

Title: A scoping review of the format, content, effectiveness and acceptability of reproductive life planning tools

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Abstract:

Introduction: A Reproductive Life Plan (RLP) is a set of questions that encourage patients to reflect on their reproductive goals and the actions needed to achieve them. This scoping review of the published and grey literature aims to map the evidence on currently available RLPs.

Methods:

We searched four databases (Medline, Embase, PsycINFO and Scopus) and used Google to search the grey literature, the search terms were; “reproductive life plan\$” OR “reproductive plans\$” OR “pregnancy intention screening”. Data were extracted on target audience, format, content, behaviour change theory, features, effectiveness and acceptability.

Results:

44 published papers and 18 grey literature sources were included. 21 RLPs were discussed in the published papers and 17 in the grey literature. Most RLPs came from the USA. Most RLPs in published papers were asked verbally, while all RLPs in the grey literature were self-completed; there were six digital RLPs. Most ask whether an individual wants children, some then ask about number and timing of children, and contraception. Grey literature RLPs also asked about lifestyle and health.

Discussion:

The concept of developing an RLP is acceptable to people of reproductive age and healthcare professionals. There was a lot of consistency in the questions asked, however, there is limited data on effectiveness and only three tools, all digital, incorporated behaviour change theory.

Conclusion

A digital RLP that builds on the evidence for existing tools and integrates appropriate theory could result in the realisation of the potential that RLPs are theorised to deliver.

Introduction

“You’re either on contraception or you’re pregnant, and that middle step is missing”. So said one woman in our qualitative research (1), describing the gap that pregnancy intention screening (PIS) and reproductive life planning (RLP) is attempting to fill (see Box 1 for definitions). Arguably the decision of whether or when to have children is one of the most important decisions a person will make in their lifetime, with far reaching impacts for health and wellbeing across the lifecourse. Despite this there is very little reliable and evidence-based support available for people to make these decisions, whether that is from health professionals, educational settings, digital sources, or from peers.

Pregnancy intention screening (PIS): a way of identifying a person’s desire for pregnancy, within a set timeframe, usually a single question. In a clinical context, this can be used to determine which reproductive health services to offer or could precede a reproductive life planning discussion.

Reproductive life plan (RLP): a set of longer-term personal goals about having or not having children and how to achieve those goals, based on the person’s own values, goals, and resources.

Box 1: Definitions of pregnancy intention screening and reproductive life plans

Reproductive life planning is a concept developed in the USA and championed by the Centers for Disease Control and Prevention (CDC) (2). It is a set of questions that health care providers were encouraged to use to prompt their patients to reflect on their reproductive goals and the actions that they need to take to achieve them (Box 2). This could lead to advice on how to improve health before pregnancy (preconception care) to increase the chances of pregnancy (3) and reduce adverse birth outcomes (4,5), counselling on contraceptive choices, or support for those who are unsure or

ambivalent about a future pregnancy, recognising that pregnancy planning is not a salient concept for some (6).

- Do you plan to have any(more) children?
 - How many children do you hope to have?
 - How long do you want to wait until you become pregnant (again)?
 - How much space do you plan to have between your future pregnancies?
- What do you plan to do to avoid pregnancy (until you are ready to become pregnant)?
- What can I do to help you achieve your plan?

Box 2: Questions in the RLP developed by Moos (2006) and adopted and adapted by the CDC (7).

As the implementation of reproductive life planning has been developed it has increasingly been emphasised that it should be used in a way that supports patient autonomy, is not judgemental, and is patient-centred i.e. focusing on the patient's priorities and not what the healthcare professional thinks those should be, particularly when it comes to contraceptive choice (6). Consequently, five key attributes of reproductive life planning have been defined: goal-orientated; personalised; collaborative but person-centred; fluid; and health promotion-focused (8). Pregnancy intention screening is an antecedent to reproductive life planning (8), often a single question in a clinical encounter which seeks to establish a person's current attitude towards pregnancy, and which may begin the process of reproductive life planning, resulting in the formulation of a reproductive life plan. Throughout this paper we use RLP to refer to both the *process* and the *output* of reproductive life planning.

To date there has been no attempt to implement pregnancy intention screening or reproductive life planning in the United Kingdom. However, in 2023 it was recommended as the entry point for holistic care across the reproductive life course in primary care in England (1). There are a range of

potential tools and it is not clear which would be best in any given setting. Furthermore, women and healthcare professionals have expressed preferences for a digital approach, or one that integrates digital and in-person modalities (1, 9, 10), and the evidence for this needs to be explored.

This scoping review of the published literature, and a review of RLPs available in the grey literature, aims to map out what is currently available and describe the content and format of existing RLPs, as well as synthesise any information on their effectiveness or acceptability, with a particular focus on digital tools.

Methods

We conducted a scoping review of the published and grey literature (11). The search protocol was pre-registered with OSF (DOI 10.17605/OSF.IO/S26CV). We searched four databases: Medline; Embase; PsycINFO; and Scopus, accessed via the Ovid and Scopus interfaces, and used Google to search the grey literature. After extensive testing we created a parsimonious search strategy of keywords, as there were no suitably focused MeSH terms, of “reproductive life plan\$” OR “reproductive plans\$” OR “pregnancy intention screening”. The search was limited to peer-reviewed studies, in humans, published from 1 January 2015, when the first digital RLPs began to appear, to 24th October 2023. Observational and intervention studies were included. The full electronic search strategies are included in S1. We searched Google on 15/11/2023 using the search strategy “reproductive life plan\$” OR “reproductive plan\$ tool\$”, extracting the first 50 results. Additional inclusion criteria were that the study focused on people of reproductive age, or health professionals serving them, and was about any reproductive life planning or pregnancy intention screening tool. Studies were excluded if they were not in humans, not available in English or not a primary study. The same criteria were applied for both papers and grey literature.

Database search results were extracted and uploaded to Rayyan where duplicates were removed, and title/abstract screening was managed. The list of papers selected for full text review was uploaded to Endnote. To minimise bias and increase objectivity, reviewers worked in parallel for all

screening rounds, blind to each other's decisions. Any discrepancies were resolved by a third reviewer. Reviews were excluded after references were checked for additional studies meeting the inclusion criteria. References and citations of included studies were screened to identify additional studies. Data items extracted into an Excel spreadsheet designed for this review included meta data about the studies, target audience, format, content, including any associated behaviour change theory, features, effectiveness and acceptability of the PIS/RLP. Findings were synthesised within each of these categories with differences between tools, settings and formats considered.

We contacted authors of any papers that did not include the wording of the PIS or RLP content in the paper. Of the three authors contacted (12-14) only one replied (14).

Results

The database searches yielded a total of 432 publications: 135 were duplicates; 235 were removed on title and abstract review; and 62 full-text papers were retrieved. Thirty-one of these were excluded, mostly because they were not about PIS/RLP. Thirteen additional publications were identified from forward and backward citation searching. From the grey literature search, eighteen results were retained; most results were excluded as they were a research paper that had been identified in the database search (n=17). The PRISMA flowchart is shown in Figure 1 and checklist is in S2.

Figure 1: Flowchart of study identification

Included studies

Ultimately, 44 papers were included in our review and are described in Table 1 (6, 12-54). Although published between 2015-2023, data were collected between 2012-2021. The majority of papers came from the USA (n=33) followed by Sweden (n=6) and Eswatini (n=2). Pilot studies, qualitative analyses and randomised controlled trials were the joint most common studies (n=8). Most studies

took place in clinical settings: either primary/community health services (n=27) or secondary clinic/hospital (n=10). Within the grey literature sources most were published by health care services in the USA and are described in Table 2 (55-72).

Table 1: Characteristics of included studies

Authors and year of publication	Paper title	Study type	Setting	RLP/PIS	Target audience - Sex	Age	How effectiveness of RLP was measured in the study	Effectiveness	Acceptability patients/public	Acceptability healthcare professionals	Public awareness	Behaviour Change Theory
Bello, J. K. et al (2020). (15)	Perceptions of a Spanish language Reproductive Health Self-assessment Tool Among Spanish-Speaking Women at a Federally Qualified Health Center.	Qualitative - 1:1 semi structured interviews	Federally Qualified Health Centre in Chicago	The Spanish version of the Reproductive Health Self-assessment Tool (RH-SAT)	Female	18-45	Received reproductive counselling	All participants read the RH-SAT before their visit, six filled it out, 9 discussed it with their clinician, 8 saved it, 17 said they would fill it out again before their next appointment	1) RH-SAT was easy to use and useful 2) RH-SAT provided new and helpful information ; 3) RH-SAT prompted self-reflection 4) RH-SAT could help overcome barriers in discussing contraception and preconception health	N/S	N/A	Patient-centred approach

Bodin, M. et al (2018). (16)	Can Reproductive Life Plan-based counselling increase men's fertility awareness?	Randomised-controlled trial	Two sexual health clinics in Sweden.	Exact questions Participant s also received a brochure about male fertility and lifestyle.	Male	18-50	Knowledge, Satisfaction	Fertility awareness increased from 4.6 to 5.5/12 (p=0.004) in intervention group. 77% had received new information.	76% had a positive experience of the counselling . Some suggested that a website or app about fertility would be useful.	N/S	N/A	Not stated
Bommaraju, A. et al (2015). (12)	Reproductive Life Plan Counseling and Effective Contraceptive Use among Urban Women Utilizing Title X Services.	Interventional study	Gynaecological services in Cincinnati-Hamilton County Reproductive Health and Wellness Program, Ohio.	Providers were trained on RLP counselling g with a web-based programe for Title X, but this page is no longer available. Requested from authors but no response.	Female	16+	Contraception use	Controlling for ethnicity and education, RLPC appeared to increase the use of contraception compared to no method, but this was only significant for LARC (aOR 1.64, 1.03, 2.61).	N/S	N/S	N/A	Shared decision making was emphasised.
Callegari, L. S. et al (2017). (6)	Addressing potential pitfalls of reproductive life planning with patient-centered counseling.	Describes a new RLP based on avoiding issues identified in those to date	N/A	PATH	Female	N/S	N/A	N/A	N/A	N/A	N/A	Patient-centred counselling. Motivational interviewing

Callegari, L. S. et al (2015). (17)	Reproductive Life Planning in Primary Care: A Qualitative Study of Women Veterans' Perceptions.	Qualitative study to explore veteran's perceptions of RLP, 27 interviews	Two Veterans' Association Women's Health Clinics in Seattle	Moos / CDC RLP	Female	18-44	N/A	N/A	Women veterans valued RLP discussion, gained new information. Preferred providers to raise the issue. Wanted it to be non-judgmental, unbiased sounding board respect individual values and preferences	N/A	N/A	Not stated
Chivers, B. R. et al (2020). (18)	Preconception health and lifestyle behaviours of women planning a pregnancy: A cross-sectional study.	Cross sectional survey	Survey of women with private insurance, aged 18-40 who had upgraded their insurance to cover pregnancy and were planning a pregnancy in the next 5 years	Asking about awareness of RLPs.	Female	18-40	N/A	N/A	N/A	N/A	90.2% were unaware of RLP, with no statistically significant difference between active planners (desire pregnancy in the next year)	Not stated

Chuang, C. H. et al (2019). (19)	Reproductive Life Planning and Contraceptive Action Planning for Privately Insured Women: The MyNewOptions Study.	Two year randomised controlled trial with three arm parallel group to compare RLP, RLP+, and web-based information	Women privately insured by Highmark Health, Pennsylvania. Website access was unrelated to clinic use.	How many children do I have now? How many more children do I want in the future? Does my partner agree with my decision about if and when I want to have children in the future? What am I doing now to prevent getting pregnant by accident?	Female	18-40	Contraception use, Contraception adherence, Other: Contraceptive satisfaction and self-efficacy.	RLP was not effective in terms of contraceptive use, adherence, switching to a more effective method, satisfaction, or contraceptive self-efficacy. However, women in the RLP group were more likely to use a prescription method.	Follow up rates over 3 years of 94-95% are high and suggest that the intervention was acceptable. Says 'repondents reported that the interactive, web-based format was easy to use and desirable'	N/A	N/A	and non-active planners (1-5 years).	Action planning
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DiPietro Mager, N. et al (2018). (14)	Utility of reproductive life plans in identification of potentially teratogenic medication use: A pilot study.	Retrospective case note review	Toledo-Lucas County Healthy Start program, Ohio, USA	RLP questions not stated and no response from authors.	Female	13-44	Medication Review, Contraception use, Other: Detection of potentially teratogenic medicines	Medication list was completed in 437/580 (75%) of RLPs. 35/437 (8%) teratogenic medications, 10/35 (29%) on contraception	N/S	N/A	N/A	Not stated
Ekstrand Ragnar, M. et al (2018). (20)	Development of an evidence-based website on preconception health.	Development and evaluation of an RLP website.	Not implemented in a setting in this paper, but the authors say the website could be used by HCPs in client consultations, by clients before consultations to prepare for discussions and in sexual health education in schools.	'Do you wish to have children?' Options: 'Not now, perhaps later', 'Yes, within one year', or 'No'. Each response alternative is followed by preconception advice tailored to the chosen response.	Male & Female	20-30	N/A	N/A	Simple, clear, modern. Interesting content. Many like the brevity and signposting, others wanted more comprehensive content. Needed to be more inclusive. Trustworthy, reliable, valid source.	24 Nurse midwives (age 29-64) completed a survey and rated it positively as useful for them and for clients. Eg 17/19 found it very or rather useful for them and 18/20 for clients. Some had used it, all said that they would use it in the future.	N/A	Not stated

Engström, E. et al (2022). (21)	Family planning practices and women's impression of the reproductive life plan in Eswatini.	Cross-sectional study	Siphilile Maternal and Child Health - NGO in peri-urban areas outside Manzini	Moos / CDC RLP	Female	15-44 years	Received reproductive counselling, Knowledge, Satisfaction	74% n=148 reported that family planning discussions using the RLP tool had helped them 'very much' and 88% n=175 thought that it was 'very good' to have these discussion with their mentor mother.	Women in this study had a positive impression of family planning counselling using the RLP and a majority wanted to have more support on family planning by their mentor mother.	N/A	N/A	Not stated
Fooladi, E. et al (2018). (22)	Using reproductive life plan-based information in a primary health care center increased Iranian women's knowledge of fertility, but not their future fertility plan: A randomized, controlled trial.	A randomized, three-armed, controlled trial	A primary health care centre in the Sari city, the Provincial capital of Mazandaran, Iran.	Core similar to Moos / CDC RLP but supplemented for the unsure group: What are your thoughts on having children? From your point of view, what speaks in favour of or against having children?	Female	Reproductive age – not specified	Use of folic acid, Knowledge, Pregnancy planning	The group difference for folic acid intake prior to pregnancy post intervention was statistically significant. Also, provision of RLP-based information in counselling resulted in an increased knowledge of fertility.	Of 59 women in the intervention 74% found the content new. 97% mentioned a positive feeling about being asked about their RLP by the midwife, and 95% made them think about fertility in different way.	N/S	N/A	Not stated

Garbers, S. et al (2020). (23)	If You Don't Ask, I'm Not Going to Tell You: Using Community-Based Participatory Research to Inform Pregnancy Intention Screening Processes for Black and Latina Women in Primary Care.	A community-based participatory research project	New York City-based organisations: Public Health Solutions and Ryan Health/Women and Children's, a federally qualified health center (FQHC) in a predominantly Latino community in New York City.	N/A (focused on people's opinions of how to do PIS meaningfully)	Female	Ages 15 to 49	N/A	N/A	3 themes: Agency, Judgement and Shame, Expertise versus Authority.	N/A	N/A	Not stated
Hipp, S. et al (2017). (24)	Insights in Public Health: Improving Reproductive Life Planning in Hawai'i: One Key Question R.	Pilot study	Community based: Home Visiting Services Unit (HVSU) within the Maternal and Child Health Branch of the Hawai'i Department of Health	OKQ	Female	N/S	Other: literature	N/A	Response to the implementation of OKQ in home visiting has largely been positive, with many home visitors and mothers reporting feeling of empowerment and increased knowledge of reproductive health.	N/A		Not stated

Goodsmith, N. et al (2023). (25)	Acceptability of reproductive goals assessment in public mental health care.	Rapid qualitative analysis - summarised interview transcripts and identified themes using matrix analysis. Community-partnered participatory research approach	Participants were recruited from four outpatient mental health clinics chosen	PATH and OKQ	Female	18-45	N/A	N/A	Perceptions were generally positive. Need to build rapport PATH described as more “comfortable” and “conversational” and patients and providers favoured PATH’s open-endedness. A couple of patients favoured OKQ, as the defined timeline made the question “a reality”.	Providers (psychiatrists, nurses, or case managers at participating clinics) stated that the RLP conversation guides would open the door to important discussions, support a better understanding of patients' goals, and facilitate medication counselling and planning.	N/A	Not stated
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Koo Andersson, M. and Tyden, T. (2020). (26)	Implementation of reproductive life planning (RLP) in primary health care supported by an evidence-based website.	Cross-sectional study	The study setting involved contraceptive counselling provided by midwives who utilised the RLP tool and a mobile-friendly website Online	Moos / CDC RLP	Male & Female	Not specified	Pregnancy planning, Other: The study assessed the impact of the RLP tool on client counselling	The RLP made it easier for midwives to support clients in forming reproductive goals (84.9%, n = 45), give family planning advice (81.1%, n = 43), give advice about how to improve health before pregnancy (84.9%, n = 45) and give advice about how to preserve fertility (88.7%, n = 47).	N/A	Almost all (96.2%) had heard about the RLP method before the project started, 77.4% had previously used the RLP method in their work and 73.6% had experience of working with the booklet. Almost all respondents (89%) reported a positive attitude towards the tool and the website.	N/A	Normalisation process theory (NPT) - an implementation theory rather than behaviour change
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Kransdorf, L. N. et al (2016). (27)	Reproductive Life Planning: A Cross-Sectional Study of What College Students Know and Believe.	Cross-sectional survey	Study of patients seen at the student health centre of a large public university in the Southwestern US	No RLP - about awareness of RLPs in general.	Male & Female	18-40 years old	N/A	N/A	N/A	N/A	24% had heard of an RLP, only 4.2% reported ever being asked about an RLP.	Not stated
Kvach, E. et al (2017). (28)	Routine Screening for Pregnancy Intention to Address Unmet Reproductive Health Needs in Two Urban Federally Qualified Health Centers.	Quality improvement study (Qualitative)	Two clinical sites in Denver, Colorado Metropolitan Area (USA): site 1 and 2; for both sites, more than 50% of patients have an income level 100% of the federal poverty level or less	OKQ	Female	Age 12 to 45	Other: pregnancy intention screening rates as recorded in electronic health record	Screening increased from 0% to 68.3% (Site 1) and from 49.0% to 80.3% (Site 2). Adolescents were screened at lower rate than adults. No significant difference in screening rate between English and non-English speaking patients.	N/A	Challenges: cultural relevance to certain patient groups, staff turnover, and time for follow-up counselling.	N/A	Plan, Do, Study, Act (PDSA) cycles - Implementation strategy for behaviour change in providers not participants

Madrigal, J. M. et al (2019). (29)	Looking Through the Lens of a Family Planner to Prioritize Reproductive Health Among Women With Cancer.	Pilot study n=9	Division of Family Planning in the Department of Obstetrics & Gynecology AND Division of Hematology/Oncology of the Cook County Health (USA)	FPQ (family planning quotient) and RepLI (reproductive life index)	Female	Women of reproductive age - younger than 50 years	Other: Women evaluated the FPQ/RepLI tool effectiveness of RLP in helping them to think about and communicate their personal goals; and whether it was helpful overall	All participants agreed that the FPQ/RepLI helped them to talk to their provider about their reproductive goals.	88.9% found the tool helpful and would use it for future tracking of their reproductive goals.	Physicians were receptive to referring their patients to an in-clinic health educator to discuss the FPQ/RepLI during patients visits.	N/A	Not stated
Madrigal, J. M. et al (2019). (30)	The family planning quotient and reproductive life index (FPQ/RepLI) tool: a solution for family planning, reproductive life planning and contraception counseling.	Pilot study, cross sectional evaluation	Urban, public hospital in Chicago: patients and providers in the Family Planning and Reproductive Health Service clinics within the John H. Stronger, Jr. Hospital of Cook County	FPQ (family planning quotient) / RepLI (reproductive life index) and OKQ	Female	N/S	Other: Patients and providers completed an evaluation survey rating their satisfaction with the RLP tool	Most patients (n=725, 91.9%) agreed that the RLP tool was helpful. Most agreed that the tool helped them communicate goals, aided in educating about contraception, and facilitated discussion and decision-making about available contraceptives.	Most patients (n=725, 91.9%) would use it to track their reproductive goals.	Of the providers surveyed, 91% (n=60) agreed that the tool was useful in facilitating the conversation and understanding their patient's reproductive plan, and 83% (n = 55) agreed that they saw a need for reproductive health tools like FPQ/RepLI in clinical practice and counselling	N/A	Balanced Counseling Strategy Plus (BCS+) - not behaviour change theory, but aligned with being patient centred

Manze, M. G. et al (2020). (31)	Physician perspectives on routine pregnancy intention screening and counselling in primary care.	Cross-sectional (self-administered) survey	Surveys with primary care physicians in New York State, USA	1 - OKQ - 2 - "Many of my patients are thinking about either getting pregnant or preventing a pregnancy. Where are you on this issue right now?" 3 - "Can I help you with any reproductive health services today, such as birth control or planning for a healthy pregnancy?" 4 - What are your thoughts on becoming pregnant?	Female	Women of reproductive age	N/A	N/A	N/A	88% felt pregnancy intention screening should be routinely included in primary care, with 48% reporting that they routinely perform such screening Q3 was ranked first most often (33%), followed by Q2 (29%). OKQ was ranked first least often (15%). Physicians required more training to implement pregnancy intention screening (8%), contraceptive provision (17%), contraceptive counselling (16%), and preconception care (15%).	N/A	Not stated
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Manze, M. G. et al (2020). (32)	Women's Perspectives on Reproductive Health Services in Primary Care.	Qualitative (interviews and focus groups)	Community based: Focus groups in two New York City neighbourhoods and in-depth interviews in two upstate New York suburban/rural neighbourhoods	1- OKQ - 2- Many of my patients are thinking about either getting pregnant or preventing a pregnancy. Where are you on this issue right now? 3- Can I help you with any reproductive health services today, such as birth control or planning for a healthy pregnancy?	Female	21-40 years	N/A		N/A	1- Participants felt neutral about this question, 2 - less abrupt than the Q1, and opened up the conversation to both preventing becoming pregnant but comparison to others disliked and too wordy. 3- overwhelmingly positive response; demonstrates that providers care about patients, promoted reproductive autonomy, conversation starter. Participants appreciated that this question	N/A	N/A	Not stated
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									could include female patients who had sex with people other than cisgender males.			
Nelson, A. L. et al (2016). (33)	Reproductive life planning and preconception care 2015: Attitudes of English-speaking family planning patients.	Qualitative (1:1 interviews)	Clinic that served indigent women and men in the California State Family PACT program.	Do you have any children now? Do you want to have (more) children? How many (more) children would you like to have and when?	Female	N/S	N/A	N/A	53% confidently estimated how many children they wanted in their lifetimes, 47% provided delayed responses, 6.4% were unable to provide any estimate.	N/A	N/A	Not stated

Niemeyer Hultstrand, J. et al (2020). (34)	Evaluating the implementation of the Reproductive Life Plan in disadvantaged communities: A mixed-methods study using the i-PARIHS framework.	Mixed-methods study	Community-based: disadvantaged areas in Eswatini	Moos / CDC RLP	Female	N/S	N/A	N/A	N/A	22/23 Mentor Mothers valued the effect the RLP had on their work; improved confidence, enabled reflection, support clients in forming reproductive goals, discussing family planning preconception health. Implementing was easy as it fit well with existing practices.	N/A	Not stated
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Pryor, K. P. et al (2022). (35)	Pregnancy Intention Screening in Patients With Systemic Rheumatic Diseases: Pilot Testing a Standardized Assessment Tool.	6-month pilot quality improvement study	Multi-site rheumatology practice (Brigham and Women's Hospital), USA	OKQ	Female	18 to 49 years	Received reproductive counselling, Knowledge, Assess the use of the OK to document pregnancy intention / any documentation of pregnancy intention/ any documentation of contraception use.	11 of the 43 providers documented reproductive health preferences for 83/957 patients (8.7%). Patients seen by female rheumatologists had 2.42 times higher odds of being screened, either with or without OKQ. Patients screened OKQ were more likely to have contraceptive method documented and be referred to OB/GYN.	N/A	Small increase in feeling comfortable asking about reproductive goals (31% - 38%), no increase in feeling comfortable discussing contraception, fewer reported discussing pregnancy preparation postimplantation (72% v 59%). Barriers included time, sensitivity, limited knowledge, and challenges to referring patients; Postimplantation there was a decrease in reported barriers to referral to OB/GYN (41%-21%),	N/A	Not stated
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Skogsdal, Y. et al (2019). (36)	An intervention in contraceptive counselling increased the knowledge about fertility and awareness of preconception health-a randomized controlled trial.	RCT	Outpatient clinics (contraceptive counselling) in central Sweden	Moos / CDC RLP	Female	20-40 years	Knowledge, Awareness	Women in the intervention group increased their fertility knowledge, were more likely to think it was important to make lifestyle changes before a pregnancy and planned to do so. No differences on the use of contraception after the intervention. Of those who wished to have children/more children, 65% thought it was important to become pregnant according to their own time plans.	437/585 had read the brochure, 59.2% (342/577) considered the RLPC very or fairly positive, 37.6% (217/ 577) were neutral 3.1% (18/ 577) thought it was fairly negative, no one thought it was very negative. 76% (443/ 585) felt it should be routine during visits to midwives or other healthcare providers, while 18.2% (106/583) were unsure, and 5.7% (33/583)	N/A	N/A	Not stated
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Song, B. et al (2021). (37)	Effects of clinic-level implementation of One Key Question® on reproductive health counselling and patient satisfaction.	RCT		OKQ	Female	18-49 years	Received reproductive counselling, Satisfaction, Other: Reproductive counselling classes as provider talking about birth control, what method was recommended, being healthy before becoming pregnant, recommended taking prenatal vitamins.	Intervention demonstrated a non-significant increase in patient reported receipt of any reproductive counselling while control practices showed a non-significant decrease. A non-significant increase from 63% to 72% (p = 0.41) in contraceptive	were negative.	N/A	N/A	Not stated
			Outpatient practices within NorthShore University Health System, USA - one primary care and one ob/gyn						Satisfaction increased in primary care, both with overall medical care (from 81% to 97%, p = 0.04) and with the way the provider talked about improving health (from 77% to 94%, p = 0.06); and in ob/ gyn stayed very high with overall medical care (97%			

								e counselling and from 21% to 31% (p=0.35) in preconception counselling in the intervention practices.	in both time points) and the way the provider talked about improving health (87% to 92%, p = 0.5).			
Srinivasulu, S. et al (2022). (38)	Women's Perspectives on a Reproductive Health Services Screening Question: An Alternative to Pregnancy Intention Screening.	Qualitative (interviews and focus groups)	Not a specific setting, but women aged 18-45 in New York who had seen a primary care provider in the last year	Can I help you with any reproductive health services today, such as preventing pregnancy or planning for a healthy pregnancy?	Female	18-45 years	N/A	N/A	Participants interpreted this question as asking about contraception or help with preparing for a healthy pregnancy. Several discussed providers expressing assumptions and gender role stereotypes about getting pregnant versus being childless by choice. Some saw	N/A	N/A	Not stated

									OB/GYN as the appropriate specialist, not primary care.			
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Stern, J. et al (2015). (39)	Midwives' adoption of the reproductive life plan in contraceptive counselling: a mixed methods study.	Exploratory mixed methods study (questionnaires and focus group interviews)	Nurse-midwives at antenatal/family planning clinics and youth clinics within the primary care system in one Swedish county	Expanded version of Moos/CDC RLP	Female	N/S	N/A	N/A	N/A	N/A	68% (n=36) had used RLP in their contraceptive counselling. No midwife did not like the idea of RLP in contraceptive counselling. Qualitative findings showed it to be a predominantly positive experience that motivated health promotion actions with positive reactions from women. Societal factors, including social norms were noted. Wider use was supported.	N/A	Not stated
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Stulberg, D. B. et al (2019). (40)	Increase in Contraceptive Counseling by Primary Care Clinicians After Implementation of One Key Question® at an Urban Community Health Center.	Quasi-experimental - Survey study (pre & post complex intervention)	Federally Qualified Health Centre in Chicago (family medicine attending and resident physicians, nurse practitioners, nurse midwives), USA	OKQ	Female	18-49 years	Contraception use, Pregnancy Planning, Other: Rates of contraceptive counselling and LARC recommendation, rates of preconception counselling, patient satisfaction	Increased rates of contraceptive counselling (52% v 76% p=0.04) and LARC recommendations (10% v 32% p=0.04). A decrease in satisfaction with overall medical care. No difference in preconception counselling. Increased contraceptive care was noted especially among patients presenting for general health reasons.	N/A	N/A	N/A	Patient-centred counselling
Tydén, T. et al (2016). (41)	Using the Reproductive Life Plan in contraceptive counselling.	Mixed methods RCT	Student health centre (University) in Sweden	Moos / CDC RLP	Female	Student, exact age not specified	Knowledge, Pregnancy planning, Satisfaction	At follow-up, women in the intervention group had better knowledge about reproduction	Nine out of 10 were positive about the fact that the midwife initiated the RLP discussion,	Presents the same findings as the Stern 2015 paper.	N/A	Not stated

								, and they wished to have their last child earlier in life than at baseline.	and thought midwives routinely should discuss RLP with their patients.			
Allen, D. et al (2017). (42)	One Key Question®: first things first in reproductive health.	Commentary	N/A	OKQ	N/S	N/A	N/A	N/A	N/A	N/A	N/A	Patient-centered

Batra, P. et al (2018). (43)	A cluster randomized controlled trial of the MyFamilyPlan online preconception health education tool	Cluster RCT (34 physician well-woman care providers as the units of analysis (clusters))	Urban academic medical centre in California, USA	MyFamily Plan	N/S	18-45 years old	Received reproductive counselling, Use of folic acid, Contraceptive use, Other: scheduled an additional appointment about reproductive health; patient-reported self-efficacy with respect to pregnancy planning using Reproductive Health Attitudes & Behaviour (RHAB) instrument	97.9% completed MyFamilyPlan. Completion increased discussion with physicians, which remained significant in the adjusted model (OR = 1.97, 95% confidence interval: 1.22-3.19). No significant changes in secondary outcomes of folate supplementation, scheduling an additional appointment, and self-efficacy.	75.3% liked the online format, citing ease of use and online availability as reasons to recommend it to a friend. Reasons for not liking MyFamilyPlan included: information was too general/basic; and that it seemed to be more tailored toward women intending pregnancy. Participants	N/A	N/A	Patient-centred health-education, grounded in Fishbein's reasoned action approach to health promotion.
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Caskey, R. et al (2016). (44)	A novel approach to postpartum contraception: A pilot project of pediatricians' role during the well-baby visit.	Mixed methods: survey and focus groups, pilot project	Routine Well Baby Visits (WBV) at a large university medical centre in USA (exact location not specified, though it mentions that The University of Illinois at Chicago Institutional Review Board granted approval for this research)	As part of your child's care I ask about plans for future pregnancies because the timing of pregnancies has an impact on your child's health and your health. Then CDC/Moo's RLP. If using non-LARC: then suggest referral to family planning clinic.	N/S	N/S	Contraception use, Other: Referral to family planning services	RLP was completed in 83% of eligible visits (n=50). 46% of the 37 mothers who stated 'no' or were 'unsure' about having more children reported not using any contraception. Of the 36 women eligible for a referral to family planning services, six (16.7 %) accepted the referral and all completed the online appointment request.	Only three women declined to discuss the issues raised by the RLP, one of whom had had a tubal ligation. Nearly all the paediatricians reported that women seemed comfortable discussing their contraception needs during the WBV. Residents reported that women were generally open and willing to talk about the subject, though less so if a male partner was present.	Feedback from 18 paediatricians showed the majority felt comfortable with the general idea of discussing reproductive plans with their patients' mothers at the WBV, although most had not previously done so. There were some concerns about discussing contraception due to lack of time/knowledge. Others were concerned about taking attention away from the infant, which is meant to be their focus.	N/A	Not stated
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Thorman, A. et al. (2022). (45)	Quantitative and qualitative impact of One Key Question on primary care providers' contraceptive counseling at routine preventive health visits	Mixed methods: retrospective review, interrupted time series analysis, semi-structured qualitative interviews	Federally qualified health centres in Utah, USA	OKQ	Female	15-49	Contraceptive counselling, Contraceptive use, Other: documentation of being asked OKQ	Documentation of contraceptive counselling (39.6%) and contraceptive use (17.9%) remained stable over the time period, but documentation of OKQ rose from 2.6% on initial introduction to 9% after retraining. Qualitative data indicated increased attention to patient-centred counselling among the majority of participants, while others employed the OKQ algorithm in a manner that could be considered coercive.	N/A	Providers appreciated the algorithmic structure of OKQ, its ease of use, and its function as a reminder to address reproductive goals. However, providers voiced indifference about the effect of OKQ on their contraceptive counselling practices and found it difficult to integrate OKQ into preventive health visits due to time constraints and more pressing issues to be addressed.	N/A	Not stated
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Gawron, L.M. et al (2021). (46)	Pregnancy Risk Screening and Counseling for Women Veterans: Piloting the One Key Question in the Veterans Healthcare Administration	Pilot study (mixed methods)	Veterans Healthcare Administration (VHA) Women's Primary Care Clinic in Utah, USA	OKQ	Female	18-45	Family planning documentation, Pregnancy planning, Medication Review, Other: Recommendations to use prenatal vitamins/folic acid, initiation of contraception and method type, referrals for preconception/contraception	A change in provider type accounted for a decrease in reproductive plan documentation between the pre- and post-training months (22% vs. 6%; p= 0.02). Although not statistically significant, there was an increase in documentation of current contraceptive method type between periods (20% vs. 37%; p= 0.08)	Did not specifically ask women what they thought of the screening tool, but they were receptive to completing it per the receptionist and nurse feedback, and five wrote positive comments, such as "thank you for asking!!" in the margins	Most were interested in integrating routine screening for all women into their practice. All respondents felt reminders in the EHR would be helpful, but some felt overwhelmed by existing clinical reminders and desired the screening to be "Veteran-facing", so women could bring up the issue when they wanted to discuss it with the provider or for the nurse to screen the patient.	N/A	patient-centred counselling
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Ferketa, M. et al (2022). (47)	Facilitators of and Barriers to Successful Implementation of the One Key Question® Pregnancy Intention Screening Tool	Post implementation Survey and semi-structured interview study	Primary care and general obstetrics and gynaecology practice in Chicago, USA	OKQ	Female	18-49 years	Other: Barriers and facilitators to implementation (effectiveness measured in Song et al 2021)	Facilitators: simplicity of the tool, leadership engagement, champions, and compatibility between the perceived goals of the tool and those of key practice stakeholders . Barriers: time concerns, issues with OKQ distracting from the visit agenda, and concerns about the OKQ gold standard protocol.	N/A	95% agreed or strongly agreed that OKQ addressed an important clinical need. Most (93%) respondents felt that OKQ did not excessively slow down room turnover time. The majority of respondents from both clinics (88%) felt that patients appreciated being asked about their reproductive needs.	N/A	Not stated
Jagoda, L. M. et al (2016). (13)	Assessing the influences on rural women's reproductive life plans: A cross sectional descriptive study.	A cross sectional, quantitative descriptive study	Northern California counties collected in a beauty salon	Information on tool not included in paper; no response to requests to author.	Female	18-35 years	Other: Anonymous on-line survey on the usefulness of RLP	When asked how helpful the survey was in assisting them in thinking about their future family plans,	When asked how difficult it was to complete, 97% responded it was "very easy" and 3% "somewhat	N/A	N/A	Health Promotion Model, though how is not clear.

								98%(n=29) felt it was “very” or “somewhat helpful”	easy”. All participants reported the questions were “very understandable” and interesting.			
Shah, S.D. et al (2019). (48)	Feasibility study of family planning services screening as clinical decision support at an urban Federally Qualified Health Center network.	Observational study	The Institute for Family Health in New York, USA	Would you like you like your provider to help you with birth control or pregnancy planning today? - Yes, help with birth control - Unsure - Yes, help plan pregnancy - No, happy with method - No, not sexually active - No, not sexually active with men - Not asked/Deferr to next visit	Female	13-44 years	Family planning documentation = contraception, preconception or both	Overall family planning documentation during visits of reproductive -age women increased in the intervention period (70%) compared to the preintervention period (64%) (p=0.01).	N/A	Staff were more comfortable asking (60% vs. 80% p<0.01) and more likely to feel it was in scope (55% vs. 71%, p=0.03) at baseline. Most (67%) agreed that support staff asking would improve the likelihood that a patient will get services. 72% said it took less than 1min and 83% believed that patients were okay being asked the question “always” or “most of the time”	N/A	Not stated

Jones, H. et al (2020). (49)	Primary care patients' preferences for reproductive health service needs assessment and service availability in New York federally qualified health centers.	Cross sectional survey comparing different PIS	Waiting rooms of four Federally Qualified Health Centers, New York, USA	1 Can I help you with any reproductive health services today, such as birth control or planning for a healthy pregnancy 2 "Many of my patients are thinking about either getting pregnant or preventing a pregnancy, where are you/ your partner(s) on this issue?" 3 OKQ 4 "What are your thoughts on you or your partner(s) becoming pregnant?"	Male & Female	18-49	N/A	N/A	34.5% had no preference or Q1 (31.5%), which was consistent across all groups. At a health centre, all groups preferred to be asked by their doctor (43.9%), or receptionist (21.1%). 49.8% were happy to be asked at every visit, this was higher in females (52.9%) and under 40s and lowest in trans-gender/ other individuals (34.1%, $p < 0.01$). Very few (8.3%) stated they never wanted to be asked.	N/A	N/A	Not stated
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Baldwin, M.K. (2018). (50)	Pregnancy intention screening tools: a randomized trial to assess perceived helpfulness with communication about reproductive goals.	RCT of FPQ versus the OKQ tool; specifically to assess patient-provider communication using the tools.	Oregon Health & Science University (OHSU) in Portland, Oregon from patients attending the Center for Women's Health, USA	FPQ and binary version of OKQ	Female	12–45 years old	N/A		N/A	About two-thirds of patients in both groups reported that the tools were helpful in communicating their reproductive goals to providers (FPQ 31/47, 66%; OKQ 25/37, 67.6%; $p = 0.88$). More participants in the FPQ group agreed with the statement: "Overall, this tool is helpful and I would use it to track my reproductive health goals" (35/46, 76.1% v19/37, 51.4% $p = 0.02$).	Fewer providers agreed the FPQ tool helped to focus their counselling (FPQ 16/43, 37.2% versus OKQ 18/36, 50%; $p = 0.25$).	N/A	Not stated
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Callegari, L.S. et al (2021). (51)	Development and Pilot Testing of a Patient-Centered Web-Based Reproductive Decision Support Tool for Primary Care.	Pilot implementation	Two Women's Health primary care clinics in VA Puget Sound Health Care System, Seattle, USA	Based on PATH. MyPath is online, a series of patient-centred questions designed to help women consider their personal reproductive hopes and goals.	Female	18-44	Contraception use, Satisfaction, Assessed whether women had discussed their pregnancy goals and/or birth control needs and the perceived quality both pre-and post-visit. Self-reported efficacy in communicating with providers (modified version of the validated Perceived Efficacy in Patient-Provider Interactions (PEPPI) scale). Reproductive knowledge was measured using a set of 14 questions about fertility, health prior to pregnancy, and contraception. Decision quality was measured using the validated 16-item Decisional Conflict Scale. Perceived concordance between values and preferences and the chosen method was measured using the Measure of the Alignment of	Increased discussion of pregnancy and/or contraceptive needs (67.9% vs. 93.1%, p=0.02). No change in provider communication. Self-efficacy in provider-patient communication scores increased significantly more in the intervention group (0.8 vs 0.2, p=0.02). Knowledge scores increased significantly in the intervention but not the control group (p<0.001). Non significant increase in participants reporting	Participants spent an average of 11 min (median 11; range 1 to 19) using MyPath. Most (83.3%) liked it and said it helped them to get what they wanted out of their visit; 93.3% would recommend it. Nearly all (96.7%) felt that the information was easy to understand and that the length of the tool and the amount of information in the tool were "just right" (93.3% and 86.7%, respectively). All felt that the content of	Most providers agreed that the tool helped users to make informed decisions about pregnancy planning or timing (71.4%) and about contraception (100%, n=8). Over half agreed that the tool made their counselling more efficient (57.1%) and helped them to discuss pregnancy goals (71.4%), preconception health (57.1%), or contraception (71.4%). None felt that it significantly increased their workload/negatively impacted	N/A	Self-determination theory which postulates that health care that meets individuals' psychological needs for autonomy, competence and relatedness results in improved health behaviours and health outcomes. MyPath was developed using best practices for patient-facing decision support tools drawn from the evidence-based International Patient Decision Aid
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							Choices (MATCH) measure.	the lowest level of decision conflict about their contraceptive (23.3% v 7.1%, p = 0.09). Non-significant increase in participants reporting the highest confidence that their contraceptive method was right for them (33.3% versus 7.4%, p = 0.11).	at least one section was useful to them. 87.0% were comfortable answering the questions about their thoughts and wishes about pregnancy. Most felt that the summary page printout from the tool was helpful (80.0%). More participants felt that the tool should be used at home before a visit (63.3%)	clinic flow. Half felt the tool should be used in clinic waiting rooms and half at home prior to clinic visits.		Standards (IPDAS)40 and principles of user-centred design.
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Villafan a, A.C. et al (2022). (52)	Implementation of One Key Question? at an Urban Teaching Hospital: Challenges and Lessons Learned	Pilot implement ation	Hospital based clinic (integrated gynaecologic and prenatal services) involving 9 OB/GYN providers and 11 medical assistants (MAs) USA (exact location not specified)	Binary version of OKQ	Femal e	18-45	Documentation of OKQ in medical records, Contraception use, discussion of interpregnancy interval	78% of 64 patients sampled had documentati on of usage of OKQ.	N/A	Despite good awareness, most physicians reported only using OKQ at “some visits” compared to the MAs, who reported using OKQ at “every visit”. Most providers felt that OKQ was an effective method of providing preconception and contraception care, but physicians overwhelmin gly felt that it was too simplistic and did not benefit patients. MAs felt that OKQ was helpful to start a conversation on contraception and to help patients make informed decisions.	N/A	Diffusion of Innovation Theory (DOI) provides a framework for program planning and evaluating the adoption and diffusion of a new program within a social system
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Fitch, J. et al (2023). (53)	Acceptability and usability of 'One Key Question'® in Australian primary health care	Pilot study (mixed methods: quantitative and qualitative components)	Primary care (two general practice settings) in Australia; one site was a mixed billing practice, the other site only charged patients the cost of the government rebate	OKQ	Female	18-40 years	N/A	OKQ tool facilitated a discussion of pregnancy intention and opens up subsequent discussions. Barriers to using the OKQ: Time constraints, felt that the discussion may be regarded as inappropriate in the patient's presenting circumstances.	56 patients were asked the OKQ, with the majority stating they were happy to be asked about their reproductive choices and felt it was relevant to their general health. Patient acceptability of being asked the OKQ was higher than GPs had anticipated.	The 10 participating GPs felt the OKQ was easy to use, helped introduce pregnancy intention discussions, which was easier where the consultation was relevant. 62.5% reported it extended the consultation time, but the medium time taken was 2 min.	N/A	Not stated
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Srinivasulu, S. et al (2020). (54)	Effectiveness of clinical decision support to enhance delivery of family planning services in primary care settings	Implementation and evaluation	Institute for Family Health, a New York State FQHC network, USA	“Would you like your provider to help you with birth control or pregnancy planning today?”	Female	13–44	Family planning documentation	Adjusted incidence of documentation of family planning services was 53.8% pre- and 57.2% post-intervention, with the intervention - a 3.4point increase (95% CI: 2.24, 4.63). There was substantial variation in effect by race, site and insurance, but not by age or ethnicity. The adjusted odds of having documentation of family planning services was 1.35 (95% CI: 1.25, 1.45).	N/A	N/A	N/A	Not stated
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Table 2: Details of included grey literature sources

RLP Title	Questions / Topics	Features	Format	Link
<i>Reproductive Life Planning: A Tool to Shape Your Future</i> by Dr. Kimberly D. Gregory (55)	“Are you planning to have a child in the next year?” Contraception		Blog	https://www.acog.org/womens-health/experts-and-stories/the-latest/reproductive-life-planning-a-tool-to-shape-your-future
My Reproductive Life Plan by Best Start by Health Nexus (56)	Is having children one of your life goals? - Vaccination - Medications - Folic acid - Lifestyle - Reproductive health - Relationships - Mental health - Health - Family health history	Goal setting Tracking of goals Ability to review / revise	PDF	https://resources.beststart.org/wp-content/uploads/2018/12/F18-E.pdf
<i>Reproductive Life Plan - Before pregnancy</i> by ParentHelp123 (57)	Do I hope to have any (more) children? - Timing - Family health history		Blog	https://www.parenthelp123.org/pregnancy/before-pregnancy/reproductive-life-plan/
Set your Mind. Set your Goals. Linked to in ParentHelp123 (58)	Do you want to have children someday? - Life dreams/goals - Timing - Contraception - Lifestyle - Health - Family health history	To-do lists Goal setting Tracking of goals	PDF	https://dhss.delaware.gov/dph/chca/files/adultlifeplan2011.pdf Linked within a blog post - https://www.parenthelp123.org/pregnancy/before-pregnancy/reproductive-life-plan/
Steps to a Healthier me and	- Life goals before having children - Contraception	Goal setting	PDF	https://www.cdc.gov/preconception/documents/Pregnancy_Planner_508.pdf

baby-to-be! by CDC (59)	- Timing - Number of children - Spacing - Medications - Lifestyle - Folic acid - Reproductive health - Vaccinations - Mental health - Relationships - Health - Family health history			
What's your reproductive life plan? By Healthy Start (60)	Do you want to have children? • Number of children • Contraception • Lifestyle		PDF	https://www.healthystartorange.org/uploads/1/0/3/3/10330863/reproductive_life_plan_final.pdf
Preconception Health and Health Care. My Reproductive Life Plan. by CDC (61) Same as another source (not in the table)	Do you want to have children? • Contraception • Health • Number of children • Timing • Spacing		PDF	https://www.montgomerycountymd.gov/HHS-Program/Resources/Files/PHSDocs/reproductivelifeplan-worksheet.pdf
My Life, My Goals. Family Planning Life Plan by Kansas Department of Health and Environment (62)	• Life goals Would becoming pregnant this year change your plans or goals? Do I plan to become pregnant within the next year? • Loving yourself • Relationships • Health • Lifestyle • Family health history	To-do lists Goal setting Action planning Ability to print/save/share Provides links/resources.	PDF	https://www.kdhe.ks.gov/DocumentCenter/View/15437/Reproductive-Life-Plan-PDF

	Vaccines			
<i>Reproductive Life Plan Tool for Health Professionals by CDC (63)</i>	Do you plan to have any (more) children at any time in your future? - Number of children - Timing - Contraception		Website	http://med.iiab.me/modules/en-cdc/www.cdc.gov/preconception/RLPtool.html
10 Tips For Building A Reproductive Life Plan - Channing Bete Company (64)	Want to have child soon / at some point in the future / not at all? - Number of children - Timing - Life goals - Health - Contraception - Reproductive health - Lifestyle		Booklet	https://products.channingbete.com/examples/CBC0894/index.html
REPRODUCTIVE LIFE PLAN by Family Tree Clinic (65)	Where do you see yourself in 5/10 years? Do you want to have kids someday? - Timing - Number of children - Spacing - Life goals - Contraception - Support - Lifestyle	Goal setting	PDF	https://www.familytreeclinic.org/wp/wp-content/uploads/2014/09/plan.pdf
OKQ <i>How Do I Make A Reproductive Life Plan? By A Midwife Nation (66)</i>	One Key Question Would you like to become pregnant in the next year?		Blog	https://amidwifemation.com/2021/01/27/women-ask-wednesday-how-do-i-make-a-reproductive-life-plan/
Reproductive Health & Wellness Program	Would you like to become pregnant in the next year? (OKQ) - Spacing - Health	Action planning Ability to print/save/share	PDF	https://odh.ohio.gov/wps/wcm/connect/gov/df862ff6-7e1f-48cf-a07c-10997dc76597/Columbus-Public-HD-

Reproductive Life Plan by Ohio Department of Health (67)	• Lifestyle • Folic acid • Medication • Family health history • Previous obstetric history • Mental health • Life goals			Reproductive-Life-Plan.pdf?MOD=AJPERES&CONVERT_TO=url&CACHEID=ROOTWORKSPACE.Z18_M1HG6IK0NOJO00QO9DDDDM3000-df862ff6-7e1f-48cf-a07c-10997dc76597-mnOToyg
Planning Your Family: Developing a Reproductive Life Plan by American College of Nurse-Midwives (68)	• Contraception • Number of children • Timing • Spacing • Health • Medications • Family health history	Action planning Ability to print/save/share	PDF	https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1542-2011.2011.00057.x
My Life My Plan by Best Start (Adolescents) (69)	• Health • Lifestyle • Vaccinations • Mental health • Relationships • Sex • Number of children • Contraception • Reproductive health • Support • Family health history • Life goals	Goal setting Ability to review / revise Ability to print/save/share Action planning	PDF	https://resources.beststart.org/wp-content/uploads/2014/01/F13-E.pdf
Reproductive Life Plan (70)	Do you want to be a parent someday? • Timing • Spacing • Contraception	Goal setting Tracking of goals Ability to review / revise To-do lists	PDF	https://evogov.s3.amazonaws.com/media/3/media/13998.pdf
<i>Planning your pregnancy - March of Dimes</i> (71)	• Number of children • Spacing • Health • Contraception		Website	https://www.marchofdimes.org/find-support/topics/planning-baby/planning-your-pregnancy

<i>Dr Ransford Ansong Boateng's Post (72)</i>	Do I hope to have any (more) children? • Life goals • Number of children • Timing • Spacing • Family health history		LinkedIn Post	https://www.linkedin.com/posts/ransford-ansong-boateng-pharmd-31a6021b6_reproductive-life-plan-how-do-i-create-it-activity-7100187741979619328-_BYW/
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Findings

We extracted and synthesised the evidence relating to the PIS/RLP's target audience, format, content including any associated behaviour change theory, features, effectiveness and acceptability of the PIS/RLP. Findings were synthesised within each of these categories with differences between different RLPs, settings and formats considered.

PIS/RLP

Twenty-one different PIS/RLPs were discussed in the 44 studies (Table 3).

Table 3:

RLP/PIS name	Questions	Format	Features	Paper	RLP/PIS
MyNewOptions	How many children do I have now? How many more children do I want in the future? Does my partner agree with my decision about if and when I want to have children in the future? What am I doing now to prevent getting pregnant by accident? Relationship, school, job/career Qs.	Digital (self-complete)	Interactive, individualised information, provides assistance, action planning, direct to nearest provider/pharmacists/GP, ability to review/revise and ability to print/share/save	Chuang et al., 2019 (19)	RLP
MyFamilyPlan	Do you plan to have any (or any more) children at any time in your future? Questions covering contraception, sexual health, nutrition, stions, substance use, family/genetic history, environmental exposures, medications, obstetric history, and chronic medical conditions.	Digital (self-complete)	Individualised information, to-do lists	Batra et al., 2018 (43)	RLP
MyPath	Questions are not specified in the paper but are available in the online tool and are based on PATH. Do you currently have any children? Do you think you would like to have (more) children at some point? What are your thoughts about pregnancy today? (options) How important is it to you to prevent pregnancy now? How happy would you feel if you got pregnant now? How upset would you feel if you got pregnant now? Then questions about menstrual cycle, information on health before pregnancy, and finding a method of birth control.	Digital (self-complete) Linked to primary care	Interactive, individualised information, ability to print/save/share	Callegari et al., 2021 (51)	RLP
reproduktivlivsplan.se	Do you wish to have children? NOT SURE - What are your thoughts about children?	Digital (self-complete)	Ability to print/save/share	Ekstrand Ragnar et al., 2018 (20)	RLP

	- What are the advantages of having children? What are the disadvantages of having children? - How do you plan to prevent getting pregnant until you are certain? - What parts of the puzzle of life affect your reproductive life plan? YES - Preconception advice NO - Contraception advice				
Moos/CDC	Do you wish/plan to have children/more children at any time in the future/in your life? NO - How do you plan to prevent becoming pregnant (again)? YES How many (more) children do you wish to have? When would you like to become pregnant (again)? If within 0-6 months: How do you prepare for pregnancy? LATER: How do you plan to preserve your fertility? How do you plan to prevent becoming pregnant (again) until then? If maybe or don't know: What are your thoughts on having children? From your point of view, what speaks in favour of or against having children? How do you plan to prevent becoming pregnant (again) until you have decided? What can I do to help you achieve your goals?	Digital (self-complete) With midwife.	Action planning, provides assistance, direct to nearest provider/pharmacists/GP, ability to review/revise, ability to print/save/share	Koo Andersson & Tyden, 2020 (26)	RLP
		Verbally (clinical)		Fooladi et al., 2018 (22), Niemeyer Hultstrand et al., 2020 (34), Skogsdal et al., 2019 (36), Tydén et al., 2016 (41)	
		Self-complete (written)		Engström et al., 2022 (21)	
	Do you want children in your life? DON'T KNOW -What are your thoughts about children? -What would you do if you became pregnant unintentionally? -How do you plan to prevent becoming pregnant until you are sure? - Which contraception method suits you?	Verbally (clinical)		Stern et al., 2015 (39)	RLP

	YES, SOMETIME IN THE FUTURE, BUT NOT NOW -How many children would you like? -When would you like to have your first child? -When would you like to have your last child? -Which contraception method suits you? -What other parts of your life affect your RLP? NO -Which contraception method suits you? -How can you protect yourself from STIs? YES, I WANT TO BECOME PREGNANT WITHIN A YEAR -How many children would you like? -When would you like to have your last child?				
	Desire pregnancy in the future: When do you want to get pregnant? What do you need to change about your health to get ready for pregnancy? Don't desire pregnancy in the future: How will you prevent pregnancy? Is there a possibility of changing your mind? What if you become pregnant by accident?	Verbally (clinical)		Callegari et al., 2015 (17)	RLP
RH-SAT	Want children? Don't want children? Aren't sure? If you want (more) kids now or in the future... -How many (more) kids do you hope to have? -When do you hope to become pregnant or pregnant again? -Information about health before pregnancy and a list of things to talk to your doctor about. -Do you want to wait to get pregnant? IF YOU DON'T WANT (MORE) KIDS RIGHT NOW... -Do you want to wait to have kids later / want no (more) kids / want to learn about birth control but are not sure how you feel about having kids? -What have you tried in the past to prevent getting pregnant (list of options)? -Did you have any problems with any of the birth control methods you used in the past?	Self-complete (written)		Bello et al., 2020 (15)	RLP

	-What do you want to do to prevent getting pregnant right now? -What help would you like from your doctor? If you are not sure how you feel about having kids... -How would you say you feel about pregnancy right now? -You are ready to be pregnant / you are not ready to be pregnant / you are not sure how you feel about pregnancy right now. -Information about birth control / getting ready for pregnancy and a list of things you could talk to your doctor about. -Are you interested in reading about birth control methods?				
Reproductive Life Plan Tool <i>(modified from CDC)</i>	As part of your child's care I ask about plans for future pregnancies because the timing of pregnancies has an impact on your child's health and your health. Do you plan to have any more children in the future? NO/UNSURE What are you using for birth control? YES When would you like to become pregnant again? What are you using for birth control? Do you plan to continue this form of birth control until you are ready to become pregnant?	Verbally (clinical)		Caskey et al., 2016 (44)	RLP
PATH	Do you think you might like to have (more) children at some point? When do you think that might be important? How important is it to you to prevent pregnancy (until then)?	Verbally (clinical)		Callegari et al., 2017 (6), Goodsmith et al., 2023 (25)	RLP
Family Planning Quotient (FPQ) and Reproductive Life Index (RePLI) (FPQ/RePLI)	FPQ How many children do you have? (including adoptive/step) How many children do you desire? OKQ Would you like to become pregnant in the next year? RePLI Asks questions about other pregnancy outcomes including whether live births were intended or unintended, adopted or step-children, miscarriages, ectopic or tubal pregnancies, elective abortions, stillbirths, and child deaths. The tool also incorporates other reproductive health indicators including menarche, sexual debut,	Verbally (clinical)		Madrigal et al., 2019a (29), Madrigal et al., 2019b (30)	FPQ - RLP OKQ- PIS
		Self-complete (written)		Baldwin et al., 2018 (50)	

	contraceptive use, and history of sexually transmitted infections (STIs). <i>(Cancer diagnosis/treatment is also included, as FPQ/RepLI has been adapted for use with oncology)</i>				
Healthy Start RLP	Do you want to have (more) children one day? YES: What age would you like to have children? How many children would you like to have? How far apart would you like your children to be? NO/UNSURE: Are you currently pregnant? What is your plan to prevent pregnancy? What will you do if you become pregnant? Are you currently using a birth control method? If yes, what method are you currently using? If pregnant, method before pregnancy? Personal Habits Tobacco use, alcohol, drugs. Physical Activity and Nutrition Weight/Height/BMI, physically activity, diet. Emotional Health Sad, nervous, anxious, worried, anger, physical/sexual abuse. Reproductive Health STIs, pregnancies/children, abortions/ miscarriages / stillbirth, preterm / low birth weight babies. Health Problems Current Medication Vaccinations Family History Personal and Professional Goals List of counselling and Referrals Provided	Self-complete (written) – linked to clinical encounter		DiPietro Mager et al., 2018 (14)	RLP
No name	Do you have any children now? Do you want to have (more) children? How many (more) children would you like to have and when?	Verbally (clinical)		Nelson et al., 2016 (33)	RLP
One Key Question (OKQ)	Would you like to become pregnant in the next year? Yes, No, I'm not sure, OK either way	Verbally (clinical)		Allen et al., 2017 (42),	PIS

				Thorman et al., 2022 (45), Fitch et al., 2023 (53), Goodsmith et al., 2023 (25), Hipp et al., 2017 (24), Kvach et al., 2017 (28), Manze et al., 2020a (31), Manze et al., 2020b (32), Pryor et al., 2022 (35), Stulberg et al., 2019 (40), Villafana et al., 2022 (52).	
		Self-complete (written)		Baldwin et al., 2018 (50), Ferketa et al. 2022 (47), Gawron et al., 2021 (46), Song et al., 2021 (37)	
No name	Do you wish to have children?	Verbally (clinical)		Bodin et al., 2018 (16)	PIS
No name	What are your thoughts on you (<i>or your partner</i>) becoming pregnant?	Verbally (clinical)		Jones et al., 2020 (49), Manze et al., 2020 (31)	PIS
No name	Would you or your partner(s) like to become pregnant in the next	Verbally		Jones et al.,	PIS

	year?	(clinical)		2020 (49)	
No name	How soon after this baby are you planning to become pregnant? Within the next year?	Verbally (clinical)		Villafana et al., 2022 (52)	PIS
No name	Many of my patients are thinking about either getting pregnant or preventing a pregnancy. Where are you on this issue right now?	Verbally (clinical)		Jones et al., 2020 (49), Manze et al., 2020a (31), Manze et al., 2020b (32)	PIS/Services Assessment
No name	Can I help you with any reproductive health services today, such as birth control or planning for a healthy pregnancy?	Verbally (clinical)		Jones et al., 2020 (49), Manze et al., 2020a (31), Manze et al., 2020b (32), Srinivasulu et al., 2022 (38)	PIS/Services Assessment
No name	Would you like your provider to help you with birth control or pregnancy planning today?	Verbally (clinical)		Shah et al., 2019 (48), Srinivasulu et al., 2020 (54)	PIS/Services Assessment

Some PIS/RLPs were mentioned in multiple papers, e.g. One Key Question (OKQ) (n=14); CDC/Moos (n=6); FPQ/RepLI (n=3); and PATH (n=2), although were not always in the same format.

The 18 grey literature sources discuss 17 different RLPs, though there was a lot of commonality and many were based on the CDC/Moos RLP.

Target audience

In the published literature, the main target audience was cis-gender females of reproductive age, although the age range varied; only one paper specifically focused on men (16). A few studies focused on women with cancer (29) or chronic mental illness (25), but most did not mention specific medical conditions.

In the grey literature, the target population was often unclear, however, eight stated the target audience was female and seven appeared to be for both males and females. Age was not specified in most cases, but two mentioned people of reproductive age (63, 64) and two were focused on adolescents/teens (65, 69).

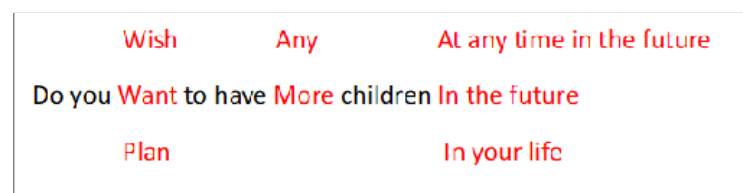
Format

The majority of PIS/RLPs were employed verbally during clinical encounters (15 RLPs in 27 papers) (6, 16, 17, 22, 24, 25, 28-36, 38-42, 44, 45, 48, 49, 52-54), five were self-completed (written) RLPs studied in seven papers (14, 15, 21, 37, 46, 47, 50) and six were digital RLPs (13, 19, 20, 26, 43, 51), although one was designed to be used/completed with a midwife (26) and one was linked to primary care (51). Several PIS/RLP were implemented in different formats, for example, the OKQ, FPQ/RepLI and Moos were all asked both verbally during clinical encounters and self-completed (written). All PIS (apart from OKQ) were only used in clinical encounters, while the RLPs were used in clinical encounters, were self-completed and were digital. While the method of recording PIS/RLP was not stated for most of the papers, the electronic medical record was the most frequently identified location (n=9).

All of the RLPs in the grey literature were designed to be self-completed, although one was connected to clinical encounters. Twelve of the 17 RLPs in the grey literature were PDFs and six were within blogs/websites.

Content – questions

Most of the RLPs, whether in the published or the grey literature, started with a question like the options shown in Box 3. For those who answer yes to having children, most RLPs go on to ask how many children an individual would like, when they would like to have those children, and what method of contraception will be used to prevent pregnancy until the desired time. Some of the longer RLPs also asked about/mentioned preconception health e.g. asking about health behaviours, health problems or medications, however this was rare for RLPs in the published literature (n=5) (14, 19, 20, 43, 51). For those that answer no, most RLPs ask how an individual will prevent pregnancy. For those who are unsure, most RLPs ask individuals what their thoughts on having children/getting pregnant are and how they will prevent pregnancy until they have decided what they want. Details of the specific topics covered by each RLP, the format of the RLP and its features can be found in Table 3 (55-72).



Box 3: Word tree of the most common wording of opening questions in RLPs

The RLPs in the grey literature tended to be longer, e.g. My Life My Plan was 12 pages long (69). This was because they also asked about other life goals, such as education and career aspirations, lifestyle, health (mental and physical) and family health history, relationships (e.g. partner's thoughts, support, abuse) as well as questions about wider reproductive health (e.g. sexually transmitted infections) and previous obstetric experiences.

The PIS questions tended to ask an individual about their thoughts/feelings about becoming pregnant, rather than 'having children' and focused on a shorter time frame such as a year. Some had answer options, for example the OKQ has 'Yes', 'No', 'I'm not sure', 'OK, either way', but most were open-ended in line with the verbal format. Some PIS were focused on the reproductive health services an individual wanted and were therefore only applicable to clinical encounters (31, 32, 38, 48, 49, 54).

Content – topics covered

Thirty-three papers discussed information/advice that was provided alongside the RLP; most provided information about health behaviours, lifestyle, fertility and contraception, with folic acid supplementation mentioned in both

published and grey literature. For those that were used verbally during clinical encounters (especially the PIS) some stated the information/advice that should go alongside the RLP/PIS but it is impossible to know what discussions individual healthcare professionals actually had with their patients. From the grey literature, 'My Life My Plan', which is specifically targeted at teenagers, included topics relevant to this demographic, such as being ready for sex, relationships and teen pregnancy, as well as providing information (and links) specific to teenagers (69).

Features

Five of the digital RLPs included features such as being interactive (19, 51), providing individualised information (19, 43, 51), creating to-do lists(43), and allowed the RLP to be revised (19, 26) or printed/saved/shared (19, 20, 26, 51). Other features included providing assistance such as directions to nearest provider/pharmacy/GP, or incorporated action planning into the RLP.

Of the 12 RLPs that were PDFs in the grey literature, nine had features including goal setting (56, 58, 59, 62, 65, 69, 70), tracking goals (56, 58, 70), to-do lists (58, 62, 70), action planning (62, 67, 68, 69), ability to review/revise(56, 69, 70) or print/save/share (62, 67, 69, 69).

Behaviour Change

Of the 44 included papers, 32 made no mention of any underpinning behaviour change theory and there was no explicit mention in the grey literature of behaviour change theory. Studies focused on implementation in a clinical setting often mentioned the importance of taking a patient-centred approach, ensuring shared decision-making and balanced counselling, and aspects of motivational interviewing, which is a recognised behaviour change technique. The web-based 'My New Options' RLP incorporated action planning (19). This encourages a person to think in advance how to implement the desired behaviour and how to address challenges, reducing the cognitive load when these situations are faced (73).

The development of three RLPs, all of which were digital, was said to be informed by specific behaviour change theories: Fishbein's reasoned action approach to health promotion (43); the health promotion model (13); and self-determination theory (51, 74).

Batra et al (43) hypothesised that their RLP 'MyFamilyPlan' would increase preconception discussion with HCP via an increase in self-efficacy, a component of Fishbein's theory (75). The intention was that the pre-consultation use of MyFamilyPlan, which provided actionable, specific preconception health recommendations and encouragement to discuss them with a physician, would empower patients to initiate discussions of reproductive health.

The health promotion model was utilised by Jagoda et al (13) as their conceptual framework. This model concentrates on three major categories: individual characteristics and experiences, behaviour-specific cognitions and affect; and the behavioural outcomes (76). It has previously been applied to reproductive health and showed that social support, perceived benefits and perceived barriers were the most important predictors of health promoting behaviour (77).

Finally, Callegari et al (51) implemented self-determination theory, a personality theory that focuses on the motivations behind decisions in their web-based RLP 'MyPath' (78). It focuses on intrinsic motivation i.e. engagement in the activity is valued rather than valuing the outcome. This theory suggests that there will be improved health behaviours and outcomes where health care meets individuals' psychological needs for autonomy, competence, and relatedness (feeling understood and cared for by others). MyPath was designed to build competence through knowledge and self-efficacy, autonomy by encouraging reflection on reproductive desires and goals, and relatedness by promoting patient-centred communication among clinicians.

Effectiveness

Twenty-six out of 44 studies (59.1%) measured effectiveness as a study outcome, however there were several different ways that effectiveness was conceptualised. The most common effectiveness outcome was contraceptive use (14/26, 53.8%). One study described a significant increase in long-acting reversible contraceptive (LARC) use, but not pill or injection, following RLP implementation whilst controlling for ethnicity and education (aOR 1.635, 1.03, 2.61) (12), and another, using the MyNewOptions tool, noted no differences in contraception use between intervention and control arms (19). The remaining studies described either stable contraception use or did not report contraception use pre-intervention as a comparator.

Most of the seven studies (35, 45, 46, 48, 52, 54) reporting documentation of reproductive counselling measured a significant increase after implementation of the RLP with intervention arm rates ranging from 58.4% in a study of the

OKQ (54) to a maximum of 93.1% in a study of the MyPath tool (51). Knowledge and awareness also appeared to increase across the seven studies measuring this outcome. One study of the OKQ reported 77% of women had received new information and general fertility awareness increased from a mean score of 4.6 to 5.5 out of 12 ($p=0.004$) (16).

Medication reviews and use of folic acid were less commonly measured outcomes of effectiveness. Results of the impact of the RLP on folic acid use were inconsistent across two studies: a study of the Moos/CDC tool showed a statistically significant increase in folic acid use prior to pregnancy after RLP implementation (22) whilst a study using the MyFamilyPlan tool showed no difference between intervention and control (43). The Healthy Start tool, implemented as part of a program serving urban low-income African-American women, was found to result in a medication review in 75% (437/580) of cases of which 8% (35/437) were identified as including potentially teratogenic medications (14).

Five of the six studies using digital tools evaluated effectiveness (13, 19, 26, 43, 51). Digital RLPs were shown consistently to increase reflection (13), discussion and advice provision (26, 43), and to sometimes increase self-efficacy (51) but there was limited evidence of the translation of this into contraception or preconception behaviour change (19, 43, 51). A cluster randomised controlled trial of 292 women, showed that participants completing the MyFamilyPlan health education module prior to a well-woman visit were significantly more likely to report discussing reproductive health with their physicians (OR 1.97, 95%CI 1.22-3.19), though there was no impact on folate use before pregnancy (43). This tool was based on Fishbein's reasoned action approach and aimed to improve self-efficacy to improve these outcomes, though they did not show an improvement in self-efficacy as measured in the study. Self-efficacy and knowledge were measured in the study of MyPath demonstrating a greater increase in both domains in the intervention arm versus the control arm, as well a significantly increased discussion of pregnancy and/or contraceptive needs (93.1% vs 67.9%, $p=0.02$) (51). There were non-significant increases in underpowered secondary outcomes of participants reporting the highest confidence that their contraceptive method was right for them the intervention versus control group (33.3% versus 7.4%, $p = 0.11$) and in the proportion of participants reporting the lowest level of decision conflict about their contraceptive decision (23.3% versus 7.1%, $p=0.09$).

Acceptability to users

Acceptability to users was assessed in 25 studies in the USA (n=18), Sweden (n=4) and one each in Iran (22), Eswatini (21) and Australia (53). Users were overwhelmingly positive about being asked about reproductive life planning across countries, settings and tools, commonly appreciating the opportunity to discuss their reproductive health and stating that PIS/RLPs should be routine. One study that looked at men only (16) showed that most (76%) found being counselled about their RLP in sexual health clinics in Sweden to be a positive experience. Negative reactions were extremely rare: 3.1% of respondents in another Swedish study found the experience ‘fairly negative’ and none thought it was very negative (36); in the well-baby setting only three out of 55 declined to discuss the issues raised by the RLP (including one who had a tubal ligation) (44); and one participant said that mental health professionals should not ask RLP questions (25).

Qualitative findings showed that RLPs were a valuable prompt for women to think critically about pregnancy intentions and related actions (17, 23) as they were hesitant to raise the topic themselves (15, 17, 23) and therefore preferred providers to raise the issue (17, 23). However, it was vital that providers did this, and gave the subsequent advice, in a non-judgemental, unbiased way that respected autonomy (17, 23, 32). This was particularly important for those with lower agency due to perceived shame, for example where their desires may not conform with society’s expectations of who should become a mother and when, whether that related to teenage pregnancy (23) or being childless by choice (38).

The four studies of digital RLPs’ acceptability (19, 20, 43, 51), found them to be an acceptable format, including in one study that included men (20). Respondents described an interactive, web-based format as easy to use and ‘desirable’ (19) with the majority reporting that they liked the online format (e.g. 75.3% in 43). Comments related to specific tools included ‘user friendly’ with ‘interesting content’ (20). High levels of completion (97.9% of intervention participants completely reviewed MyFamilyPlan (43)), recommendation (e.g. 93.3% would recommend MyPath to other women Veterans (51)), and retention (follow up rates over 3 years of 94-95% (18)) are further evidence of acceptability. For this format it was important that it was seen as a trustworthy and reliable source (20), that struck the right balance between brevity, ease of understanding and comprehensive content, for example by having ‘click here to read more’ options (20, 43, 51) and that was inclusive i.e. not too heteronormative (20).

Across different settings and populations, the FPQ/RepLI (29, 30), RH-SAT (15), PATH (25), FPQ (50) and OKQ (37, 50) were all shown to help participants talk to their provider about their reproductive goals, or to lead to an overall increase in satisfaction (from 81% to 97%, $p=0.04$) and communication (from 77% to 94%, $p=0.06$) (37). Where comparisons were made between tools, PATH (25), FPQ (50) and questions about reproductive service needs (32, 49) were preferred to OKQ.

Acceptability to HCPs

HCP opinions were assessed in seventeen studies, including nurses ($n=3$), midwives ($n=5$), primary care physicians ($n=8$), obstetric and gynaecology doctors ($n=2$), psychiatrists ($n=1$), paediatricians ($n=1$) or support staff (e.g medical assistants, medical students, or administrative staff) ($n=3$), or a mentor mother ($n=1$). Data came from Sweden ($n=4$), the USA ($n=11$), Eswatini ($n=1$) and Australia ($n=1$).

Overall, across the countries, professionals, formats and tools there was general support for the implementation of PIS/RLP as a good way of raising an important topic, that was generally a positive experience for the HCP (20, 26, 34, 39). HCP's views on two online tools were positive (20, 26, 51), with most HCPs agreeing that women using MyPath prior to clinic attendance had helped users make informed decisions about pregnancy planning/timing (71.4%) and contraception (100%). There were no specific concerns with any of the approaches used, though more recently there has been growing evidence that, in the context of a clinical encounter, a question asking about service needs may be more acceptable to HCPs (30, 48). Lack of training (30) or time (39, 45, 47) was raised, though some felt it was time-efficient (39, 46, 51) and while empirical evidence suggested an additional 1-5mins was the norm (44, 48, 53), even this could be unmanageable in a busy clinic. In relation to this, several studies showed support for self-complete options (26, 46, 51).

Eight papers considered the acceptability of the OKQ, either alone or in comparison with other RLPs: five were as part of a clinical consultation (30, 31, 45, 52, 53); three were in a self-complete format (46, 47, 50); and all but one (52) were in primary care. Where OKQ was considered alone (45-47, 52, 53), providers generally found it easy to use, especially when related to the patient's reason for presenting (53) and a helpful reminder to consider reproductive goals (45, 46) and get the conversation started (52, 53), though some felt overwhelmed by existing clinical reminders (46).

When compared with other tools, Madrigal et al (30) found OKQ was the least-preferred option (15%) in comparison with FPQ/ReplI and a screening question for reproductive service needs (which was the preferred option). A screening question focused on service needs was highly acceptable to support staff in primary care in another USA study (48). Conversely, in Baldwin et al's comparison of OKQ and FPQ (50), fewer providers agreed the FPQ tool helped to focus their counselling, though this was not statistically significant (FPQ 16/43, 37.2% versus OKQ 18/36, 50%; $p=0.25$).

Awareness

Three studies considered awareness of RLPs: one each in Australia (18), the USA (27) and Iran (22). Most people were unaware of RLPs, whether or not they were currently planning a pregnancy. A survey of women in Australia, for example, found 90.2% were unaware of RLP, with no statistically significant difference between active planners (desire pregnancy in the next year) and non-active planners (1-5 years) (18). There was slightly higher awareness (24%) amongst college students in the USA, but only 4.2% had been asked about RLP by an HCP (27). Despite low awareness, most (62.9%) agreed developing an RLP was important and 68.7% wanted to receive information about RLP before attempting pregnancy, from either primary care or an obstetrician/gynaecologist. Awareness of RLPs amongst midwives in Sweden increased from 68% in 2012 (41) to 96.2% in 2018 (26).

Discussion

Our review has shown that the published and grey literature on RLP/PIS is dominated by the USA. While awareness of RLPs and their value is low amongst the public, there is consistent evidence of acceptability across countries, settings, tools, formats, users and providers. There was a great deal of consistency in the types of questions asked to help a person develop an RLP, with many plans based on the 2006 Moos RLP that was adopted by the CDC (7), and the topics covered, though those used outside a clinical encounter tended to be more holistic and less focused on reproductive health service needs. RLPs in the grey literature were more comprehensive, likely because they were not constrained by the time limits of a clinical encounter. Given the small number of digital RLPs, there is a scarcity of evidence on these tools, however where they have been developed, they are more likely to have underpinning theories and to have conducted more detailed effectiveness evaluations.

Despite finding 44 studies, there is limited data of effectiveness beyond changes in knowledge or recording of discussion of reproductive health in consultations. While important, these outcomes are a step away from the behaviour change outcomes on which we would wish to judge effectiveness, such as reduced unplanned pregnancies, increased use of folic acid before pregnancy or reduced contraception discontinuation. Part of the gap is that many studies did not look at effectiveness in terms of behaviour change or other outcomes, and another part is due to the heterogeneity of outcomes measured. Even where effectiveness was considered the evidence is still limited and conflicting. There are several possible reasons for this. Firstly, very few tools have been developed with due consideration to relevant behaviour change theory. This omission may be why tools have shown limited impact beyond increased knowledge and discussion. Where behaviour change theory has been utilised, precursors, such as self-efficacy have been focused on, without perhaps considering the other steps in the theory of change required to lead to impact. Secondly, the choice of outcome measure could also be a factor, and considering patient-centred measures, such as satisfaction with contraception, rather than efficacy-based outcome measures such as LARC use which reflect health system targets, may be better aligned to the concept of patient-centred RLPs (79). Thirdly there is potential selection bias in that those most likely to engage with an RLP might be the healthiest and least in need of change, resulting in a high baseline that is hard to affect. Fourthly, it is also important to consider that an individuals' preferences and choices might be constrained by other factors, such as access to services and the (opportunity) cost of contraception which an RLP focusing on individual behaviour change may be unable to affect. Examination of the implementation context and facilitators and barriers in each setting and for each population group and tool is therefore also required. Finally, the digital RLPs developed may be too weak, lacking features such as personalisation, adaptive feedback and the ability to track behaviours which are known to facilitate engagement in mobile health apps (80, 81, 82).

Limitations

Due to our particular interest in digital tools, we focused on relatively recent literature. This could mean that we missed some RLPs, however given the consistency in the questions and topics covered in the identified RLPs this is unlikely to impact the overall findings of the review. We only searched in English, which would limit our ability to find studies or grey literature on RLPs in other languages. We excluded only one paper based on language (Hungarian) but did include an RLP in Swedish as the publications about it were in English.

Three papers did not include the questions that were asked as part of the RLP and only one author responded to our request for further information. Furthermore, some of the papers, particularly about the digital tools, only discussed the topics included within the RLPs. We were able to access some, but not all, meaning that we did not always have the specific wording of the questions used.

Conclusions

The concept of developing an RLP is acceptable to people of reproductive age and health care professionals, but awareness is low and evidence of how to effectively implement PIS/RLP is inadequate with none from the UK. New digital tools that are underpinned by behaviour change theories are emerging and though evidence of effectiveness is limited to date, it is promising. A digital RLP that builds on the existing tools, integrates appropriate theory, learns from other digital health interventions, has an appropriate implementation strategy and that supports person-centred care could facilitate reproductive choice and lead to the realisation of the potential that RLPs are theorised to deliver.

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