Development and Pilot Testing of a Patient-Centered Web-Based Reproductive Decision Support Tool for Primary Care

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BACKGROUND: Patient-centered counseling to help women achieve their reproductive goals is an essential yet often absent component of primary care.

OBJECTIVE: We developed and piloted MyPath, a novel web-based decision support tool integrating reproductive goals assessment, information about optimizing health before pregnancy, and contraceptive decision support, for use prior to primary care visits in the Veterans Administration (VA).

DESIGN: We created MyPath using best practices for decision tool development, including a conceptual framework informed by theory and user-centered design with input from patients, providers, and scientific experts. We conducted a non-randomized pilot in two VA Women's Health primary care clinics. A control group ($n = 28$) was recruited prior to and intervention group ($n = 30$) recruited after introduction of MyPath into clinics.

PARTICIPANTS: Women Veterans ages 18–44 with an upcoming visit scheduled with one of eight providers.

INTERVENTIONS: After recruitment of controls, providers and staff received a brief introduction to MyPath. Patients scheduled to see providers in the intervention phase used MyPath on an iPad in the waiting room prior to their visit.

MAIN MEASURES: Acceptability, feasibility, discussions about pregnancy and/or contraceptive needs, and contraceptive decision quality by a survey of participants and providers.

KEY RESULTS: Nearly all participants who used MyPath reported they learned new information (97%) and would recommend it to other Veterans (93%). No providers reported that MyPath significantly increased workload. A greater proportion of intervention participants reported having discussions about reproductive needs in their visit compared to controls (93% vs 68%; $p = 0.02$). Intervention participants also experienced greater increases in pre-/post-visit knowledge and communication self-efficacy and a trend towards greater reduction in contraceptive decision conflict compared to controls.

CONCLUSIONS: MyPath was highly acceptable to women, increased the proportion of primary care visits addressing reproductive needs, and improved decision quality without increasing providers' perceived workload. A larger randomized evaluation of effectiveness is warranted.

KEY WORDS: family planning; contraception; reproductive health; women Veterans; decision aids; shared decision-making; patient-centered care; MyPath; preconception care; prepregnancy counseling.

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INTRODUCTION

Counseling and care that supports individuals' ability to achieve their reproductive goals is an essential element of primary care. National organizations, including the Centers for Disease Control and Prevention (CDC), recommend that clinicians routinely engage in conversations about reproductive goals and offer patient-centered counseling in preventive care to help optimize health and well-being prior to desired pregnancies and prevent unwanted pregnancy and births.[1–3]

Primary care providers (PCPs) are well-positioned to provide this counseling, as they care for patients before, between, and after pregnancies.[3] In practice, however, PCPs often fail to proactively engage patients in conversations about their reproductive goals and needs due to a variety of barriers, including

lack of knowledge and training, perceived or real-time constraints, and lack of reimbursement.[4–6] Patients may not initiate these conversations for reasons including a desire for providers to bring up the topic, uncertainty about what to ask, concerns that providers will not be comfortable discussing the topic, and fear of providers judging their reproductive goals or desires.[7,8] National data indicate that only 14% of US primary care visits with non-pregnant reproductive age women included contraceptive or prepregnancy counseling.[9]

The Veterans Health Administration (VA) provides care to nearly 200,000 women Veterans of reproductive age.[10] Over the past 20 years, VA has invested in building reproductive health services, including training PCPs in reproductive health,[11] creating comprehensive women's health clinics,[12] and ensuring availability of all FDA-approved contraceptive methods.[13] Despite this, only 38% of reproductive-aged Veterans who could become pregnant report that they discussed contraception or optimizing health prior to pregnancy with their PCP in the past year.[14] This counseling is particularly critical for Veterans, who face elevated risks of adverse pregnancy and birth outcomes due to a high prevalence of chronic medical[15,16] and mental health conditions[17] as well as psychosocial stressors including sexual trauma histories,[18] intimate partner violence,[19] and homelessness.[20] Furthermore, racial/ethnic disparities in pregnancy outcomes are well-documented, and nearly half of women Veterans of reproductive age are of minority race/ethnicity.[10]

To date, proposed strategies to increase patient-centered conversations about reproductive goals and needs in primary care have focused on expanding screening for reproductive intentions[21] and supporting provider counseling.[22,23] While provider-facing interventions may be necessary, data suggest they may not be sufficient to change practice.[24,25] A large body of literature supports use of patient-facing decision tools to promote shared decision-making, where providers contribute expertise on medical evidence and patients contribute expertise on their values and preferences.[26] For reproductive decisions, decision support requires particular attention to reproductive autonomy; while the process can involve provider input when desired by patients, ultimate decision authority must rest with the patient.[27] While several web-based tools have been developed to support contraceptive decision-making,[28,29] none to date addresses reproductive decisions from a broader perspective, including pregnancy timing and optimizing health prior to pregnancy, of particular importance among women with chronic conditions. Building on prior work in contraception, we sought to create a patient-facing decision support tool, "MyPath," to augment women's knowledge related to fertility and health prior to pregnancy as well as contraception; to promote high-quality reproductive decisions; and to increase patient-centered communication with providers. In this manuscript, we describe the development and pilot testing of MyPath in VA primary care.

METHODS

Conceptual Framework

MyPath's conceptual framework was informed by the ethical principles supporting reproductive autonomy as critical to an individual's health and well-being.[30–32] While a woman's ability to make autonomous decisions depends on many factors, including her partner, her social or economic situation, and her cultural context,[32] interactions in the healthcare setting can either compromise or support reproductive autonomy.[33–35] The USA has a long history of infringing upon reproductive rights of women of color and poor women,[36,37] which has contributed to mistrust of the healthcare system among these populations.[38] Furthermore, reproductive counseling often occurs in a manner that fails to acknowledge social and historical contexts surrounding reproduction.[22,27] Our framework recognizes that safeguarding reproductive autonomy requires centering women's individual reproductive preferences, priorities, and goals and that autonomy support is of particular importance in marginalized groups, including women of color and sexual minority women.

The MyPath development process drew on self-determination theory (SDT), which postulates that health care that meets individuals' psychological needs for autonomy (alignment of choices and behaviors with central values and lifestyle), competence (knowledge and self-efficacy), and relatedness (feeling understood and cared for by others) results in improved health behaviors and health outcomes.[39] We designed MyPath to support autonomy through providing women the opportunity to consider their individual reproductive desires and goals and communicate them to providers, to build self-efficacy through offering information to help women understand their health and healthcare choices and to increase relatedness to providers through promoting patient-centered communication.

Systematic Development Process

MyPath was developed using best practices for patient-facing decision support tools drawn from the evidence-based International Patient Decision Aid Standards (IPDAS)[40] and principles of user-centered design.[41,42] Key elements of our development process are shown in Figure 1. We convened a Steering Committee including scientific experts and PCPs within and outside VA and women Veteran representatives to guide the process. Veteran perspectives were further incorporated through a veteran engagement group and focus groups with women Veterans.

Story Board and Prototype Development. We developed the proposed content and functionality for the MyPath tool as a "story board" drawing on several sources, including a qualitative needs assessment of patients and providers,[8,43] review of the scientific literature, and iterative input from scientific experts and Veterans. The story board included simple illustrations and gender-neutral language adapted to

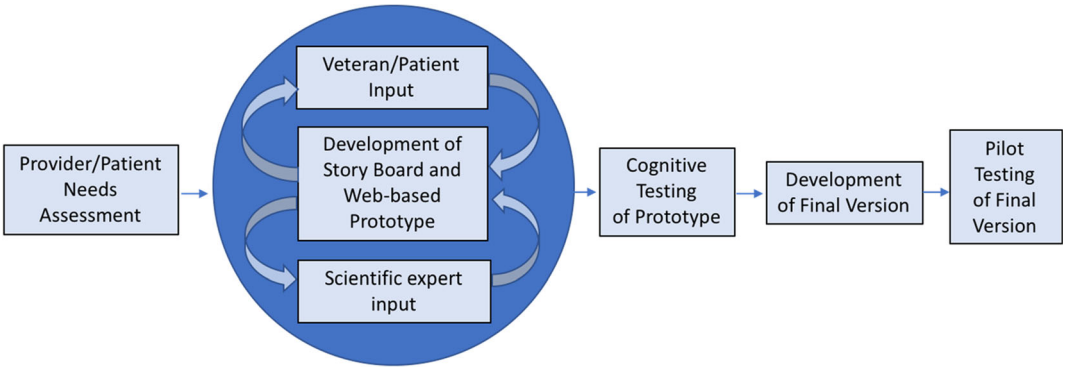

Figure 1 MyPath systematic development process. Curved arrows depict the iterative process of developing the web-based prototype content and design.

be at a reading comprehension level no higher than eighth grade. We then developed the web-based prototype (Fig. 2), which includes the following sections:

Thoughts About Pregnancy and Children. This section includes a series of patient-centered questions designed to help women consider their personal reproductive hopes and goals. Development of these questions drew on the body of literature challenging the prevailing "pregnancy planning" framework, which assumes that women hold clear and binary intentions to plan or avoid pregnancy at any given time and that these timing-based intentions drive behaviors.[22,44] This literature, in contrast, demonstrates that orientations towards a potential pregnancy exist on a spectrum, with many women holding ambivalent, conflicting, and fluctuating feelings.[45,46] Furthermore, affective or emotional orientations towards future pregnancy are often not consistent with stated intentions, as many women report they would be happy if they had an unplanned pregnancy.[47] Questions in this section of MyPath thus ask users to consider both cognitive and affective orientations towards pregnancy, with the wording based on iterative input from Veterans. In addition, these questions were designed to be applicable to all users who have reproductive capacity, whether they are or are not sexually active and regardless of their gender or that of their sexual partners. In response to our veteran engagement group's concerns that the intimate and personal nature of the questions might be uncomfortable for some women, we added a response option of "I'd prefer not to answer" to the questions.

Menstrual Cycle and Fertility. This section includes frequently asked questions and answers developed to support informed decision-making by addressing common misperceptions about the menstrual cycle, including when during a cycle a woman is most fertile and the impact of age on fertility.[48] Questions also address common misperceptions that lead women to incorrectly perceive that they are unlikely or less likely to become pregnant compared to others, which can result in contraceptive nonuse or inconsistent use.[45,49]

Health Before Pregnancy Info. This section was designed to provide information about how physical and mental health can affect a pregnancy and to prompt individualized conversations with providers about optimizing health among women considering pregnancy. Eight areas were selected on the basis of prevalence of the risk factors and appropriateness for screening and intervention in primary care settings: folic acid and healthy lifestyle, medical conditions, mental health, medications, relationships, healthy weight, infections, and birth spacing. This section also includes a list of additional concerns, such as pregnancy in same-sex relationships or for transgender or non-binary individuals, housing instability, or concerns about insurance coverage, which can be flagged for discussion with the healthcare team.

Birth Control—Find Your Method. We incorporated and adapted an evidence- and theory-based contraceptive decision support tool which includes systematic education about the attributes of birth control methods (side effects, return to fertility, mode of delivery and frequency of administration), elicitation of women's preferences, and suggestions for methods based on an algorithm matching preference to options (https://clinic.mybirthcontrol.org/).[28,50]

Other Features and Summary Page. As they progress through the tool, users can select topic buttons and add free-text questions in a question box that are populated in real time on the Summary Page (Fig. 3). For users who complete the contraception section, the Summary Page includes a list of preferences for birth control methods and suggested methods that best match these preferences. The Summary Page can be emailed and subsequently printed, and users can choose whether or not they wish to share it with their providers.

Cognitive Testing. We conducted cognitive testing of the web-based prototype with 17 women Veterans who had not previously contributed to the development of the tool to assess clarity and acceptability. The cognitive interviews used "think aloud" techniques, where participants were encouraged to

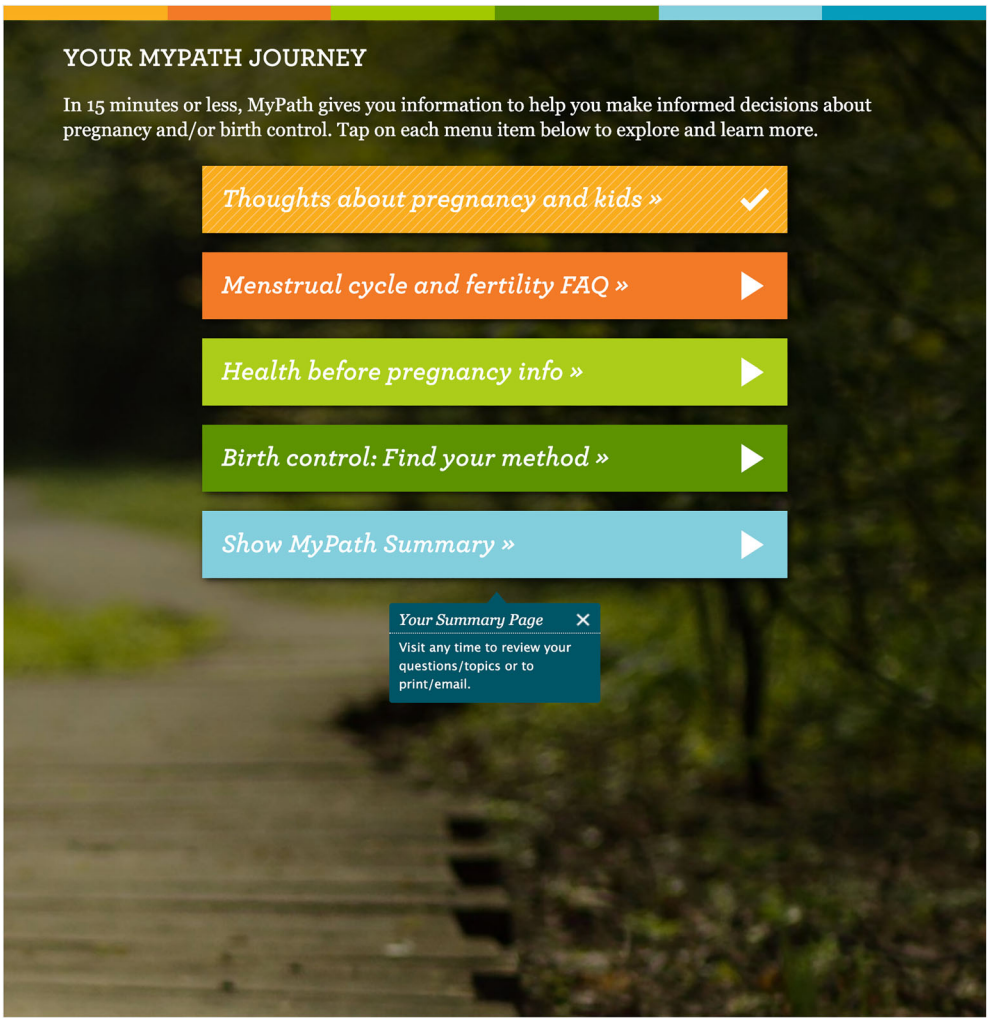

Figure 2 MyPath main menu.

express their thoughts and perceptions while reading through the tool.[51] We probed by asking what was confusing or unclear and by asking for comments on specific elements and then made iterative improvements to language, content, and functionality.

Pilot Test Methods

Design and Study Setting. We conducted a non-randomized pilot study of MyPath in two Women's Health primary care clinics in VA Puget Sound Health Care System between April and August of 2018. We recruited a usual care control group prior to and an intervention group after introduction of the tool. We decided a priori to recruit approximately 25–30 Veteran participants in each group to achieve our objective of evaluating acceptability and feasibility in a clinical setting and to test study procedures in anticipation of a future larger trial.[52] The study was approved by the VA Puget Sound Health Care Institutional Review Board.

Participants and Recruitment Procedures. Women Veterans ages 18–44 with an upcoming scheduled visit were mailed an introductory letter with opt-out postcard. Potential participants were contacted by telephone after one week and invited to participate in the study if no opt-out postcard was received. Women were eligible for the study if they desired discussing contraception and/or pregnancy plans at their visit and were not infertile, sterilized, or currently pregnant or seeking pregnancy.

Usual Care and Intervention Procedures. During the usual care phase (April to June 2018), study staff instructed participants to meet a member of the research team in the clinic waiting room one hour before their scheduled visit. These control group participants completed a pre-visit survey on an iPad with questions about demographic, reproductive, and health characteristics as well as pre-visit assessment of outcome measures. After attending their visit, they

YOUR MYPATH SUMMARY

Here is a summary of your information from MyPath. You can take it into your visit with your health care provider to start your conversation about your reproductive goals and health.

My Thoughts on Pregnancy and Children	
Your thoughts on children	Not sure if I want children
Your thoughts on pregnancy	Not trying, but I'd be okay with it
When you think you might want to get pregnant	Not sure
How important avoiding pregnancy is to you	Somewhat important
How happy you would feel if you got pregnant	Happy
How upset you would feel if you got pregnant	Somewhat upset
Your current birth control method(s)	Withdrawal
Satisfaction with your current birth control method(s)	Somewhat satisfied

My Topics: Menstrual cycle and fertility FAQ / Health before pregnancy

- ▫ Irregular Cycle
- ▫ Vaccines
- ▫ My medical conditions
- ▫ Fertility
- ▫ Sexually transmitted infections
- ▫ Finances or housing

My Questions

- » How long does the implant last? How easily can I get it removed?
- » Is it safe to get pregnant after 40?

Methods you want to talk about

Ring Copper IUD Shot

Things that are very important to me	
Effectiveness	
How method is used	✓
How often method is used	

Identified red flags
none

Side effects and benefits	
Things I really do want	Lack of Bleeding, Lighter Periods
Things I really don't want	Irregular Bleeding/Spotting, Heavy Bleeding

Figure 3 First part of a sample MyPath Summary Page (additional information on specific contraceptive preferences not shown).

immediately met a research staff member in the waiting room to complete a post-visit survey on the iPad.

We then introduced MyPath to clinic providers and staff at participating clinics in June 2018 during standing clinic meetings. We provided a brief overview of the objectives and sections of the tool, as well as an overview of patient-centered counseling and decision support in the context of reproductive decisions. Shared decision-making training is routinely delivered to VA PCPs;[53] the objective of our brief training was therefore to provide content-specific information.

Study staff then recruited participants in the intervention phase of the study (June to August 2018). Procedures for this phase were the same as for usual care, except that intervention group participants used MyPath on the iPad after completing the pre-visit survey and before attending their visit. Study staff provided participants with a printed copy of the MyPath Summary Page (Fig. 3) and invited them to share it with their provider if they wished. After their visit, the intervention group completed the post-visit survey and answered questions regarding acceptability of the tool.

After completing patient recruitment, we invited all PCPs who had a visit with one or more intervention participants to complete an online survey assessing acceptability and feasibility of using MyPath in primary care settings.

Measures. Acceptability and Feasibility. We assessed participants' and providers' experience and perceptions of MyPath using Likert scale response options and free-text response questions. Website analytic data was used to assess the average time participants spent using the tool.

Effectiveness Outcomes. After the visit, we assessed whether women had discussed their pregnancy goals and/or birth control needs and the perceived quality of that discussion using an adapted version of the Interpersonal Quality of Family Planning (IQFP) scale.[54] We assessed self-reported efficacy in communicating with providers about reproductive decisions, reproductive knowledge, and contraceptive decision quality both pre-and post-visit. Self-reported efficacy in communicating with providers was measured using a modified version of the validated 5-item Perceived Efficacy in Patient-Provider Interactions (PEPPI) scale.[55,56] Questions assessed the extent to which respondents were confident in their interactions with providers, such as knowing what questions to ask, getting a provider to address those questions, and making the most of the visit. Reproductive knowledge was measured using a set of 14 questions about fertility, health prior to pregnancy, and contraception.[28,50] Decision quality was measured using the validated 16-item Decisional Conflict Scale[57] and dichotomized into lowest decision conflict (score of 1 on all 16 questions) versus all other responses.[28] Perceived concordance between values and preferences and the chosen method was measured using the Measure of the Alignment of Choices (MATCH) measure (How confident are you that the contraceptive method(s) that you are using is right for you?)[58] and responses were dichotomized into highest values concordance (score of 5) versus all other responses. We also assessed what contraceptive(s) participants were using pre-visit and what method they intended to use post-visit.

Analysis. We used chi-squared testing to compare the proportion of women in each group who reported discussions about their reproductive needs at their visit. We used paired *t* tests to compare pre- and post-visit continuous outcomes within groups and *t* tests to compare pre-/post changes between groups. McNemar's tests were used to compare pre-/post changes in categorical outcomes within groups. For between-group comparisons of categorical outcomes, we created categorical variables capturing pre-/post change to lowest decision conflict, change to highest values concordance, and change to prescription contraception (pill, patch, ring, implant, intrauterine device, or sterilization) from non-prescription methods (e.g., barrier, natural family planning) or no method, and used chi-squared or Fisher exact tests, as appropriate.

RESULTS

A total of 314 women Veterans were sent recruitment letters and 173 (55%) were reached by phone. Among those, 54 (31%) were ineligible based on study criteria and 45 (26%) declined participation. An additional 16 (9%) were excluded because they either canceled their appointment or did not arrive with sufficient time to be enrolled. A total of 58 participants were consented and completed the baseline and post-visit surveys (30 intervention, 28 control).

Sample Characteristics

The intervention and control groups were similar in self-reported age, race/ethnicity, and marital status, although those in the intervention group had less education. (Table 1). Self-reported gravidity, parity, current pregnancy intentions, history of military sexual trauma, and prevalence of hypertension, diabetes, obesity, and mental health conditions were similar across groups.

Acceptability Among Veterans

Intervention participants spent an average of 11 min (median 11; range 1 to 19) using MyPath. Most participants (83.3%) agreed that they liked the tool and that the tool helped them to get what they wanted out of their visit with their provider; 93.3% reported that they would recommend the tool to other women Veterans. Nearly all participants (96.7%) felt that the information in the tool 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 participants felt that the content of at least one section was useful to them. Nearly all (87.0%) were comfortable answering the questions about their thoughts and wishes about pregnancy.

Table 1 Pilot Study Sample Baseline Characteristics

Demographic, reproductive, and health characteristics	Intervention, *N* = 30	Control, *N* = 28
Mean age (SD)	31.6 (4.6)	32.1 (5.2)
Age categories		
18–29	10 (33.3)	10 (35.7)
30–34	12 (40.0)	9 (32.1)
35–44	8 (26.7)	9 (32.1)
Race/ethnicity		
White	16 (53.3)	13 (46.4)
Black	6 (20.0)	5 (17.9)
Hispanic/Latina	2 (6.7)	1 (3.6)
Other	6 (20.0)	9 (32.1)
Sexual orientation		
Heterosexual/straight	24 (80.0)	23 (82.1)
Bisexual/other	6 (18.9)	5 (17.9)
College degree or greater	12 (40.0)	18 (61.3)
History of military sexual trauma	18 (60.0)	17 (60.7)
≥ 1 mental health diagnosis	21 (70.0)	17 (60.7)
Obesity (body mass index ≥ 30)	12 (40.0)	10 (37.0)
Hypertension and/or diabetes	2 (6.6)	2 (7.1)

Most felt that the summary page printout from the tool was helpful for them (80.0%), and 56.7% reported discussing the printout at their visit. More participants felt that the tool should be used at home before a visit (63.3%) than in the clinic before a visit (36.7%). (See Table 2 for qualitative responses.)

Acceptability Among Providers

We obtained survey data from the eight PCPs (seven physicians and one nurse practitioner) who had seen intervention participants. Most providers agreed or strongly agreed that the tool helped users to make informed decisions about pregnancy planning or timing (71.4%) and about contraception (100%). Over half of providers agreed or strongly agreed that the tool made their counseling more efficient (57.1%) and helped them to discuss pregnancy goals (71.4%), preconception health (57.1%), or contraception (71.4%) with patients. No providers felt that the tool significantly increased their workload or negatively impacted clinic flow. Half of providers felt the tool should be used in clinic waiting rooms and half at home prior to clinic visits. (See Table 2 for qualitative responses.)

Efficacy Outcomes

A significantly higher proportion of the intervention versus the control group reported discussing pregnancy and/or contraceptive needs in their visit (93.1% vs 67.9%, $p = 0.02$, Fig. 4). Women in the intervention and control groups both rated provider communication quality highly on the modified IQFP (mean score 4.7 versus 4.8, respectively, $p = 0.40$, data not shown). Self-efficacy in provider-patient communication scores increased significantly in the intervention group and minimally in the control group, with a significantly greater pre-/post change in the intervention versus control group (0.8 versus 0.2, $p = 0.02$, Table 3). Similarly, correct knowledge scores increased significantly in the intervention but not the control group, with a significantly greater pre-/post change in the intervention versus control group (increase of 1.7 versus 0.2, $p < 0.001$).

Table 2 Free-Text Veteran and Provider Responses

Veteran quotations
It's a great 'primer' for your appointment.
I really wish this was something that existed for all appointment types with in the VA, so you can go in prepared.
I have been using birth control for 19 years and I've still learned a lot from this.
I didn't know there were so many options, it was great to read about them all.
This is absolutely a tool people should use.
It's nice because it has things you may not normally think to ask your provider
I am not sure that I am a good person to be looking at this tool and giving feedback. I am already on birth control, and I just gave birth.
Provider quotations
Empowers patient about options.
Helped vets think about contraceptive options prior to the appointment, which made our discussion more targeted.
Done in advance, gets patients to think about things prior to a visit, helped discussion take less time.
Great explanation of birth control options.
Doesn't work to have patients use it in the waiting room.

The proportion of participants reporting the lowest level of decision conflict about their contraceptive decision increased in both groups from baseline to post-visit; the pre-/post increase was greater in the intervention than the control group but the difference was not statistically significant (23.3% versus 7.1%, $p = 0.09$, Table 3). The proportion of participants reporting the highest confidence that their contraceptive method was right for them similarly increased in both groups, with a greater but non-significant increase in the intervention versus control group (33.3% versus 7.4%, $p = 0.11$). In the intervention group, 4 participants decided to start using a prescription method and none decided to stop using a prescription method. In the control group, 4 participants decided to start using a prescription method and 3 decided to stop using a prescription method. This difference in the net change between groups was not statistically significant (net increase of 13% in the intervention group versus 4% in the control group, $p = 0.20$, Table 3).

DISCUSSION

Pilot testing suggests that MyPath holds promise in facilitating high-quality care related to pregnancy and contraceptive needs in primary care settings. Use of an evidence-based and user-centered design process resulted in an end product that was highly acceptable to patients and did not increase PCPs' perceived workload. Preliminary evaluation of effectiveness suggests that MyPath has the potential to increase the proportion of primary care visits that include discussions about pregnancy and/or contraception and improve decision quality related to reproduction.

Our finding of high acceptability of MyPath among women Veterans is aligned with a growing body of literature suggesting that women generally value the opportunity to discuss reproductive goals and needs in primary care settings.[7,59,60] Evidence to guide how these conversations are best initiated to meet individuals' needs, however, is limited.[22] Some women may not feel comfortable with direct questions about their reproductive wishes, whether due to the personal nature of the questions or mistrust of health care providers' motivations or concerns about judgement.[8,59–61] MyPath, in contrast to structured screening questions for pregnancy intention, offers women the opportunity to personally consider their reproductive goals but does not require that they share this information with providers, thus providing them control over what to disclose. The acceptability of this strategy was demonstrated by no users responding that they felt uncomfortable with the questions assessing reproductive goals.

Our finding of acceptability of MyPath among PCPs is particularly relevant for future implementation of MyPath, as lack of provider support represents a major impediment to successful uptake of decision tools.[62–64] Providers in our study generally felt that the tool helped women to make informed decisions, and some additionally felt that it contributed

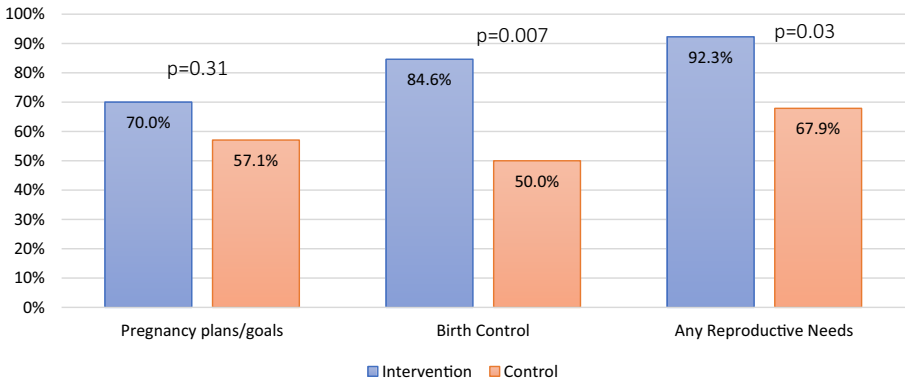

Figure 4 Occurrence of discussions about reproductive needs at visit in intervention and control groups. Bars depict the percentage of patients who reported conversations about pregnancy, birth control, or any reproductive needs at the visit.

positively to their experience of providing counseling. None felt that the tool added workload or negatively impacted clinic flow. Of note, participating providers all worked in women's clinics and may place a higher priority on reproductive health counseling than providers in other primary care settings in VA or outside the VA. Future studies will need to explore use of MyPath in a variety of primary care settings to assess perceived impact on visit times and workload as well as questions including how frequently to offer MyPath in routine practice (e.g., annually) and whether or how to incorporate the summary page into the electronic medical record. Given concerns about the feasibility of using MyPath on iPads in clinic waiting rooms, future studies of MyPath should also consider alternative strategies for making the tool available to women to use at home before visits, such as email or text messaging, to maximize feasibility and acceptability.

Although the primary objective of the pilot was to test acceptability and feasibility and not efficacy, preliminary data suggest MyPath may positively impact occurrence of discussions of reproductive needs and reproductive decision quality. Among MyPath participants, all of whom desired discussing pregnancy plans or contraception at their visits, nearly all (93%) in the intervention group discussed one or both topics at their visit compared to only 68% in the usual care group. This finding that a patient-facing intervention may be effective in increasing discussions about pregnancy and pregnancy prevention in primary care is encouraging, particularly in light of disappointing results from provider-facing interventions.[24,25] We also observed a significantly greater pre-/post-visit increase in perceived efficacy in provider-patient communication in the intervention group compared to the control group, suggesting that MyPath may help mitigate challenges women face in communicating with PCPs about their reproductive health needs.

Our preliminary data regarding MyPath's effect on decision quality are also promising. MyPath users experienced significantly greater gains in knowledge compared to the control group, which is of particular importance given that contraceptive and fertility knowledge is low among both Veterans[65] and the general population.[48] Similar to a prior study of the birth control component of MyPath,[28] users experienced a trend towards a greater decrease in contraceptive decision conflict compared to controls, suggesting that MyPath may enhance users' ability to make informed and high-quality decisions about contraception. We also observed a trend toward a larger net change from non-prescription to prescription contraception in the intervention compared to the control group. The goal of MyPath is to help users align preference with contraceptive decisions, rather than to promote any particular methods; however, because misinformation about prescription contraception is common,[65,66] MyPath may reduce barriers to using these methods through augmenting knowledge.

Table 3 Pre-/Post-Visit Comparisons in Outcomes

Outcomes	Within-group pre- to post-visit change†		Between-group difference‡
	Intervention, $N = 30$	Control, $N = 28$	p value
Provider-patient communication			
Increase in self-reported self-efficacy in communicating with providers (5-point scale), *mean (SD)*	0.8 (1.0)***	0.2 (0.7)	0.02
Contraceptive decision quality			
Increase in correct knowledge (14-item questionnaire), *mean (SD)*	1.7 (1.5)***	0.2 (1.3)	< 0.001
Change to lowest decision conflict, *n (%)*	7 (23.3%)*	2 (7.1%)	0.09
Change to highest values concordance, *n (%)*	10 (33.3%)**	2 (7.4%)	0.11
Prescription contraception			
Net change from non-prescription to prescription method, *n (%)*	4 (13%)	1 (4%)	0.20

†*p values for within-group pre-/post change calculated using paired t test for continuous variables and McNemars for categorical variables shown (***p < 0.001, **p < 0.01, *p < 0.05)*

‡*p values for difference in pre-/post changes in intervention vs control groups calculated using t tests, chi-squared, or Fisher exact as appropriate*

SD = standard deviation

Several limitations of our study are important to consider. First, due to small numbers and lack of randomization, effectiveness comparisons are preliminary and subject to bias. Furthermore, due to small numbers, we were unable to examine whether the effect of the tool was different among subpopulations, such as women of color. As sensitivity to the needs of historically marginalized populations is a central objective of MyPath, evaluating whether the tool is as effective across racial/ethnic groups or sexual orientations in future studies with larger sample sizes will be essential. In the pilot, we excluded women who were currently seeking pregnancy or were sexually active exclusively with women to obtain sufficient data on contraceptive outcomes; future work should include these populations, who can also benefit from discussions of reproductive goals and health prior to pregnancy. MyPath was not designed to address unique needs of transgender patients with reproductive capacity; additional research is needed to adapt existing interventions and improve reproductive health care for this underserved population.[67] Furthermore, MyPath was developed for Veterans, all of whom have a high school education and English proficiency to enroll in the military; additional work to address the needs of populations with less education and to translate MyPath for populations with limited English ability is also needed. Lastly, while the majority of preventive reproductive healthcare in VA is provided in primary care, women outside VA receive may this care from obstetrician-gynecologists or other specialists; future work to explore use of MyPath in settings beyond primary care is warranted.

CONCLUSION

In summary, we developed MyPath to support individuals in making informed choices and engaging with providers about their reproductive needs in primary care, with the ultimate objective of safeguarding reproductive autonomy and supporting individuals in achieving their reproductive goals. To address existing gaps in VA care, evaluation of MyPath in a larger pragmatic trial could determine if the intervention is effective and should be implemented more widely in VA clinical practice. Testing of MyPath and other emerging tools outside of the VA will also be necessary to build an evidence base for interventions that can promote patient-centered reproductive health services across diverse populations and healthcare systems.

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Compliance with Ethical Standards:

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Data availability: *To learn more about MyPath or to view the tool during the testing phase, please email the primary author at lisa.callegari@va.gov.*

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