BMJ Open

Cohort profile: the ADAPT study, a prospective study of pregnancy preferences, pregnancy, and health and well-being in the southwestern USA

Corinne H Rocca ,[1] Heather Gould ,[1] Elizabeth Gonzalez,[1] Diana G Foster,[1] Isabel Muñoz,[1,2] Miriam Parra,[1,3] Lauren J Ralph[1]

To cite: Rocca CH, Gould H, Gonzalez E, *et al*. Cohort profile: the ADAPT study, a prospective study of pregnancy preferences, pregnancy, and health and well-being in the southwestern USA. *BMJ Open* 2024;**14**:e085372. doi:10.1136/bmjopen-2024-085372

► Prepublication history for this paper is available online. To view these files, please visit the journal online (https://doi.org/10.1136/bmjopen-2024-085372).

Received 13 February 2024
Accepted 11 September 2024

[1]Department of Obstetrics, Gynecology and Reproductive Sciences, Advancing Standards in Reproductive Health (ANSIRH), University of California, School of Medicine, Oakland, California, USA
[2]Division of Epidemiology, University of California, School of Public Health, Berkeley, California, USA
[3]University of California, School of Nursing, San Francisco, California, USA

Correspondence to
Dr Corinne H Rocca;
Corinne.Rocca@ucsf.edu

ABSTRACT

Purpose Significant methodological shortcomings limit the validity of prior research on pregnancy decision-making and the effects of 'unintended' pregnancies on people's health and well-being. The Attitudes and Decisions After Pregnancy Testing (ADAPT) study investigates the consequences for individuals unable to attain their pregnancy and childbearing preferences using an innovative nested prospective cohort design and novel conceptualisation and measurement of pregnancy preferences.

Participants This paper describes the characteristics of the ADAPT Study Cohort, comprised of 2015 individuals aged 15–34 years, assigned female at birth, recruited between 2019 and 2022 from 23 health facilities in the southwestern USA.

Findings to date The cohort was on average 25 years old. About 59% identified as Hispanic/Latine, 21% as white, and 8% as black, 13% multiracial or another race. Over half (56%) were nulliparous. About 32% lived in a household with income <100% of the federal poverty level. A significant minority (37%) reported a history of a depressive, anxiety or other mental health disorder diagnosis, and 30% reported currently experiencing moderate or severe depressive symptoms. Over one-quarter (27%) had ever experienced physical intimate partner violence, and almost half (49%) had ever experienced emotional abuse. About half (49%) had been diagnosed with a chronic health condition, and 37% rated their physical health as fair or poor. The 335 (17%) participants who experienced incident pregnancy over 1 year were similar to selected non-pregnant matched comparison participants in terms of age, racial and ethnic identity, and parity but were more likely to live with a main partner than comparison participants.

Future plans We will continue to follow participants who experienced incident pregnancy and non-pregnant comparison participants until 2026. Analyses will examine pregnancy decision-making and investigate differences in health and well-being by prepregnancy pregnancy desires and feelings after the discovery of pregnancy, offering new insights into the consequences of not attaining one's reproductive preferences.

Trial registration number NCT03888404.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The study evaluates the impact on people's health and well-being of not obtaining their desired reproductive outcomes, be it avoiding or achieving pregnancy and childbearing.
⇒ The study uses the Desire to Avoid Pregnancy scale, a formally developed psychometric instrument that recognises not all individuals hold explicit pregnancy intentions, to prospectively measure ranges of and changes in pregnancy preferences over a year.
⇒ The ADAPT study's prospective design allows us to establish temporality among the factors that shape pregnancy and childbearing preferences, pregnancy incidence, pregnancy decision-making, pregnancy outcomes and health and well-being (eg, relationship characteristics, financial stability and health status).
⇒ The study is conducting two distinct comparisons: in addition to examining pregnancy and postbirth health and well-being by degree of pregnancy preferences, it uses an emulated trial design to rigorously compare these outcomes among individuals who do not attain their reproductive preferences to those who do.
⇒ Although substantial effort is made to retain participants and remunerate them fairly, to develop rapport and decrease attrition and under-reporting, some pregnancies ending in abortion or miscarriage will not be reported by participants until after the pregnancy has ended, and some may be under-reported.

INTRODUCTION

An estimated two in five pregnancies in the USA occur when the pregnant person reports not having wanted to have a baby yet or ever.[1] While some decide to terminate the pregnancy and others experience these pregnancies as welcome events,[2–4] about half carry the pregnancies to term,[5] often under circumstances they would not have chosen. Such childbearing—experienced more frequently in under-resourced communities and communities of color[5]—is concerning, as

it indicates that couples and individuals have constrained reproductive autonomy.[6 7] Ensuring the right to have children if and when desired is a core tenet of the reproductive justice framework and is considered by many to be a human right.[8]

In addition, programmes to reduce 'unintended' pregnancy and promote contraceptive use are often predicated on the grounds of improving parental and child health and well-being.[9–11] Indeed, a widely cited Institute of Medicine report recommended the US to adopt a policy that 'all pregnancies should be intended… consciously and clearly desired at the time of conception,' given the 'major social and public health burdens of unintended pregnancy.'[12] Reducing the incidence of unintended pregnancy is also a Healthy People 2030 goal.[11]

Although the long-standing belief that unintended pregnancy causes health risks for parents and children is reasonable, in fact, the claim is not supported by robust causal evidence.[13–16] Research has found associations between pregnancies categorised as 'unintended' (vs 'intended') and increased risk of adverse outcomes.[13–16] However, the same factors that shape pregnancy preferences and pregnancy risk—relationship characteristics, financial stability and prior health status, for example—also affect mental and physical health during and after pregnancy.[13 17–20] Thus, it has been extremely difficult to ascertain whether any adverse health outcomes of 'unintended' pregnancy and childbearing are due to the degree of pregnancy 'intention' of the pregnancy itself or confounding circumstantial and other factors.

In addition, simplistic approaches commonly used to measure pregnancy intention limit our ability to draw valid inferences.[21 22] Asking people who have given birth or have children retrospectively about their intentions prior to conception is vulnerable to recall and social desirability biases,[23–26] particularly among individuals for whom parenting within normative social contexts and/or with the necessary resources, is out of reach.[27] Further, ample research illustrates that many people do not hold explicit and stable intentions regarding the possibility of becoming pregnant; rather, they hold a range of preferences, including ambivalence and uncertainty, that change over time.[28–31] These conceptual and scientific limitations undermine the validity of research on the consequences of 'unintended' pregnancy, possibly leading to misguided interventions for improving parental and child health and well-being. Prospective measurement of pregnancy preferences using robust, validated instruments is needed to move beyond these conceptually limited 'unintended' or 'intended' labels. Evidence to establish whether negative health outcomes stem from the intention status of pregnancies—independent of contextual factors and underlying social inequities—is also critical to developing appropriately focused parental and child morbidity and mortality prevention efforts.

The Attitudes and Decisions After Pregnancy Testing (ADAPT) study, the prospective cohort study described here, applies novel measurement and a rigorous study design to investigate people's pregnancy and childbearing preferences, decision-making processes and the consequences of not attaining one's reproductive desires, be it experiencing pregnancy when it is not desired, or not becoming pregnant when desired. This innovative study, which is in the data collection phase, follows participants from preconception or before pregnancy recognition, through pregnancy and for 3 years postpregnancy. From 2019 to 2022, we recruited a cohort of participants (cisgender women, transmen and gender non-conforming people with a uterus) from 23 health facilities in the Southwestern USA and followed them over a year, measuring pregnancy and childbearing preferences and contextual factors quarterly to capture how preferences changed as life circumstances changed.[19 20 32 33] The study's nested prospective cohort design ensures that we measure pregnancy preferences prior to participants' pregnancy recognition so that the details and temporality of their preferences are not subject to recall bias. We use a psychometric instrument our team developed, the Desire to Avoid Pregnancy (DAP) scale, to prospectively measure a continuum of cognitive, affective and life consequence considerations about pregnancy and childbearing.[34] The DAP scale moves beyond conceptually limited 'unintended' and 'intended' labels, reconceptualising intentions as preferences and desires, in recognition of the fact that not all individuals hold clear pregnancy intentions. We are following participants who experienced an incident pregnancy over 1 year for an additional 3 years to investigate the mental health, physical health and well-being outcomes associated with carrying a pregnancy to term, and rigorously examine whether outcomes differ based on the participant's prepregnancy preferences and postconception desires. We are also following a subset of purposefully selected non-pregnant participants for an additional 3 years, allowing us to examine the health and well-being effects of experiencing versus not experiencing pregnancy. In doing so, our study employs two comparison groups to address confounding from two distinct angles. First, we investigate differences in parental and child outcomes between those experiencing more versus less desired pregnancies. Second, we emulate a hypothetical trial, comparing pregnant participants to participants who best represent their counterfactual: those with similar pregnancy preferences but who do not become pregnant.[35 36] Results from the ADAPT study (available beginning 2025) will be essential to guiding evidence-based interventions to support peoples' reproductive health and autonomy and to appropriately guide contraceptive and conception care access efforts.

COHORT DESCRIPTION

Study overview

The ADAPT study enrolled and prospectively followed an underlying cohort (UC) of participants who were not pregnant (or were having an abortion) at screening (figure 1). We measured the degree to which participants

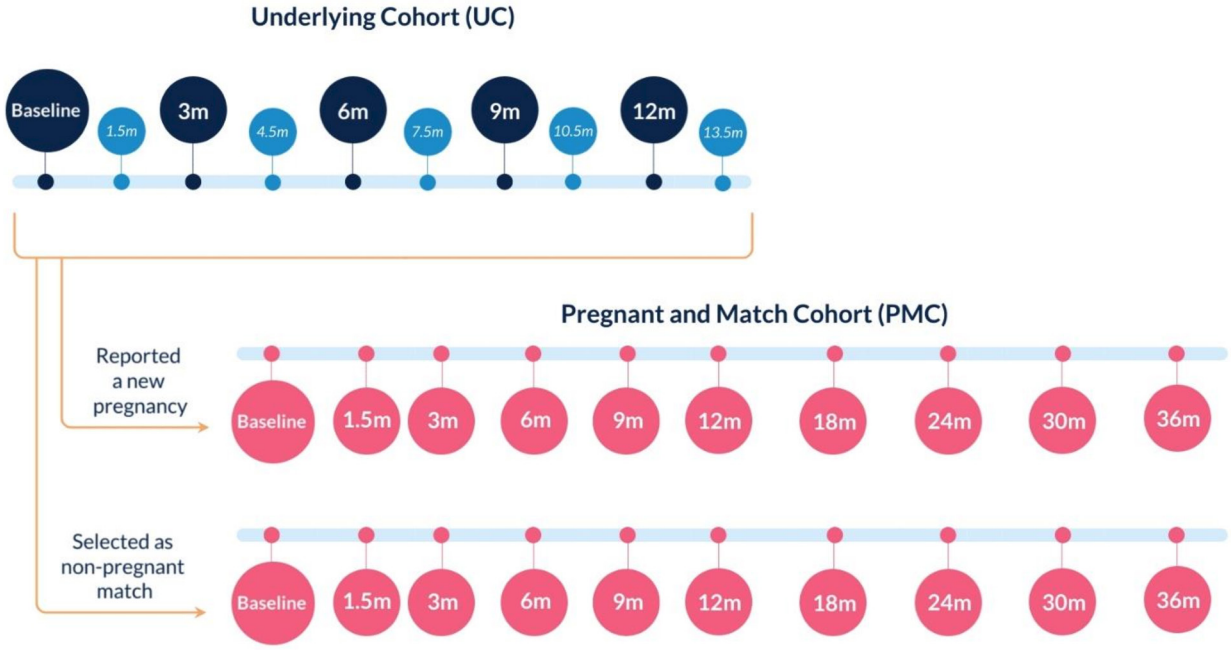

Figure 1 ADAPT study schematic. The schematic depicts participant flow through the ADAPT study and the study survey schedule. ADAPT, Attitudes and Decisions After Pregnancy Testing.

desired to avoid pregnancy multiple times over 1 year using the DAP scale (range: 0–4, with 4 representing a higher DAP) and captured incident pregnancies as they occurred. Participants who experienced new pregnancies during the 1 year UC transferred into a new cohort, the Pregnant and Non-pregnant Matched Comparison Cohort (PMC), where we continue to follow them to document and describe their feelings about the pregnancy, pregnancy decision-making and healthcare-seeking. In addition, we follow them through their pregnancies to investigate differences in health and well-being associated with carrying a pregnancy to term based on the participant's prepregnancy and postpregnancy preferences.

Finally, we are following a cohort of non-pregnant women from the UC to serve as a comparison group to pregnant participants and to emulate a hypothetical target trial in which participants are randomised to pregnancy at trial enrolment. Approximately monthly over the course of the UC, as participants experienced and reported incident pregnancies, we selected a set of non-pregnant comparison participants to also follow in the PMC. These participants were frequently matched to those with incident pregnancies (1:1 ratio) on DAP scale score to balance the groups in terms of pregnancy preferences. We also matched comparison participants to pregnant participants on time in the UC until pregnancy, or time at risk of pregnancy, to ensure 'treatment' assignment (pregnancy) and initiation of follow-up for the PMC component occurred at about the same time.[37] Selection was random among possible 'eligible' non-pregnant participants; selected non-pregnant comparison participants who experienced a pregnancy within a year of UC enrolment were themselves assigned non-pregnant matched comparisons. The non-pregnant comparison participants represent a reasonable counterfactual situation of the pregnant participants had they not experienced pregnancy, our exposure of interest for aim 3b. We will compare the outcomes of participants with new pregnancies and new births to those in the non-pregnant comparison group to assess the effect of pregnancy. Specifically, we will investigate differences in health and well-being among those experiencing versus avoiding less desired pregnancy, as well as of experiencing not attaining a pregnancy when desired.

In summary, the ADAPT study has the following aims:

Aim 1: Assess the factors associated with people's pregnancy and childbearing preferences, how preferences change over time and their associations with contraceptive use, incident pregnancy and feelings about the pregnancy after discovery.

Aim 2: Investigate the options that people consider when they become pregnant and the factors that influence their pregnancy decision-making and ability to access desired reproductive healthcare and services (prenatal, abortion, or adoption).

Aim 3a: Examine the effects of giving birth from a less desired pregnancy, measured prospectively on a continuum, as compared with a more desired pregnancy, on parental and children's health and well-being.

Aim 3b: Examine the effects of experiencing pregnancy and birth, accounting for pregnancy preferences, on people's health and well-being, as compared with not experiencing pregnancy.

This is a social science, behavioural study that does not use clinical data or biological markers.

Recruitment strategy and target population

We recruited ADAPT study participants from reproductive and primary care facilities in five US states: Arizona, southeastern California, Nevada, New Mexico and West Texas. We designed the recruitment strategy based on findings from a pilot study (n=800, 2016–2017).[34 38] The goals of the pilot were to develop study measures and to identify a feasible strategy to recruit participants prior to recognition of pregnancy, given the importance of establishing prospective pregnancy preferences. We considered recruiting people presenting for pregnancy tests at clinics but found in the pilot that 75% of pregnant respondents had first confirmed their pregnancy by taking an at-home pregnancy test (and 75% of non-pregnant respondents said they would do the same if they suspected pregnancy).[38] We considered recruiting pregnancy capable people purchasing at-home pregnancy tests from drug stores, but—like those presenting for care for suspected pregnancies—these people already suspect pregnancy, and we believe pregnancy and childbearing preferences can change on pregnancy suspicion. We concluded that identifying individuals who are pregnant, but do not suspect it, would be infeasible, and thus moved to clinic-based recruitment strategies to identify people likely to experience incident pregnancy, including less desired pregnancy. A significant advantage of clinic-based recruitment is that it provides a clear target population for generalisability and a way to assess representativeness by comparing characteristics of people enrolled to those who are not. We, thus, recruited participants from reproductive health and primary care facilities, including Federally Qualified Health Centers (FQHCs), Planned Parenthood health centres and independent and community clinics. We aimed to select safety-net facilities that varied in patient volume and urbanicity.

We selected the southwestern USA as the study region to capture the experiences of demographically similar populations living in diverse sociocultural and reproductive health policy environments.[39] Study states all have higher than average percentages of the population living in poverty.[40] Given their proximity to the US-Mexico border, study states have among the highest proportions of the population identifying as Hispanic/Latine (32% Arizona, 42% California, 29% Nevada, 49% New Mexico, 39% Texas vs 18% nationally),[41] who experience higher adolescent birth rates relative to people of other races and ethnicities, and high 'unintended' birth rates.[5 42]

Participant eligibility and recruitment

Given the study's focus on evaluating the effects of pregnancy, including less desired pregnancy, on people's lives, we selected eligibility criteria to focus on individuals likely to experience an incident pregnancy across a spectrum of pregnancy preferences. To participate, individuals had to be 15–34 years of age (pregnancy rates are relatively lower for those aged 35 and over)[1]; female, trans-male or gender non-conforming with a uterus; sexually active in the past 3 months with someone who has sperm; and not sterilised, not using a long-acting contraceptive and not pregnant (or having an abortion). Individuals needed to be able to speak and read English or Spanish, reside in a study state or a bordering state, have access to a phone, smartphone or the internet and be willing to be contacted by the research team over 1–4 years.

UCSF research associates (RAs) carried out all recruitment activities. RAs were bilingual (English and Spanish) staff who had experience working with diverse communities in health and social service settings. They received in-depth training and were involved in designing study instruments and protocols. Beginning in March 2019, RAs travelled to selected recruitment facilities, stationed themselves in clinic waiting rooms and interacted with potential participants in person. Recruitment facility front desk staff briefly alerted all English-speaking and Spanish-speaking patients presenting as female, trans-male or gender non-conforming about the study and the presence of the RAs in the waiting room. Facility staff handed patients a voluntary paper eligibility screener in English or Spanish. RAs approached patients in the waiting room and confidentially reviewed the screeners. If a patient was eligible and interested, an RA gave them a recruitment flyer and described the study using a standardised script. If an eligible patient chose to participate, the RA showed them an electronic informed consent form on an iPad, reviewed it with them discretely in the waiting room and obtained verbal consent. The RA assigned the participant a numeric ID and launched a secure electronic informed consent form on a study iPad which the participant signed. Participants also provided their contact information and confidentiality and remuneration preferences. On recruitment days, the RA documented screening, eligibility status and participation for every patient in designated clinic reception areas so that we could rigorously assess generalisability of study participants to the target population.

Due to travel restrictions and clinic safety regulations implemented during the COVID-19 pandemic, we paused recruitment between February and September 2020 and supplemented in-person recruitment with remote approaches beginning in October 2020. These approaches varied slightly to suit recruitment facility requirements, but all targeted the same patient population as the in-person approach. At several facilities, front desk staff handed out paper-based recruitment flyers to patients, posted flyers in the facilities or displayed flyers on monitors in waiting areas (in-clinic recruitment via flyer). Five facilities sent paper-based postcards or used secure patient database systems to disseminate 'Dear Patient' messages to potentially eligible adult patients who had previously agreed to receive communications from the institution via text, email or mail or posted study information on their social media accounts (ie, Facebook, Instagram) (remote recruitment via facility outreach). Recruitment flyers, postcards, 'Dear Patient' messages and posts included a toll-free phone number, email, URL link and QR code; the latter two linked to an online study

description and self-screener. RAs then contacted and recruited prospective participants via phone, screened them for eligibility (or confirmed eligibility for those who had already been screened) and obtained informed consent verbally over the phone.

Data collection procedures

The ADAPT study uses a nested cohort study design (figure 1). All participants initially enrolled into the 13.5-month UC, where they completed a baseline survey, quarterly follow-up surveys (3, 6, 9, 12 months) and interim pregnancy check-in surveys (1.5, 4.5, 7.5, 10.5, 13.5 months). We offered participants the option to self-administer confidential surveys online or to participate in interviewer-administered surveys over the phone; nearly all completed surveys online. RAs sent participants email or smartphone links to online surveys. The baseline survey included questions about sociodemographics, relationships and life context, the DAP scale, and past and current health behaviours. Follow-up surveys included these questions and others about new suspected or confirmed pregnancies. Interim check-in surveys only collected information on incident pregnancies. Participants received a gift card after completing the baseline (US$50) and each UC follow-up (US$20) and check-in (US$5) survey.

As of 2024, participant follow-up is complete for the UC and the data collection is still underway for the PMC Cohort. Participants remained in the UC until they reported a pregnancy, were selected as a non-pregnant matched comparison or exited the study at 13.5 months. Participants who reported an incident pregnancy while they were in the UC moved out of that cohort and into the PMC, where they were followed for 3 years. Only respondents who had confirmed their pregnancy with a urine pregnancy test or healthcare provider moved into the PMC; participants who reported suspected, unconfirmed pregnancies remained in the UC, as did participants who reported early miscarriages.

In the PMC, participants complete surveys at cohort entry, 6 weeks, and 3, 6, 9, 12, 18, 24, 30 and 36 months. PMC surveys ask participants about their feelings about the pregnancy, pregnancy circumstances, care-seeking, and health and well-being outcomes, including mental health symptoms and diagnoses (eg, stress, depression and anxiety), physical health conditions and behaviours (eg, self-rated health, pain and role limitations), well-being, socioeconomic status (eg, food insecurity) and birth outcomes. Non-pregnant matched comparisons follow the same survey schedule as the pregnant participants and are asked about health and well-being outcomes. Participants receive a US$50 gift card for the first and last PMC surveys and a US$35 gift card for those in between. Participants receive information and referrals via pop-up notifications in their survey if their responses indicate a potential need (eg, mental health and interpersonal violence).

To promote study retention, we conduct quarterly US$50 gift card drawings, disseminate electronic newsletters and periodically implement process improvements suggested by the study's participant advisory group, composed of former study participants.

Patient and public involvement

Patient participants from the ADAPT pilot study were involved in the development and testing of the DAP scale,[34] however, they were not involved in the development of the research questions and other aspects of the surveys. 15 former ADAPT study participants served as part of two participant advisory groups and provided input on study processes and experiences to improve protocols and dissemination strategies. Study updates and select initial results are disseminated through electronic newsletters to active participants and those who exited the study and expressed interest in learning about study results. A stakeholder advisory group is being assembled to provide input on interpretation and dissemination of study results.

Target sample size

We determined our target sample size based on the primary study outcome of stress (Perceived Stress Scale, PSS-4, range 0–16) for analyses investigating prepregnancy DAP score as the independent variable for aim 3a. Given that our treatment of pregnancy preferences as a continuum is new and relevant cut-points do not yet exist, we assumed two groups with a 2:1 desired:undesired (or preferred:unpreferred) ratio among incident pregnancies, using a cut-point of 2 on the DAP measure's 0–4 scale; mean PSS 5.0 for desired and 6.0 for undesired, with a single measurement SD of 2.5 in each group. On average, we assumed four repeated measurements per participant, with an intrasubject correlation of r≤0.7, and thus a SD of the mean PSS of 2.2 points. We built in a penalty for facility clustering design effects (1.14). With an alpha of 0.05 and power of 0.8, we would require a sample size of 148 (desired)+74 (undesired)=222 pregnancies to detect the 1-point PSS-4 difference. We increased the sample size, accounting for 15% of pregnancies ending in miscarriage,[43] and 20% of undesired pregnancies ending in termination,[44] and then rebalancing the sample to get the 2:1 ratio, for 324 pregnancies (216 desired, 108 undesired). Assuming 18% of participants will experience pregnancy in a year,[5 45 46] we would need to enrol 1800 participants to achieve 324 pregnancies. We assumed 80% follow-up between study enrolment and birth (10% loss before baseline, 10% loss before reporting a pregnancy or birth), leading to a final enrolled sample size goal of 2200.

Recruitment facility characteristics

A majority of the 23 reproductive and primary healthcare recruitment facilities were FQHCs and/or Title X funding recipients (52%); 26% were Planned

Table 1 Recruitment facility characteristics, the ADAPT study (N=23)

	N (%)*
Facility type	
Federally Qualified Health Centre and/or Title X funding recipient	12 (52)
Planned parenthood health centre	6 (26)
Independent or community clinic	3 (13)
University-affiliated clinic	2 (9)
Provides primary care services	11 (48)
Offer services in Spanish	23 (100)
Specialised patient populations served† (N=20)	
Un/underinsured	20 (100)
Adolescents	18 (90)
Undocumented	17 (85)
Men	13 (65)
State located	
Arizona	6 (26)
California	5 (23)
Nevada	3 (13)
New Mexico	4 (17)
Texas	5 (23)
Urbanicity of region served‡	
Large central metro	5 (22)
Medium metro	11 (48)
Small metro	4 (17)
Micropolitan	3 (13)
Annual patient volume (unduplicated),§ median (IQR) (N=20)	4466 (3062–10 186)
# recruited participants completing baseline, median (IQR)	74 (25–127)
Mode of recruitment†	
In-clinic via research staff	19 (83)
In-clinic via flyer	15 (65)
Remote via facility outreach	6 (26)

*Percentages may not add to 100% due to rounding.
†Percentages do not add to 100% because response options are not mutually exclusive.
‡Based on the Urban–Rural Classification Scheme for Counties by the NCHS. Source: Ingram DD, Franco SJ. 2013 NCHS urban–rural classification scheme for counties. National Centre for Health Statistics. Vital Health Stat 2 (166). 2014.
§Data obtained from either individual clinics or clinic networks/institutions, even if recruitment did not take place at every clinic.
ADAPT, Attitudes and Decisions After Pregnancy Testing; NCHS, National Centre for Health Statistics.

Parenthood health centres; and the others were independent, community or university-affiliated clinics (table 1). All facilities offered reproductive health services and about half also provided general primary care. All offered services in Spanish and served uninsured/underinsured patients; a majority served undocumented patients, adolescents and men. Facilities were located across the five study states, with 26% in Arizona, 23% in California, 23% in Texas, 17% in New Mexico and 13% in Nevada, and they served a range of urbanicities. A median of 74 participants from each of the 23 facilities completed the baseline survey.

Enrolment

We recruited participants for the ADAPT study between 16 March 2019 and 19 October 2022 (figure 2). Among the 10 047 unique individuals eligible for screening, we screened 8727 (87%). Among those, 5810 (67%) were ineligible for participation, most commonly due to current pregnancy (36%), being outside of the eligible age range (30%) or using an intrauterine device or implant (22%). A full 2612 (30%) were eligible, 2168 from in-person recruitment and 444 from remote recruitment. For in-person recruitment, 2000 (92%) eligible people consented to participate, and 1752 (88%)

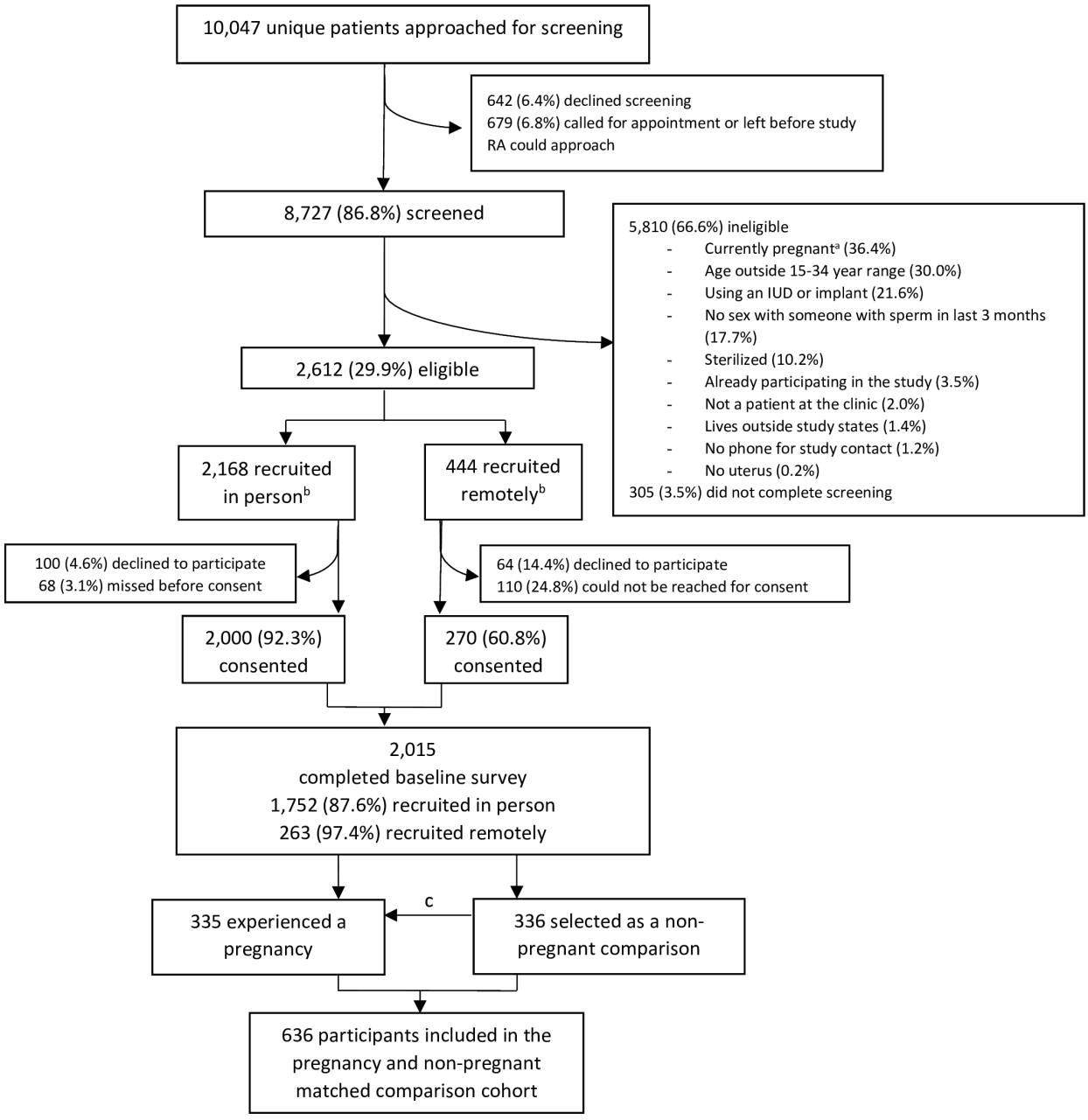

Figure 2 Flow chart of ADAPT study enrolment. The flowchart depicts numbers of potential study participants screened, eligible, consented, completing the baseline survey and included in the pregnancy and non-pregnant matched comparison cohort of the study. [a]Patients were ineligible if currently pregnant and not planning to start an abortion on the day of recruitment. [b]In-person recruitment involved a study RA screening and enrolling potential participants in recruitment facility waiting rooms. Remote recruitment involved potential participants learning about the study from the recruitment facility, undergoing screening electronically and undergoing recruitment over the phone with a study RA. [c]35 non-pregnant comparison participants experienced a pregnancy within a year of recruitment. ADAPT, Attitudes and Decisions After Pregnancy Testing; IUD, intrauterine device; RA, research associate.

completed the baseline survey. For remote recruitment, 270 (61%) eligible participants consented, and 263 (97%) completed the baseline survey. Altogether, 2270 (87%) eligible participants consented, and 2015 (89%) of them completed the baseline survey and comprise the analysis population.

Based on random effects logistic regression analyses adjusting for facility clustering, participants who enrolled and completed the baseline survey did not differ significantly from eligible people who did not complete the baseline survey in terms of age (mean 24.8 vs 24.9; p=0.15), race and ethnicity (p=0.70) or language (3.2% vs 4.9% Spanish; p=0.14).

Underlying Cohort participant characteristics

The cohort of participants completing baseline (n=2015) was on average 25 years old, with 15% being adolescents aged 15–19 years (table 2). Eight per cent of the sample

Table 2 Baseline participant sociodemographic and reproductive characteristics, the ADAPT study, underlying cohort (n=2015)

	n (%)*
Age, mean (SD) years (range: 15–34†)	25.3 (4.7)
Age group	
15–19	291 (14)
20–24	729 (36)
25–29	602 (30)
30–34†	393 (20)
Self-identified Race and Ethnicity (n=2013)‡	
Black	160 (8)
Hispanic/Latine	1184 (59)
White	415 (21)
Multiracial or another race	254 (13)
Language/s spoken at home (n=2008)	
English only	1356 (68)
English and Spanish	315 (16)
Spanish only	309 (15)
Other language (with or without English)	28 (1)
Born outside the USA (n=1973)	297 (15)
Partnership and cohabitation status (n=2012)	
Has a main partner, living together	930 (46)
Has a main partner, not living together	717 (36)
Has no main partner	365 (18)
Parity (n=2009)	
0—nulliparous	1128 (56)
1—primiparous	395 (20)
2—multiparous	280 (14)
3 or more—multiparous	206 (10)
Highest Educational Attainment (n=1977)	
Less than a high school diploma	238 (12)
High school diploma or high school equivalency diploma	503 (25)
Some community college or vocational	449 (23)
Community college or vocational	349 (18)
Some college	150 (8)
College degree or more	288 (15)
Current employment status (n=1972)	
Employed full time	857 (43)
Employed part time	470 (24)
Unemployed, looking for work	277 (14)
Unemployed, not looking for work	139 (7)
Homemaker	184 (9)
Other or unable to work	45 (2)
Household income level	
Above or equal to 100% federal poverty line	1001 (50)
Below 100% federal poverty line	650 (32)
Missing	364 (18)
Food insecure in last month (n=1975)	724 (37)
Importance of religion (n=1989)	
Very important	456 (23)
Somewhat important	514 (26)
Not important	116 (6)
No religion	903 (45)
Health Insurance coverage (n=1933)	
Public insurance	717 (37)
Private insurance	527 (26)
Marketplace insurance	156 (8)
Other insurance	32 (2)
No insurance	501 (26)
Gender identity (n=1994)	
Female	1981 (99)
Gender queer or non-conforming	11 (<1)
Trans male	2 (<1)
Reason for baseline clinic visit	
Contraceptive care	680 (34)
Abortion	270 (13)
Other reproductive health	668 (33)
Non-reproductive primary care	82 (4)
Unknown	141 (7)
No visit, recruited via dear patient letter	174 (9)
State of recruitment	
Arizona	456 (23)
California	583 (29)
Nevada	267 (13)
New Mexico	148 (7)
Texas	561 (28)
Mode of recruitment	
In-clinic via research staff	1730 (86)
In-clinic via flyer	111 (6)
Remote via facility outreach	174 (9)

*Percentages may not add to 100% due to rounding.
†The sample includes three participants determined after enrolment to be aged 35 and one aged 37 years at their baseline survey.
‡Participants selected the race and or ethnicity with which they most strongly identified. Those who identified with multiple races and/or Latine ethnicity equally were categorised as Multiracial. Participants in the 'another race' category included those who identified as Asian, Pacific Islander, Native Hawaiian, American Indian, Alaska Native, Middle Eastern and North African.
ADAPT, Attitudes and Decisions After Pregnancy Testing.

identified most strongly as black, while 59% identified as Hispanic or Latine, 21% as white and 13% as multiracial or another race. Overall, 46% were living with a main romantic partner; another 36% had a main partner but were not living with them. Over half (56%) had no

Table 3 Baseline participant health and well-being, the ADAPT study (n=2015)

Variable/measurement	Estimate	
Mental health		
Stress (n=1969) Perceived Stress Scale,[47] 4 items, range 0–16*	Mean (SD)	6.8 (3.0)
Depressive symptoms (n=1968) Patient Health Questionnaire,[48] 8 items, range 0–24*	Mean (SD)	7.3 (5.7)
Moderate or severe depressive symptoms (score ≥10)	n (%)†	599 (30)
Anxiety symptoms (n=1968) General Anxiety Disorder,[49] 7 items, range 0–21*	Mean (SD)	6.6 (5.5)
Lifetime diagnosis of any depressive disorder, anxiety disorder or anorexia or bulimia[50] (n=1972)	n (%)†	739 (37)
Alcohol use: Times consumed 4+ drinks on one occasion in prior month (n=1963) Alcohol Use Disorders Id Test-Concise[51] (modified)	n (%)†	
Never		1096 (56)
1×		419 (21)
2–3×		332 (17)
Weekly, almost daily or daily		116 (6)
Drug use: Used illicit, street or prescription drugs recreationally in prior month (n=1958)‡ NIDA-Assist[52] (modified)	n (%)†	53 (3)
Well-being and Intimate Partner Violence		
Eudemonic well-being (n=1961) Diener's Flourishing scale,[53] 8 items, range 8–56§	Mean (SD)	44.0 (7.1)
Social status (n=1970) MacArthur Scale of Subjective Social Status,[57] range 1–10§	Mean (SD)	4.9 (1.7)
Lifetime experience of physical intimate partner violence (n=1892)¶ Maternal and Infant Health Assessment[54] (modified)	n (%)†	
Yes		511 (27)
Don't know/prefer not to respond		83 (5)
No		1298 (69)
Lifetime experience of emotional intimate partner violence (n=1871)¶	n (%)†	
Yes		916 (49)
Don't know/Prefer not to respond		103 (6)
No		852 (46)
Physical Health		
Lifetime diagnosis of a chronic physical health condition (n=1957)**	n (%)†	963 (49)
Self-rated health (n=1944) RAND Short-Form Health (SF-36)[55]	n (%)†	
Excellent		117 (6)
Very good		388 (20)
Good		734 (38)
Fair		517 (27)
Poor		188 (10)
Bodily pain, last 4 weeks (n=1946) RAND SF-36[55]	n (%)†	
None		528 (27)
Very mild		550 (28)
Mild		477 (25)
Moderate		322 (17)

Continued

Table 3 Continued

Variable/measurement	Estimate
Severe	69 (4)

*Higher scores correspond to higher stress, depression or anxiety.
†Percentages may not add to 100% due to rounding.
‡Excludes marijuana use.
§Higher score corresponds to higher well-being or social status.
¶Excludes minors <18 years of age.
**Excludes gestational hypertension and diabetes.
ADAPT, Attitudes and Decisions After Pregnancy Testing.

children, while 20% had one, 14% had two and 10% had three or more children. About half (49%) reported that religion was very or somewhat important to them. Almost one-third (32%) lived below 100% of the federal poverty line, and 37% had experienced food insecurity in the prior month.

The large majority (86%) of the sample was recruited by RAs in person in the recruitment facility. Six per cent were given a study flyer by front desk staff or saw a flyer in the facility and were screened by an RA over the phone, and 9% were adult clinic patients informed about the study by postcard or electronic 'Dear Patient' message sent by recruitment facility staff and screened by an RA over the phone. Overall, 29% were recruited in south-eastern California, 28% in West Texas, 23% in Arizona, 13% in Nevada and 7% in New Mexico.

In terms of mental health, participants at baseline scored on average 7 (SD: 3) on the PSS[47] (range: 0–16); 7 (SD: 6) on the Patient Health Questionnaire[48] (range: 0–24) measuring depressive symptoms; and 7 (SD:6) on the General Anxiety Disorder scale[49] (range 0–21) (table 3). 30% were currently experiencing moderate or severe depressive symptoms, and 37% had ever been diagnosed with a depressive or anxiety disorder or anorexia or bulimia.[50] About 6% had consumed four or more alcoholic beverages weekly, almost daily or daily over the prior month[51]; 3% had used illicit, street or prescription drugs.[52]

For well-being, participants scored on average 44 (SD: 7) on Diener's Flourishing Scale[53] (range: 8–56). Over one-quarter (27%) had ever experienced physical intimate partner violence, and about half (49%) had ever experienced emotional physical intimate partner violence.[54]

For physical health, about half (49%) had ever been diagnosed with a chronic physical health condition. About 37% rated their own health to be fair or poor, and 21% had experienced moderate to severe bodily pain in the last 4 weeks.[55]

Pregnant and Non-pregnant Matched Comparison Cohort participant characteristics

Over the 13.5-month UC, 335 participants reported experiencing an incident pregnancy, and 336 non-pregnant comparison participants were selected to also be followed as part of the emulated trial portion of the study (aim 3b) (table 4). The two groups did not differ based on DAP scale score (mean: 1.7 prior to pregnancy vs 1.8 prior to becoming a non-pregnant matched comparison, p=0.11). Pregnant participants had been followed as part of the UC for a mean of 0.4 years, vs 0.5 years for the non-pregnant comparisons (p<0.001), owing to the monthly timing of our match selection process. The two groups were generally well balanced according to sociodemographic and reproductive characteristics with one exception: pregnant participants were more likely to have a main partner with whom they lived (60% vs 54% for non-pregnant participants) and less likely to have no main partner (11% vs 20% for non-pregnant participants, overall p<0.01). This difference is likely due to the greater frequency of sex among cohabiting partners.

One-year retention

Overall, 96% of the sample was retained in the study beyond the baseline survey. A full 94% remained in the sample at 3 months, 93% at 6 months, 90% at 9 months and 87% at 1 year. The 1-year retention rate was 85/100 person-years (PY). In a series of Cox proportional hazards models with robust SEs to account for recruitment facility clustering, first year retention was non-differential by baseline characteristics including race and ethnicity, nativity, partnership and cohabitation, parity, in school, employment status, food insecurity, religiosity and DAP score. Retention differed by age group (81/100 PY for 15–17 years, 73/100 PY for 18–19 years, 84/100 PY for 20–24 years, 90/100 PY for 25–29 years, 85/100 PY for 30–34 years, p<0.001) and state of recruitment site (82/100 PY in Arizona, 79/100 PY in Nevada, 85/100 PY in New Mexico, 88/100 PY in Texas and 82/100 PY in California, p=0.02).

Findings to date

An interrupted time-series analysis of the 627 participants recruited prior to the onset of the COVID-19 pandemic investigated changes in pregnancy desires over the year before and the first year of the pandemic (March 2019–February 2021).[56] Pandemic onset in

Table 4 Sociodemographic and reproductive characteristics among ADAPT study participants experiencing incident pregnancies and non-pregnant participants* at observation prior to entry into the pregnant and non-pregnant matched comparison cohort (n=671)

	Participants experiencing incident pregnancy (n=335)	Non-pregnant comparison participants (n=336)	
	n (%)†	n (%)†	P value‡
Matching variables			
DAP scale score, mean (SD)	1.7 (1.1)	1.8 (1.1)	0.11
Time at risk of pregnancy, mean (SD) years	0.4 (0.3)	0.5 (0.4)	<0.001
Characteristics			
Age, mean (SD) years	25.9 (4.4)	26.2 (4.9)	0.35
Self-identified Race and Ethnicity§			0.13
Black	31 (9)	22 (7)	
Hispanic/Latine	198 (59)	220 (66)	
White	59 (18)	58 (17)	
Multiracial or another race	47 (14)	35 (11)	
Partnership and cohabitation status			<0.01
Has a main partner, living together	202 (60)	182 (54)	
Has a main partner, not living together	97 (29)	88 (26)	
Has no main partner	36 (11)	66 (20)	
Parity§			0.14
0—nulliparous	152 (45)	177 (53)	
1—primiparous	95 (28)	83 (25)	
2—multiparous	49 (15)	42 (15)	
3 or more—multiparous	39 (12)	33 (12)	
Household income level§			0.18
Above or equal to 100% federal poverty line	174 (52)	159 (47)	
Below 100% federal poverty line	110 (33)	125 (37)	
Missing	51 (15)	52 (15)	
Food insecure in last month	118 (42)	100 (35)	0.11
Importance of religion§			0.43
Very important	77 (23)	85 (26)	
Somewhat important	89 (27)	93 (28)	
Not important	19 (5)	25 (8)	
No religion	145 (44)	130 (39)	
State of recruitment			0.43
Arizona	77 (23)	79 (24)	
California	103 (31)	101 (30)	
Nevada	51 (15)	45 (13)	
New Mexico	16 (5)	14 (4)	
Texas	88 (26)	97 (29)	

*Non-pregnant comparison participants were selected among non-pregnant participants from the UC, frequently matched to participants experiencing incident pregnancy based on DAP scale score and time at risk of pregnancy (ie, time in the UC).
†Percentages may not add to 100% due to rounding.
‡P values derived from a series of bivariable mixed effects regression models.
§Characteristic assessed at UC baseline.
ADAPT, Attitudes and Decisions After Pregnancy Testing; DAP, Desire to Avoid Pregnancy; UC, underlying cohort.

the southwestern USA in the Summer of 2020 was associated with a significant but short-term stalling of a prior trend towards a greater desire for pregnancy over time. Participants aged 15–24 years and nulliparous and primiparous participants experienced greater declines in DAP score prior to the summer surge, and greater reversals of decline between Summer and Fall 2020, than did those who were aged 25–34 years and multiparous.

Acknowledgements The authors are grateful to the healthcare facilities that served as recruitment facilities for this study, as well as the people who chose to participate, with special thanks to those who served as participant advisors. We thank Rana Barar for early infrastructure support; Micah Perlin and Keith Jackman for database support; Irene Orellana Bonilla, Jasmin Sanchez and Sabrina Serrano for recruitment and data collection; Jasmine Powell and Angela Shin for project coordination, and Molly Battistelli and Michele Benjamin for grants management.

Contributors Conceptualisation and overall study design: DGF, LJR and CHR. Funding acquisition: DGF and CHR. Protocol and instrument development: DGF, EG, HG, IM, LJR and CHR. Software programming and management: EG and IM. Research direction: HG. Site and community engagement: EG, HG, IM and MP. Data collection: EG, IM and MP. Data management: IM. Data analysis: IM, LJR and CHR. First draft of the manuscript: HG and CHR. Manuscript revision and approval: DGF, EG, HG, MP, IM, LJR and CHR. The guarantor of the study is CHR, who accepts full responsibility for the finished work and the conduct of the study, has access to the data and control the decision to publish.

Funding This study was funded by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (R01-HD108643) and a research grant from the Susan Thompson Buffett Foundation.

Disclaimer These entities had no role in the study design; collection, analysis, and interpretation of the data; writing of the report; or in the decision to submit the article for publication.

Competing interests None declared.

Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Cohort description section for further details.

Patient consent for publication Not applicable.

Ethics approval This study involves human participants and was approved by the UCSF Institutional Review Board (#17-23592). Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request. The ADAPT study dataset is managed and maintained by UCSF investigators. Investigators and trainees at other academic institutions may obtain a deidentified dataset and collaborate on data analyses after presenting analysis plans to the UCSF investigators; obtaining IRB approval (or documentation of exemption of approval) from relevant academic institutions; signing a data use agreement with the UCSF investigators and being approved by the UCSF IRB. Data for this study are not currently being made publicly available due to the vulnerable study population (minors, pregnant people) and sensitive topics of investigation and because we did not obtain consent from participants to share their data in this way.

ORCID iDs
Corinne H Rocca http://orcid.org/0000-0001-9892-249X
Heather Gould http://orcid.org/0009-0002-3272-2297

REFERENCES

1 Kost K, Zolna M, Murro R. Pregnancies in the United States by Desire for Pregnancy: Estimates for 2009, 2011, 2013, and 2015. *Demography* 2023;60:837–63.
2 Aiken ARA, Dillaway C, Mevs-Korff N. A blessing I can't afford: factors underlying the paradox of happiness about unintended pregnancy. *Soc Sci Med* 2015;132:149–55.
3 Sable MR, Libbus MK. Pregnancy intention and pregnancy happiness: are they different? *Matern Child Health J* 2000;4:191–6.
4 Helfferich C, Gerstner D, Knittel T, *et al*. Unintended conceptions leading to wanted pregnancies – an integral perspective on pregnancy acceptance from a mixed-methods study in Germany. *Eur J Contracept Reprod Health Care* 2021;26:227–32.
5 Finer LB, Zolna MR. Declines in Unintended Pregnancy in the United States, 2008-2011. *N Engl J Med* 2016;374:843–52.
6 Potter JE, Stevenson AJ, Coleman-Minahan K, *et al*. Challenging unintended pregnancy as an indicator of reproductive autonomy. *Contraception* 2019;100:1–4.
7 Senderowicz L. Contraceptive Autonomy: Conceptions and Measurement of a Novel Family Planning Indicator. *Stud Fam Plann* 2020;51:161–76.
8 Ross L, Solinger R. *Reproductive justice*. Oakland, CA: University of California Press, 2017:360.
9 Starbird E, Norton M, Marcus R. Investing in Family Planning: Key to Achieving the Sustainable Development Goals. *Glob Health Sci Pract* 2016;4:191–210.
10 USAID. Fact sheet on family planning and reproductive health program overview. 2020. Available: https://www.usaid.gov/sites/default/files/documents/FPRH-factsheet_OCT2020.pdf
11 US Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Healthy people 2030. 2020. Available: https://health.gov/healthypeople
12 Brown SS, Eisenberg L. *The best intentions: unintended pregnancy and the well-being of children and families*. Washington DC: National Academy Press, 1995:393.
13 Gipson JD, Koenig MA, Hindin MJ. The effects of unintended pregnancy on infant, child, and parental health: a review of the literature. *Stud Fam Plann* 2008;39:18–38.
14 Hall JA, Benton L, Copas A, *et al*. Pregnancy Intention and Pregnancy Outcome: Systematic Review and Meta-Analysis. *Matern Child Health J* 2017;21:670–704.
15 Tsui AO, McDonald-Mosley R, Burke AE. Family planning and the burden of unintended pregnancies. *Epidemiol Rev* 2010;32:152–74.
16 Shah PS, Balkhair T, Ohlsson A, *et al*. Intention to become pregnant and low birth weight and preterm birth: a systematic review. *Matern Child Health J* 2011;15:205–16.
17 Carson C, Kelly Y, Kurinczuk JJ, *et al*. Effect of pregnancy planning and fertility treatment on cognitive outcomes in children at ages 3 and 5: longitudinal cohort study. *BMJ* 2011;343:d4473.
18 Herd P, Higgins J, Sicinski K, *et al*. The Implications of Unintended Pregnancies for Mental Health in Later Life. *Am J Public Health* 2016;106:421–9.
19 Barber JS, Miller W, Kusunoki Y, *et al*. Intimate Relationship Dynamics and Changing Desire for Pregnancy Among Young Women. *Perspect Sexual Reproductive* 2019;51:143–52.
20 Hill B, Ling M, Mishra G, *et al*. Lifestyle and Psychological Factors Associated with Pregnancy Intentions: Findings from a Longitudinal Cohort Study of Australian Women. *Int J Environ Res Public Health* 2019;16:5094.
21 Mumford SL, Sapra KJ, King RB, *et al*. Pregnancy intentions-a complex construct and call for new measures. *Fertil Steril* 2016;106:1453–62.
22 Santelli JS, Lindberg LD, Orr MG, *et al*. Toward a multidimensional measure of pregnancy intentions: evidence from the United States. *Stud Fam Plann* 2009;40:87–100.
23 Guzzo KB, Hayford SR. Revisiting retrospective reporting of first-birth intendedness. *Matern Child Health J* 2014;18:2141–7.
24 Rocca CH, Wilson MR, Jeon M, *et al*. Stability of Retrospective Pregnancy Intention Reporting Among Women with Unwanted Pregnancies in the United States. *Matern Child Health J* 2019;23:1547–55.
25 Joyce T, Kaestner R, Korenman S. On the validity of retrospective assessments of pregnancy intention. *Demography* 2002;39:199–213.
26 Poole VL, Flowers JS, Goldenberg RL, *et al*. Changes in intendedness during pregnancy in a high-risk multiparous population. *Matern Child Health J* 2000;4:179–82.
27 Gomez AM, Arteaga S, Freihart B. Structural Inequity and Pregnancy Desires in Emerging Adulthood. *Arch Sex Behav* 2021;50:2447–58.
28 Bachrach CA, Newcomer S. Intended pregnancies and unintended pregnancies: distinct categories or opposite ends of a continuum? *Fam Plann Perspect* 1999;31:251–2.

29 Bhrolchain MN, Beaujouan E. How real are reproductive goals? Uncertainty and the construction of fertility preferences. 2015. Available: https://eprints.soton.ac.uk/385269
30 Borrero S, Nikolajski C, Steinberg JR, *et al*. 'It just happens': a qualitative study exploring low-income women's perspectives on pregnancy intention and planning. *Contraception* 2015;91:150–6.
31 Kendall C, Afable-Munsuz A, Speizer I, *et al*. Understanding pregnancy in a population of inner-city women in New Orleans--results of qualitative research. *Soc Sci Med* 2005;60:297–311.
32 Rocca CH, Hubbard AE, Johnson-Hanks J, *et al*. Predictive ability and stability of adolescents' pregnancy intentions in a predominantly Latino community. *Stud Fam Plann* 2010;41:179–92.
33 Goossens J, Van Den Branden Y, Van der Sluys L, *et al*. The prevalence of unplanned pregnancy ending in birth, associated factors, and health outcomes. *Hum Reprod* 2016;31:2821–33.
34 Rocca CH, Ralph LJ, Wilson M, *et al*. Psychometric Evaluation of an Instrument to Measure Prospective Pregnancy Preferences: The Desire to Avoid Pregnancy Scale. *Med Care* 2019;57:152–8.
35 Danaei G, Rodríguez LAG, Cantero OF, *et al*. Observational data for comparative effectiveness research: an emulation of randomised trials of statins and primary prevention of coronary heart disease. *Stat Methods Med Res* 2013;22:70–96.
36 Hernán MA, Robins JM. Using Big Data to Emulate a Target Trial When a Randomized Trial Is Not Available. *Am J Epidemiol* 2016;183:758–64.
37 Hernán MA, Sauer BC, Hernández-Díaz S, *et al*. Specifying a target trial prevents immortal time bias and other self-inflicted injuries in observational analyses. *J Clin Epidemiol* 2016;79:70–5.
38 Ralph LJ, Foster DG, Barar R, *et al*. Home pregnancy test use and timing of pregnancy confirmation among people seeking health care. *Contraception* 2022;107:10–6.
39 Nash E. State abortion policy landscape: from hostile to supportive. Policy Analysis; 2019. Available: https://www.guttmacher.org/article/2019/08/state-abortion-policy-landscape-hostile-supportive
40 US Census Bureau. 2019 poverty rate in the United States. 2020. Available: https://www.census.gov/library/visualizations/interactive/2019-poverty-rate.html
41 US Census Bureau. QuickFacts. 2021. Available: https://www.census.gov/quickfacts
42 Martin JA, Hamilton BE, Osterman MJK, *et al*. Births: Final Data for 2018. *Natl Vital Stat Rep* 2019;68:1–47. Available: https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_13-508.pdf
43 Nybo Andersen AM, Wohlfahrt J, Christens P, *et al*. Maternal age and fetal loss: population based register linkage study. *BMJ* 2000;320:1708–12.
44 Jones RK, Witwer E, Jerman J. Abortion incidence and service availability in the United States. 2019. Available: https://www.guttmacher.org/report/abortion-incidence-service-availability-us-2017
45 Miller WB, Barber JS, Gatny HH. The effects of ambivalent fertility desires on pregnancy risk in young women in the USA. *Popul Stud (Camb)* 2013;67:25–38.
46 Harper CC, Rocca CH, Thompson KM, *et al*. Reductions in pregnancy rates in the USA with long-acting reversible contraception: a cluster randomised trial. *Lancet* 2015;386:562–8.
47 Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav* 1983;24:385–96.
48 Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med* 2001;16:606–13.
49 Spitzer RL, Kroenke K, Williams JBW, *et al*. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med* 2006;166:1092–7.
50 Biggs MA, Neuhaus JM, Foster DG. Mental Health Diagnoses 3 Years After Receiving or Being Denied an Abortion in the United States. *Am J Public Health* 2015;105:2557–63.
51 Bush K, Kivlahan DR, McDonell MB, *et al*. The AUDIT alcohol consumption questions (AUDIT-C): an effective brief screening test for problem drinking. Ambulatory Care Quality Improvement Project (ACQUIP). Alcohol Use Disorders Identification Test. *Arch Intern Med* 1998;158:1789–95.
52 National Institute on Drug Abuse (NIDA). Resource guide: screening for drug use in general medical settings. NIDA; 2012. Available: https://archives.drugabuse.gov/publications/resource-guide-screening-drug-use-in-general-medical-settings
53 Diener E, Wirtz D, Tov W, *et al*. New Well-being Measures: Short Scales to Assess Flourishing and Positive and Negative Feelings. *Soc Indic Res* 2010;97:143–56.
54 California Department of Public Health (CDPH). Maternal and infant health assessment (MIHA). 2017. Available: https://www.cdph.ca.gov/Programs/CFH/DMCAH/MIHA/CDPH%20Document%20Library/MIHA-SAQ-2017.pdf
55 Ware JE, Sherbourne CD. The MOS 36-Item Short-Form Health Survey (SF-36). *Med Care* 1992;30:473–83.
56 Rocca CH, Parra M, Muñoz I, *et al*. Comparison of Pregnancy Preferences Preceding vs Year 1 of the COVID-19 Pandemic. *JAMA Netw Open* 2022;5:e2220093.
57 Adler NE, Epel ES, Castellazzo G, *et al*. Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy, White women. *Health Psychol* 2000;19:586–92.