service in the Republic of Ireland and Northern Ireland (75), 0.9% of 109
429 women who purchased medication abortion pills at pharmacies in Bangladesh (68), none among women
430 <9 weeks gestation, and 1.6% among women 10-14 weeks gestation who self-managed their abortions
431 with support from a telemedicine service in Poland(67), approximately 4% (n=2) of women in Saudi
432 Arabia who self-managed with misoprostol(92), and 4.3% of 23 women who self-induced an abortion and
433 had a confirmed pregnancy in the United States (36). Two studies reported a hysterectomy following a
434 self-managed abortion attempt, 4% (n=2) of women in Saudi Arabia who self-managed with
435 misoprostol(92), and one person who utilized a uterine probe combined with misoprostol in a population
436 of female sex workers in Brazil (87). Only one study reported on the incidence of ectopic pregnancy,
437 finding that 0.3% of 918 women receiving misoprostol up to 9 weeks gestation along the Thailand/Burma

border had an ectopic pregnancy - all of which were treated with standard clinical protocols (86). Five studies reported on deaths due to self-managed abortion (24, 49, 55, 58, 103). Deaths reported occurred among women who drank "potion" or other oral preparations (n=3), including broken glass(24, 49, 55, 58), ingested herbs (n=5) (103), or inserted foreign bodies (n=6) (24).

Considerations by gestational age. Three studies compared safety of medication abortion outcomes by gestational age (67, 72, 75). Gomperts et al 2014 found no difference in the incidence of potential complications (pain, bleeding, and fever) by gestational age among people who self-managed an abortion with mifepristone + misoprostol in Brazil. Comparing outcomes across pregnancies at ≤9 weeks gestation, 10-12 weeks gestation, and 13+ weeks gestations, the study reported the following proportions across gestational age groups (in gestational age category order as listed above) by outcome: continuing pain (12.5%, 9.1%, 7.7%, p=0.88); heavy bleeding (15%, 0%, 15.3%, p=0.44); and fever/vaginal discharge (2.5%, 9.1%, 0%, p=0.43). Similarly, in both unadjusted and adjusted logistic regression analyses of outcomes following self-managed abortions with mifepristone + misoprostol with support from an online telemedicine service in Poland, there was no difference in the reported heavy-bleeding following abortion between those who were ≤9 weeks gestation, versus 10-14 weeks gestation (aOR:1.65, 95%CI: 0.90, 3.04)(67). However, a study in the Republic of Ireland and Northern Ireland did find a difference in reported warning signs of complications (heavy bleeding, fever/vaginal discharge, persistent pain) when looking more closely at earlier gestations: a higher proportion of those at 7-9 weeks of gestation reported signs of potential complications than those at <7 weeks gestation (<7 weeks: 8.1% (6.2-10.2); 7-9 weeks: 13.7% (9.4-19.0), p=0.02) (75).

Beyond warning signs of complications, health care seeking and interventions received following abortion may increase with gestational age. The above study from Poland found that hospital visits

462 resulting from a complaint in the 0-1 days following the abortion (aOR: 3.82, 95%CI: 1.9, 7.7), as well as
463 surgical intervention (aOR: 2.04, 95%CI: 1.2, 3.3), as well as *any* treatment overall (defined as receiving
464 antibiotics or misoprostol treatment, fluid or blood transfusion, vacuum aspiration or D&C) (aOR: 1.84,
465 95%CI: 1.1, 3.0), had a higher odds among those who self-managed an abortion between 10-14 weeks
466 gestation as compared to those who self-managed at ≤9 weeks gestation(67). Similarly, a study among
467 Brazilian users of an online telemedicine service found that the proportion of people reporting surgical
468 intervention increased with gestational age: 19.3% of those ≤9 weeks, 15.5% of those 10-12 weeks, and
469 44.8% of those ≥13 weeks (p=0.006)(72). A similar pattern of increasing surgical intervention with
470 gestational age was reported among users of mifepristone + misoprostol in the Republic of Ireland and
471 Northern Ireland, where 3.7% (n=29) of abortions <7 weeks' gestation reported a D&E or MVA, versus
472 7.3% (n=16) of abortions 7-9 weeks' gestation (p value=0.04)(75). However, this same study found no
473 difference in self-reported treatment for adverse events (antibiotics, blood transfusion, death) among
474 women who self-managed with mifepristone + misoprostol (<7 weeks gestation: 2.7% (1.7-4.1); 7-9
475 weeks: 4.6% (2.2-8.2), p=0.19). The differences in gestational age groups compared across studies is
476 worth noting.

477

478 *Characteristics of people who self-managed abortions*

479 Approximately sixty studies contained demographic information about people who self-managed an
480 abortion (S1: Table 3). The most frequently collected demographic data included age, previous
481 pregnancies or children, educational status, relationship status, and gestational age at the time of abortion.
482 Less commonly measured demographic characteristics included employment status, socio-economic
483 status, geographic location, religion, a prior self-managed abortion attempt, knowing someone who had
484 taken misoprostol before, and knowledge of or use of contraception. Due to variation across studies in the
485 content and format of demographic data collected, we are not able to report on patterns in characteristics
486 of people who self-managed an abortion. Several studies did not report separate demographic data for

their study population if it included both people who did and did not self-manage, making it difficult to report on this information.

Reasons for abortion self-management

Slightly over one-third of studies shared information related to people's reasons for self-managing an abortion (S2: Table 4). Some studies did not separate out reasons participants chose to self-manage an abortion from reasons a participant sought any form of abortion. Studies documented reasons for abortion including financial concerns (33, 37, 43, 46, 49, 55, 57, 64, 74, 88-90, 109, 110), a desire to continue school or other life plans (33, 45, 49, 59, 88-90, 111), not desiring any or additional children (59, 63, 74, 81, 89, 90, 110), and lack of support from a partner (46, 62, 89, 90).

Other studies documented specific barriers to clinical care that led people to pursue or consider a self-managed abortion (e.g., (112)). Most commonly cited barriers were logistical difficulties, including traveling long distances to a clinic, taking time away from work, or arranging travel or childcare (10, 37, 39, 40, 46, 74, 76, 113). Inability to pay for an in-clinic abortion (37, 46, 65, 82, 109, 112) and insurmountable legal restrictions on abortion (10, 12, 23, 36, 37, 40, 45-47, 74, 89, 91, 92, 114) contributed to people pursuing self-managed abortion. While 15 studies explicitly named legal restrictions as a reason for pursuing abortion self-management, it is possible that this finding is implicit in additional studies conducted in contexts where abortion is legally restricted or inaccessible. Less commonly cited barriers to clinical care included physician refusal to perform an in-clinic abortion (53, 88, 92, 114), overly long wait-times for appointments(53, 88), and lack of knowledge about where to obtain a legal abortion (44-46).

Some studies described concerns that led people to pursue self-managed abortion, including concerns about privacy and confidentiality (10, 37, 40, 42-45, 53, 58, 76, 78, 82, 84, 93, 114), and about clinic staff, including mistreatment or being reported to police (23, 40, 43, 44, 47, 50, 51, 53, 109, 111, 114). Ten studies explicitly stated that respondents pursued self-managed abortion as a way to cope with abortion stigma (23, 40, 43, 45, 46, 74, 76, 84, 111, 113) or to bypass the stigma of being seen at an abortion clinic (37, 43, 58). Five studies noted that people were concerned about presenting at a clinic due to the threat of violence from a partner or other person (40, 46, 62, 76, 89).

Other studies cited proactive, positive reasons that a person might prefer self-managed abortion over clinical care. In ten studies, respondents noted that the ease of using and procuring abortion pills contributed to seeking a self-managed abortion (10, 13, 40, 74, 79, 82, 92, 102, 110, 115). Other studies indicated that knowing someone who had prior experience with successful self-managed abortion led participants to pursue the same option (92, 114), while others highlighted the perception that self-managed abortion is safer or more acceptable than a surgical abortion (10, 11, 73), and still others emphasized the comfort, privacy, and autonomy conferred by the self-managed nature of their abortion (10-13, 37, 40, 43, 53, 61, 74, 76, 102). Other reasons for pursuing self-management included: explicitly not wanting a surgical abortion (93), being able to have someone with them during the abortion (11, 13, 43, 78), a previous successful self-managed abortion (115), and the perception that self-managed abortion is more affordable than a facility-based, often surgical, abortion (37, 42, 64, 93) or that self-managed abortion is not even abortion, rather, it is bringing on a miscarriage(93).

Physical experience of self-managed abortion

Ten studies documented physical symptoms associated with self-managed abortion by medication(13, 43, 51, 63, 67-69, 78, 87, 109). All of these studies described abortion symptoms, including heavy bleeding,

cramping, and back pain, of varying intensity. Seven studies mentioned other common symptoms, including nausea, dizziness, and fevers (13, 43, 63, 67-69, 109). Symptoms reported included buzzing in ears, chills, diarrhea, and expelling blood clots or the actual gestational sac (13, 78). Four of the ten studies reported on pain management techniques, including over-the-counter pain medication (13, 43, 69, 78) and accompaniment during the abortion (78). An eleventh study described symptoms of mild cramping and diarrhea, but did not specify the method of self-managed abortion(36), and a twelfth study among people contacting a poison control center after using herbal methods and other substances to self-manage abortion reported gastrointestinal symptoms, including abdominal pain and vomiting(103).

Emotional experiences of self-managed abortion

Nearly half of included studies documented emotional experiences with self-managed abortion (S3: Table 5). We categorized an experience as "emotional" if it documented anything related to how a person felt before, during, or after the self-managed abortion.

Several studies documented respondents reporting positive emotions following self-managed abortion, including gratefulness (12, 70, 74, 110) and relief (13, 74, 77). Six studies documented participants taking comfort in being able to have an abortion at home (13, 37, 40, 74, 78, 79). Five studies documented participants receiving emotional support from a partner, friend, or family member during their abortion at home (13, 43, 74, 78, 89). While they did not explicitly document positive emotions, two studies reported that participants would recommend self-management to others (74, 94). Some participants reported feeling safe self-managing (76, 110) and confident that it was the right decision for them (13, 74), although it is unclear if this refers to the decision to have an abortion or the decision to self-manage. Five studies documented satisfaction data related to self-managed abortion procured via an online telemedicine service, finding that people were satisfied with the experience, that they "valued the privacy,

confidentiality and convenience" conferred by the telemedicine model(12), had "acceptable" levels of stress, or had no specific feelings about the experience (12, 70, 72, 73, 80).

Negative emotional experiences fell generally into two categories: a negative experience related to the abortion itself or related to the environment in which the abortion occurred. Five studies explicitly named guilt, sadness, stress, and/or shame (13, 65, 80, 109, 116) as emotions accompanying the self-managed abortion experience. Eight studies reported fear as a powerful emotion participants experienced related to self-management, including fears related to safety, death, and lack of information about how to self-manage an abortion effectively, or what was considered "normal" in terms of bleeding and pain (13, 31, 36, 47, 51, 78, 79, 99). Two studies stated that secrecy surrounding self-managed abortion was associated with concerns about safety (51, 87). Three studies of satisfaction with telemedicine services found that a small minority of people reported "extreme stress" or dissatisfaction with the self-managed abortion experience (67, 70, 73).

Studies also reported on negative emotional experiences related to the environment in which self-managed abortions occurred. Six studies documented fears related to legal consequences of self-managed abortion, including fears of being reported to the police by health professionals (10, 40, 51, 78, 110, 114). Six studies also documented a fear of or past experiences with abortion-related mistreatment at a healthcare facility (47, 50, 51, 83, 87, 114). Five studies named stigma-related fears, including community condemnation, mistreatment by peers, and an internalized sense of shame (40, 51, 109, 111, 113). Three studies documented respondents expressing frustration, anger, and disappointment related to having to pursue self-managed abortion as a result of the legal restrictions (40, 74).

Discussion

583 This paper provides a comprehensive review of the existing public health literature on self-managed
584 abortion. Our findings document a wide variety of methods for self-managed abortion, and how each is
585 procured/performed. This review also describes what is known about those who self-manage their own
586 abortions, reasons for pursuing self-managed abortion, safety and effectiveness of self-managed abortion,
587 and physical and emotional experiences during the process.
588

589 The most commonly reported finding among studies in this review was the method used to self-manage
590 abortion. This may be reflective of the relative simplicity of asking people what they used to self-manage
591 an abortion, in comparison to asking about more nuanced and complex aspects of the process such as their
592 physical or emotional experiences. Additionally, the prevention of unsafe abortion has been an important
593 focus of research on abortion in highly restrictive settings—measuring and reporting on methods of self-
594 managed abortion is central to that goal.
595

596 The reasons people cited for self-managed abortion often mirrored reasons that people cite for having
597 clinic-based abortion that have been previously identified in the literature (117-120). Yet, several reasons
598 unique to self-managed abortion emerged, including concerns about legal, emotional, and social safety of
599 seeking clinical care and an inability to overcome logistical and financial obstacles to clinical care. We
600 also identified a proactive preference for self-management in some studies because of its inherent privacy,
601 perceptions about the safety and ease of self-management, and knowing others who had self-managed.
602 More research is needed to understand for whom self-management is a last resort, and for whom self-
603 management is a preferred method of abortion, and what interventions are needed to ensure that these
604 individuals can obtain the type of abortion they desire.
605

606 Despite much focus in recent years on self-management of abortion with medications, a substantial
607 proportion of studies that reported method of self-managed abortion (42 versus 61) reported on the
608 ingestion of plants and herbs as the method of abortion, as compared to describing the use of mifepristone
609 + misoprostol, or misoprostol alone. This is true even when considering articles published since the year
610 2000, after which the proportion that focused on plants and herbs remains substantial. Yet, these studies
611 on plant-based and herbal methods focused primarily on sourcing and preparation, rather than safety and
612 effectiveness; peer-reviewed, published data on these aspects of plants and herbs as abortifacients are
613 lacking. Also needed is a broader understanding of preferences for herbal or "natural" methods of self-
614 managed abortion and the significance that these methods hold for many communities. Future research
615 should elevate the knowledge and experiences of communities that practice these methods, particularly
616 those that have been excluded from or mistreated by Western medicine through experiences of systemic
617 and individual-level discrimination, including but not limited to racism and sexism, which can lead to a
618 subpar standard of care for specific groups, particularly in sexual and reproductive health settings (e.g.,
619 (121)). The frequent use of herbal and plant-based methods may also highlight a need to expand access to
620 and information about medication abortion, but medication abortion should not be presumed to be the
621 preferred method of choice for all people interested in self-managing an abortion. Notably, plants and
622 herbs were reported to be obtained from local herbalists, healers, friends, and family, while medication
623 abortion pills were more often obtained from the Internet, local vendors, as well as friends and family.
624 This is consistent with an understanding that the Internet can facilitate access to WHO recommended
625 methods of abortion, and also consistent with evidence that social networks play a key role in abortion
626 access, regardless of method(44, 122).

627

628 Almost every study that described methods and procurement for self-management discussed harmful
629 methods of abortion induction. Common reports of physical trauma or toxic substance ingestion, confirm
630 previous findings that people are willing to risk their health and lives to prevent an unwanted birth and/or

parenthood (e.g., (36)), and that these more harmful methods are still very much present around the world today, despite the existence of safer methods and legal access to abortion in some settings.

Beyond the presentation of methods used for self-management, many studies reported on the effectiveness of self-managed abortion in its various forms. Definitions of effectiveness varied and included clinical definitions such as complete uterine evacuation without additional intervention (e.g., surgical evacuation), to more general definitions such as the state of no longer being pregnant. Among studies reporting on self-managed medication abortion (with misoprostol alone, or in combination with mifepristone), high-levels of effectiveness were reported. These studies defined effectiveness with some variation, and included participants at a wide range of gestational ages. Yet, eight out of nine studies on self-managed abortion with WHO-endorsed medications reported an effectiveness greater than 70% - with most in the mid-to-high 90s. However, due to the variation in definitions of effectiveness and the wide range of methods of self-managed abortion that are presented in the included studies, an overall assessment of the effectiveness of the *complete* range of methods of self-managed abortion was not possible – nor appropriate.

The safety of self-managed abortion in the included studies was also assessed in a variety of ways, and was reported in differential detail. Major adverse events were rare, although varied by method used. Complications and signs of potential complications were reported and defined with different degrees of detail across included studies. Of note, some studies framed health-care seeking following abortion as indication of a safety concern, some with more nuance (e.g.,(67)), others with less. There are a range of reasons that people may seek health care during or following an abortion, including seeking reassurance about the process, obtaining confirmation of abortion completeness, or due to warning signs of a potential complication. Studies that classify all health facility visits related to an abortion as “complications” likely

655 overestimate the proportion of self-managed abortions that result in complication and may contribute to
656 concerns about the safety of self-managed abortion (123, 124).

657

658 Across the included studies, a range of characteristics of people who self-managed their abortions were
659 reported. In reflecting on this compiled body of self-managed abortion research, we propose that experts
660 convene to recommend the relevant demographic characteristics that would be most critical for future
661 research on self-managed abortion, and share tools for measurement. Consistency across this set of
662 informative indicators would contribute greatly to our knowledge about the people that pursue self-
663 managed abortion, thereby facilitating the design of unique interventions and outreach to meet their
664 needs. Additional measures of abortion knowledge, attitudes, and stigma may be relevant to better
665 understand the relationship between self-management and these factors.

666

667 As with all research, this systematic scoping review has limitations. The search strategy we used was
668 designed to identify and review studies of self-managed abortion. Yet, we must acknowledge that in many
669 legally restrictive contexts, the majority of abortions taking place may well be self-managed abortions,
670 but are not described as such – and as a result, may have been missed by our search strategy. Further, due
671 to the nature of the databases searched, the studies we identified and included may be more likely to
672 include findings from the biomedical model as opposed to anthropological or other disciplines. With
673 regard to methodology, we restricted our search to publications in English and Spanish languages based
674 on investigators' language ability, making it likely that we missed relevant research on this topic in other
675 languages. Future research should explore the same or a similar search strategy in additional languages.
676 Further, consistent with scoping review methodology, as our aim was not to conduct a meta-analysis for a
677 particular quantitative research question about self-managed abortion, we do not evaluate the quality of
678 included studies or assess bias. Finally, due to variance in how self-managed abortion is described and
679 defined, and how that has changed over time and across disciplines, it is likely that our search strategy

may have missed key studies that present relevant results. Hand searches of known journals attempted to mitigate this possibility, as did consultations with experts in the field, but it remains a near certainty that some studies were missed. The limitations of this review, however, are tempered by several key strengths, including the multidisciplinary nature of our research team, the rigorous and comprehensive multi-database search strategy that was utilized, and the iterative process of review of identified studies to ensure a consistent and replicable study selection process.

In reflecting on the state of the literature presented in this review, four key areas stand out where more and better evidence on self-managed abortion is urgently needed:

- Consistency in definitions of and measurement approaches to the safety and effectiveness of, and complications experienced from, methods of self-managed abortion, including non-medication based methods. These data would continue to advance understanding of the safety of self-managed abortion with medications, would contribute to the development of global guidelines, and would help individuals to understand and evaluate their choice of method.
- More evidence on the physical experiences of self-managed abortion--including timing and duration of bleeding/cramping/other side effects, pain experienced, and pain management approaches. These data would help those seeking abortion to better understand the options available to them, and what to expect during a "normal" abortion process – perhaps preventing unnecessary health facility visits.
- Research that documents the social and emotional experience of self-managed abortion, distinct from satisfaction data. Such data would contribute to a more nuanced understanding of the interpersonal elements of interactions with care providers in the formal and informal health sectors and could inform interventions with care providers that center the provision of person-centered abortion care.

- Research that documents the needs, values, and preferences for care among abortion seekers in diverse legal, geographic, and social contexts.

Summary

We provide a comprehensive synthesis of the scientific, peer-reviewed, public-health literature on self-managed abortion globally. While discussions of self-managed abortion often focus on medication abortion, we found a comparable number of studies that reported on non-medication based methods, including ingesting plants/herbs, toxic substances, intrauterine trauma, physical trauma, alcohol and drug abuse, and more. Reported safety outcomes included signs of complications, rare actual complications, and, even more rarely, adverse events. Studies reporting on self-managed medication abortion (with misoprostol alone, or in combination with mifepristone) reported high-levels of effectiveness. Due to the variation in definitions of effectiveness and the wide range of methods of self-managed abortion presented in the included studies, an overall assessment of the effectiveness of the complete range of methods of self-managed abortion was not possible. In reviewing the reasons people gave for seeking self-managed abortion, many similarities existed with reasons people have given in the literature for seeking clinic-based abortion care; however, reasons unique to self-managed abortion, such as a desire for privacy or to avoid anticipated negative treatment by health professionals, were also common. The literature on the emotional experience of self-management indicates that people feel a range of conflicting emotions, including gratefulness, relief, comfort, and fear – yet, more research is needed to understand how people manage these emotions and others before, during, and after abortion self-management. We identify gaps in the literature, particularly around a need to measure the safety and effectiveness of non-medication based methods of abortion self-management, and to better understand reasons for self-managed abortion.

Research Agenda

- Evaluate the effectiveness and safety of methods of self-managed abortion beyond mifepristone and misoprostol.
- Document the physical experiences of self-managed abortion, including timing and duration of bleeding/cramping/other side effects

- Document pain management techniques used before and during self-managed abortion
- Measure the range of emotions felt about self-managed abortion, distinct from satisfaction data
- Disentangle reasons for versus preferences for self-managed abortion
- Document pathways to self-managed abortion
- Measure experiences with the formal healthcare system after self-managed abortion

Practice Points

- People self-manage their own abortions for a variety of reasons, from preference for the privacy inherent in this model, to viewing this mode of abortion as a last resort.
- People use a wide variety of methods to self-manage abortion, from herbal to medication to substance abuse to intrauterine trauma.
- Data suggest that self-management of abortion with medication (mifepristone + misoprostol, or misoprostol alone) is highly effective and safe.
- Data are lacking on the safety or effectiveness of non-medication methods

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Conflict of interest statement

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Table 1. List of studies included in analysis, with study location, sample size, and methods of self-managed abortion analyzed. Conference abstracts are highlighted in italicized font.

Study citation	Reference Number	Study location	Sample size	Method of self-managed abortion used
Ahiadeke 2002	101	Ghana	1689	Intrauterine, Other drugs/substances/mixtures
Aiken et al. 2017 (a)[1]	74	Ireland	1023	Mifepristone + misoprostol
Aiken et al. 2017 (b)[2]	75	Ireland	1000	Mifepristone + misoprostol
Aiken et al. 2018 (a)[3]	76	UK	519	Mifepristone + misoprostol
Aiken et al. 2018 (b)[4]	40	Ireland	38	Plants/herbs, Intrauterine, Physical trauma, Alcohol & drug abuse, Other drugs/substances/mixtures
Aiken et al. 2018 (c)[5]	37	US	32	Plants/herbs, Toxic substances, Intrauterine, Physical trauma, Alcohol & drug abuse, Other drugs/substances/mixtures
Aiken et al. 2018 (d) [6]	*112*	*US*	*1502*	*Not available*
Aiken et al. 2019	10	Northern Ireland	30	Mifepristone + misoprostol, Other drugs/substances/mixtures
Albuja et al. 2017	55	Haiti	79	Plants/herbs, Intrauterine, Misoprostol only, Other drugs/substances/mixtures
Alsibiani 2014	92	Saudi Arabia	678	Misoprostol only
Appiah-Agyekum et al. 2014	102	Ghana	142	Other drugs/substances/mixtures
Appiah-Agyekum et al.2018	43	Ghana	32	Plants/herbs, Mifepristone + misoprostol, Misoprostol only, Alcohol & drug abuse, Other drugs/substances/mixtures
Armo et al. 2015	81	India	400	Mifepristone + misoprostol
Banerjee et al. 2012	63	India	381	Plants/herbs, Intrauterine, Physical trauma, Other drugs/substances/mixtures

Study citation	Reference Number	Study location	Sample size	Method of self-managed abortion used
Begun et al. 2018	46	US	30	Plants/herbs, Physical trauma, Other drugs/substances/mixtures
Belton 2007	62	Thailand	Varied by datasource	Intrauterine, Physical trauma, Other drugs/substances/mixtures
Berry-Bibee et al. 2015	*111*	*Haiti*	*75*	*Not measured*
Berry-Bibee et al. 2018	98	Haiti	330	Plants/herbs, Intrauterine, Misoprostol only, Other drugs/substances/mixtures
Bhalla et al. 2018	82	India	100	Mifepristone + misoprostol
Bose 1978	60	India	350	Intrauterine
Burkhardt et al. 2016	48	Democratic Republic of Congo	55	Plants/herbs, Other drugs/substances/mixtures
Bury et al. 2012	51	Bolivia	1551	Plants/herbs, Intrauterine, Toxic substances, Physical trauma, Misoprostol only, Other drugs/substances/mixtures
Ciganda et al. 2003	103	Uruguay	86	Plants/herbs, Intrauterine, Other drugs/substances/mixtures
Constant et al. 2014	35	South Africa	194	Plants/herbs, Other drugs/substances/mixtures
Damalie et al. 2014	33	Ghana	252	Alcohol & drug abuse, Plants/herbs, Misoprostol only, Other drugs/substances/mixtures
De Zordo 2016	50	Brazil	52	Plants/herbs, Misoprostol only
Delay 2019	11	Ireland	N/A	Plants/herbs, Intrauterine, Physical trauma, Alcohol & drug abuse, Other drugs/substances/mixtures
Duarte et al. 2018	47	Brazil	18	Plants/herbs, Intrauterine, Misoprostol only, Other drugs/substances/mixtures

Study citation	Reference Number	Study location	Sample size	Method of self-managed abortion used
Elizalde et al. 2018	89	Argentina	121	Misoprostol only
Endler et al. 2019	67	Poland	615	Mifepristone + misoprostol
Ferrari et al. 2018	99	Brazil	10	Misoprostol only
Fiol et al, 2012	91	Uruguay	184	Misoprostol only
Flavier & Chen 1980	22	Philippines	676	Plants/herbs, Physical trauma, Other drugs/substances/mixtures
Footman et al. 2018	68	Bangladesh	109	Misoprostol only, Mifepristone + misoprostol, Other drugs/substances/mixtures
Foster et al. 2017	86	Thailand/Burma	918	Misoprostol only
Foster 2018 (a)[7]	*77*	*Poland*	*1098*	*Mifepristone + misoprostol*
Foster 2018 (b)[8]	*12*	*Poland*	*20*	*Mifepristone + misoprostol*
Gemming & Crighton 1978	30	New Zealand	578	Alcohol & drug abuse, Physical trauma, Other drugs/substances/mixtures
Gerdts & Hudaya, 2016	21	Indonesia	1829	Not measured
Gerdts et al. 2017	44	South Africa	42	Plants/herbs, Toxic substances, Alcohol & drug abuse, Other drugs/substances/mixtures
Gerdts et al. 2018	69	Indonesia	96	Mifepristone + misoprostol, Misoprostol only
Gipson et al. 2011	41	Philippines	108	Plants/herbs, Physical trauma, Misoprostol only, Other drugs/substances/mixtures
Gomperts et al. 2008	70	33 countries	484	Mifepristone + misoprostol
Gomperts et al. 2012	71	88 countries	2323	Mifepristone + misoprostol
Gomperts et al. 2014	72	Brazil	307	Mifepristone + misoprostol

Study citation	Reference Number	Study location	Sample size	Method of self-managed abortion used
Grossman et al. 2010	36	US	30	Plants/herbs, Intrauterine, Physical trauma, Misoprostol only, Alcohol & drug abuse, Other drugs/substances/mixtures
Grossman et al. 2018	*64*	*US*	*7022*	*Plants/herbs, Physical trauma, Misoprostol only, Other drugs/substances/mixtures*
Hami et al. 2013	*54*	*Mali*	*253*	*Other drugs/substances/mixtures*
Hernandez-Rosete et al., 2019	45	Mexico	15	Plants/herbs, Other drugs/substances/mixtures
Hill et al. 2009	49	Ghana	11 narratives, 10 focus groups, unspecified number of participants, 7 verbal postmortems	Plants/herbs, Alcohol & drug abuse, Other drugs/substances/mixtures
Hodoglugil et al. 2012	*52*	*Ethiopia*	*162*	*Plants/herbs, Toxic substances*
Jerman et al. 2018	34	US	1235	Plants/herbs, Misoprostol only, Alcohol & drug abuse
Jewkes et al. 2005	53	South Africa	46	Toxic substances, Intrauterine, Misoprostol only, Other drugs/substances/mixtures
Jilozian & Agadjanian 2016	93	Armenia	40	Misoprostol only
Jones 2011	38	US	9493	Plants/herbs, Misoprostol only, Other drugs/substances/mixtures
Kahabuka et al. 2017	94	Tanzania	110	Misoprostol only
Kebede et al. 2000	57	Ethiopia	80	Plants/herbs, Intrauterine, Other drugs/substances/mixtures

Study citation	Reference Number	Study location	Sample size	Method of self-managed abortion used
Kerestes et al. 2019	39	US	276	Plants/herbs, Misoprostol only, Other drugs/substances/mixtures
Kyilleh et al. 2018	58	Ghana	89	Plants/herbs, Intrauterine, Alcohol & drug abuse, Other drugs/substances/mixtures
Lane et al. 1998	31	Egypt	18	Plants/herbs, Intrauterine, Physical trauma, Alcohol & drug abuse, Other drugs/substances/mixtures
Lara et al. 2006	95	Unknown Latin American city	197	Misoprostol only, Other drugs/substances/mixtures
Machungo et al. 1997	32	Mozambique	306	Intrauterine, Other drugs/substances/mixtures
Madeiro & Diniz 2015	87	Brazil	39	Plants/herbs, Misoprostol only, Intrauterine
Makorah et al. 1997	23	South Africa	25	Plants/herbs, Other drugs/substances/mixtures
Mandondo et. al 2018	88	South Africa	18	Misoprostol only
Manriquez et al. 2018	78	Chile	30	Mifepristone + misoprostol, Misoprostol only
Measham et al. 1981	24	Bangladesh	1590	Plants/herbs, Intrauterine, Physical trauma, Other drugs/substances/mixtures
Meffen et. al 2018	100	Haiti	289	Plants/herbs, Misoprostol only, Other drugs/substances/mixtures
Meglioli & Kahabuka 2015	*96*	*Tanzania*	*110*	*Misoprostol only*
Mengue et al. 1998	25	Brazil	6077	Plants/herbs, Misoprostol only, Other drugs/substances/mixtures
Mutua et. al 2018	83	Kenya	37	Mifepristone + misoprostol
Naravage & Sakulbumrungsil 2009	65	Thailand	45	Physical trauma, Other drugs/substances/mixtures
Nath et al. 1997	26	India	2305	Plants/herbs

Study citation	Reference Number	Study location	Sample size	Method of self-managed abortion used
Nations et al. 1997	27	Brazil	91	Plants/herbs, Other drugs/substances/mixtures
Nivedita & Shanthini 2015	104	India	40	Mifepristone + misoprostol
Nozar et al 2009	*85*	*Uruguay*	*623*	*Misoprostol only*
Ochoa et al 2018	*116*	*Nicaragua*	*17*	*"medicines"*
Ojanen-Goldsmith et al 2017	*105*	*US & Canada*	*19*	*Plants/herbs, Other drugs/substances/mixtures ("medication")*
Oodit et al 1996	28	Mauritius	490	Plants/herbs, Intrauterine, Physical trauma, Misoprostol only, Other drugs/substances/mixtures
Panda et al 2016	107	India	204	Mifepristone + misoprostol
Penfold et al 2018	59	Kenya	22	Plants/herbs, Intrauterine, Physical trauma, Other drugs/substances/mixtures
Polgar & Fried 1976	29	US	889	Plants/herbs, Toxic substances, Intrauterine, Alcohol & drug abuse, Other drugs/substances/mixtures
Pongsatha et al. 2002	90	Thailand	103	Misoprostol only
Pourette et. al 2018	61	Madagascar	60	Misoprostol only
Ramos et al. 2015	13	Argentina	45	Misoprostol only
Rogers et. al 2019	84	Nepal	9	Mifepristone + misoprostol
Rominski et al. 2017	114	Ghana	27, + 6-10 people in 8 focus groups	Misoprostol only
Rosing & Archbald 2000	115	US	610	Misoprostol only
Sensoy et al. 2015	56	Turkey	600	Plants/herbs, Intrauterine, Physical trauma, Other drugs/substances/mixtures
Shamala et al. 2018	*109*	*India*	*24*	*Not available*

Study citation	Reference Number	Study location	Sample size	Method of self-managed abortion used
Srivastava et al. 2018	108	India	164	"Medical abortion pills"
Szwarc et al. 2018	79	Argentina	5	Mifepristone + misoprostol, Misoprostol only
Tousaw et al. 2017	110	Thailand/Burma border	16	Misoprostol only
Ujah et al. 2009	*97*	*Nigeria*	*160*	*Misoprostol only, Other drugs/substances/mixtures*
Vallely et al. 2014	66	Papua New Guinea	67	Plants/herbs, Intrauterine, Physical trauma, Misoprostol only, Other drugs/ substances, mixtures
Wantania et al. 2012	106	Indonesia	137	Plants/herbs, Misoprostol only
Webb 2000	42	Zambia	1500	Plants/herbs, Toxic substances, Intrauterine, Other drugs/substances/mixtures
Yoon 2018	*80*	*Korea*	*1340*	*Mifepristone + misoprostol*
Zurbriggen et al. 2018	113	Argentina	16	Not measured

[1]Aiken 2017 (a) Experiences and characteristics of women seeking and completing at-home medical termination of pregnancy through online telemedicine in Ireland and Northern Ireland: a population-based analysis.
[2]Aiken 2017 (b) Self-reported outcomes and adverse events after medical abortion through online telemedicine: population based study in the Republic of Ireland and Northern Ireland.
[3]Aiken 2018 (a) Barriers to accessing abortion services and perspectives on using mifepristone and misoprostol at home in Great Britain
[4]Aiken 2018 (b) Experiences of women in Ireland who accessed abortion by travelling abroad or by using abortion medication at home: a qualitative study.
[5]Aiken 2018 (c) Motivations and Experiences of People Seeking Medication Abortion Online in the United States.
[6]Aiken et al. 2018 (d) Self-managed medication abortion: variation in knowledge, interest and motivations among abortion clients across three Texas cities
[7]Foster 2018 (a) Providing telemedicine abortion care in Poland: An analysis of 18 months of service delivery through Women Help Women.
[8]Foster 2018 (b) Exploring Polish women's experiences using a medication abortion telemedicine service: a qualitative study.

Table 2. Effectiveness of self-managed abortion by method

Method	Study	Year	N	Gestational Age	Definition of effectiveness	Complete Abortion
Mifepristone + misoprostol						
	Aiken	2017b	781	<7 weeks	"No longer pregnant"	99.1% (95%CI: 98.2-99.6)
	Aiken	2017b	781	<7 weeks	"No longer pregnant and no surgical intervention"	95.4% (95%CI: 93.7-96.8)
	Gomperts	2008	367*	<9 weeks	Did not report continuing pregnancy	98.9%
	Gomperts	2012	2345**	<9 weeks	Did not report ongoing pregnancy	99.1%
	Foster	2018	174	<9 weeks	"confirmed their abortion was successful"***	99%
	Gomperts	2014	207	≤9 weeks	Complete abortion without surgical intervention	78.7% (95%CI: 72.4-84.0)
	Yoon	2019	938	<9 weeks	"The success rate was"***	96%
	Aiken	2017b	219	7-9 weeks	"No longer pregnant"	99.5% (95%CI: 97.5-100.0)
	Aiken	2017b	219	7-9 weeks	"No longer pregnant and no surgical intervention"	92.2% (95%CI: 87.9-95.4)
	Gomperts	2014	71	10-12 weeks	Complete abortion with no surgical intervention	83.1% (95%CI: 72.0-90.6)
	Footman	2018	82	≤12 weeks	"not pregnant" at day 15	94.3%
	Gerdts	2018	75	>12 weeks	Complete abortion with no surgical intervention	97%
	Gomperts	2014	29	≥ 13 weeks	Complete abortion with no surgical intervention	48.3% (95%CI: 29.9-67.1)
Misoprostol only						
	Foster	2017	918	<9 weeks	"not pregnant at follow-up"	96.4%
	Footman	2018	15	≤12 weeks	"not pregnant" at day 15	75%
	Gerdts	2018	16	>12 weeks	Complete abortion with no surgical intervention	71%
Other methods						
Drugs, instruments, excessive exercise, baths, etc	Gemmings	1974	33	unspecified	"successful"	24%

** This sample size reflects the combined number of people that reported taking the medications that were sent to them, both between April and December 2006, and in January 2007. ** This sample n is the number of people who reportedly took the medications (i.e., the 2,585 women who completed a follow-up questionnaire, minus 240 who decided not to take the medications.) *** These data are from a conference abstract, and thus space for definitions was limited.*