2022

Evaluating the Quality of Electronic Decision Aids for Birth Control and Recommendations for Practice in Primary Care

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Doctor of Nursing Practice

Seattle University

2022

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Contents

Abstract

Aims

The aims for this project were to evaluate the quality of electronic decision aids (DAs) for birth control using the International Patient Decision Aids Standards quality criteria checklist and to query primary care providers on current practices around their use of decision aids to assist patients when choosing a method of birth control.

Background

Since the advent of the internet in the early 2000s and subsequent increase in electronic dissemination of DAs, there has been international awareness highlighting the lack of quality control with their content. This is significant because DAs that provide information on methods of birth control can influence a woman's decision when it comes to reproductive decision making. If the content is of poor quality, then the woman may not be making a well-informed decision when it comes to choosing a birth control.

Method

First aim: DAs were identified using an online search of published literature through PubMed, google search, iTunes store, and google play store. DAs were evaluated using the International Patient Decision Aids Standards (IPDAS) quality criteria checklist. 7 DAs met the inclusion criteria.

Second aim: Primary Care providers were queried around utilization of DAs in practice via an email survey. All providers held an active license and were currently practicing in Primary Care in Washington State. Results were summarized using charts in a presentation format.

Results

First aim: There was significant variability among the quality scores of the DAs. Interestingly, more common sources of health information such as the Centers for Disease Control and Mayo

Clinic were some of the poorest performers. Bedsider.org was the best performing DA and scored the highest on the IPDAS checklist. In addition, websites that focus exclusively on family planning have more comprehensive and high-quality information.

Second aim: Six providers provided responses to survey questions. All providers reported using electronic sources to educate women on birth control options during visits and agreed DAs were useful tools. Time was reported as the biggest barrier to using DAs during a patient visit.

Conclusion

Our evaluation supports the need to establish international quality criteria for DA developers. Providers reported DAs are useful tools to use during a visit to discuss contraception.

Introduction

When it comes to making decisions about personal health, the choice isn't always clear, and it can be difficult if there is more than one option. Contraceptive decision making is a complex process that most women will face at some point in their lifetime. Choosing a method of birth control that doesn't align with a patient's values and preferences can lead to personal and societal consequences. In the United States, nearly half of all pregnancies are unintended, and the direct health care costs of those pregnancies are estimated to be $9.6 to 12.6 billion annually (George et al. 2015). Strategies to improve adherence and acceptability of contraceptives have been met with little success thus far. Decision aids (DAs) are tools that can potentially play a valuable role in this regard. DAs are interactive, evidence-based tools used in health care to assist patients make better informed decisions about their health. They are often used in shared decision making, a process in which clinicians and patients work together to select tests, treatments, and care plans based on clinical evidence that balances risks and expected outcomes with patient preferences and values (National Learning Consortium, 2013). DAs exist in paper or electronic forms such as websites or phone apps and align patient values and preferences with treatments or screenings. Compared to usual care, DAs have shown to increase patients' knowledge of options, reduce decisional conflict, and give more accurate perceptions of outcome probabilities (Stacey, 2017; Poprzeczny et al., 2020). French, Wellings, Cowan (2009) highlight that individual beliefs and values surrounding sexual health vary enormously and a benefit of DAs when choosing a method of birth control is that they consider the individual user's preferences in relation to the attributes of different methods. While DAs offer easy access to digital health information for patients, the lack of national quality standards in the development of DAs may hinder the effective use of this potentially helpful tool for women and providers.

Today, there are hundreds of resources claiming to be DAs that facilitate contraceptive decision making. Elwyn and colleagues (2006) emphasize that because DAs influence patient decisions, poor quality, inaccurate or unbalanced presentations or misleading information may put patients at risk. For example, a woman may be unaware that combined hormonal contraceptives (CHCs) such as the pill can place her at a higher risk for blood clots if she has certain medical conditions. To date, no criteria for national standards of DAs exist and the few quality frameworks that have been developed are not required for DA developers. As a result, quality indicators such as citing evidenced-based sources for recommendations and maintaining up-to-date information may be sparse or missing altogether. Prior to describing the project, itself, an overview of the benefits and barriers to utilizing DAs for contraceptive counseling and background on the importance of DA quality control will be discussed.

Background and Significance

Benefits of DAs in Contraceptive Counseling

Choosing a method of birth control is a preference-sensitive, values-based decision where there is often more than one medically appropriate option that's accessible to women. Shared decision making is a process that can be helpful for patients and providers when they are faced with these types of decisions. Shared decision making is most relevant when there is a close trade-off between the risks and benefits of a decision that could be altered by individual preferences and values (Grad, et al., 2017). DAs have been shown to facilitate shared decision making by using evidence-based content while asking patients to consider personal values and preferences (Poprzeczny, 2020; Grad et al., 2017; Jull et al., 2021). Patients who utilize DAs have been shown to have better knowledge regarding options and outcomes, more accurate perceptions

of outcome probabilities, decreased decisional conflict, and improved quality of decision-making (Chakraborty et al., 2021; Stacey et al 2017; Dehlendorf et. al 2017). When decision conflict is minimized, patients are more likely to feel comfortable with their choices when compared with usual care (Stacey et al., 2017). Women have also reported that when using an electronic DA for contraceptive counseling, it helped them learn about contraception, think about changing to a different method and feel better prepared for clinic appointments (Stephenson et al., 2020). From the providers perspective, Dehlendorf and colleagues (2019) found providers felt DAs enabled them to focus on patients' interests during appointments, patients were more informed about contraception options and features, and patients took a more active role in method selection. However, it has also been found that distrust in the content of
DAs is one of the barriers for DA use (Scalia et a., 2019).

DAs and Quality Control

Over the last two decades, there has been increased accessibility to and production of DAs via the internet or phone applications, thus increasing their popularity. In addition, costs for producing and distributing DAs have decreased spurring an increase in the number of DAs available (O'Connor et al., 2006). Searching for health information online, while convenient, doesn't guarantee the quality of information. The quality control issue around the content of electronic DAs was addressed in 2006 when the International Patient Decision Aids Standards checklist was developed to enhance the quality and effectiveness of patient decision aids by establishing a shared evidence-informed framework with a set of criteria for improving the content, development, implementation, and evaluation (Stacey et al., 2019). Today, the IPDAS checklist is considered the gold standard for developing decision aids (Vromans et al., 2019). Although developing the IPDAS checklist provided an evidence-informed framework for DA

developers, the lack of national certification, a clear set of criteria, and standards has led to an ongoing quality issue with their content. For example, when Vromans et al., (2019) applied the IPDAS checklist to two DAs, one for the treatment of localized prostate cancer and the other for early-stage breast cancer treatment, the percentage of DAs that met the quality criteria was between 31-92%. This wide variability further supports the need to evaluate the quality of the content of existing DAs to ensure patients are receiving accurate and complete information when making informed decisions about their health. The purpose of this study was to evaluate the quality of current electronic DAs for contraceptive methods using the IPDAS checklist and to then formulate recommendations for primary care providers regarding a DA for contraceptive counseling that will also support shared decision-making.

Methods

Purpose and Aims

There were two aims to this translating research into evidence project. First was to evaluate the quality of electronic DAs for birth control using the IPDAS checklist. The second aim was to query primary care providers' practices around their methods of contraceptive counseling and use of DAs for birth control to achieve a better understanding of their use in primary care visits.

Setting and Participants

Due to the COVID-19 pandemic, the research team met via zoom to accomplish the IPDAS scoring of each DA and other steps of the research process. The research team consisted of three nurses and three economists affiliated with Seattle University. The survey was implemented with primary care providers at Swedish Bellevue Primary Care Clinic located in Bellevue, Washington, and nursing faculty at the Seattle University School of Nursing.

Participants included six providers credentialed in Washington State. Each provider was credentialed as a Medical Doctor, Family Nurse Practitioner, or Adult Registered Nurse Practitioner. Additionally, each provider was currently employed on a full-time, part-time, or per-diem basis.

Ethical Considerations

Considerations to the human subjects involved in this project included submitting the project for review through the Seattle University Institutional Review Board and was determined to be a qualitative project. For this project's second aim, the human subjects were Advanced Practice Providers credentialed in Washington State.

Measures

International Patient Decision Aids Standards

The International Patient Decision Aids Standards (IPDAS) is a quality criteria framework developed by the IPDAS collaboration in 2003. IPDAS was designed to be used by developers, patients, health care professionals, health care insurers, administrators, policy makers, and researchers to critically appraise individual decision aids or to compare across available decision aids on the same topic (Stacey et. al, 2008). It is comprised of eight quality dimensions with 36 items. Each item is given a score of 1 if the DA meets the criteria and if it does not. The eight dimensions are described next.

The first dimension is information about option effectiveness, assesses if the DA describes the benefits, positive features, side effects, and disadvantages of each option and whether it allows the user to compare the features of each option. The second dimension is outcome probabilities, evaluates details around event rates and how they are presented. Clarifying values is the third dimension which assesses if the DA includes what it's like to

experience physical, psychological, and social effects of the decision and which positive and negative features matters most to the user. The fourth dimension is decision guidance and evaluates if the DA provides a step-by-step way to decide and provides a list of questions to use when discussing the decision with a provider. Development process is the fifth dimension which looks at who was involved at developing the DA. The sixth dimension is using evidence, which evaluates if the DA describes how research evidence was selected, states a publication date, and describes the quality of the evidence used. Disclosure and transparency are the eighth quality dimension that looks at information about funding for the DA and developer credentials. Lastly, plain language is the final quality dimension that asks if the DA reports readability levels.

Provider Survey

The provider survey was sent out via email and consisted of eleven questions (See Appendix A for the survey instrument). Three questions asked for demographic information; provider credentials, years of experience, and the type of practice they are employed as shown in Appendix A. Four open-ended questions asked about current use of decision aids when counseling patients. And finally, four multiple choice questions (answers ranging from strongly agree to strongly disagree) queried the providers about barriers to using decision aids.

Data Collection

DAs were identified using four methods: a literature search of PubMed, google search, and iTunes store. The literature search on PubMed used the following search string: decision aid OR decision aids OR decision support tools OR decision support tool AND contraceptive OR contraceptives OR contraception was conducted. Inclusion criteria for the DAs were the following: DA was a website or mobile app, in the English language, free of cost to the user, discussed birth control prophylactically, and was accessible to the public. Exclusion criteria

included: decision aids intended for emergency contraception, designed for patients with a specific health condition, tangible decision aid products, and decision aids intended for users outside of the United States. Researchers used the term “birth control choices” for the google search and “birth control” for the iTunes and google play store. Each journal article was reviewed by one nurse and one economist to verify the name of the DA, whether the DA met the inclusion criteria, and determine if it was accessible for review. In total there were 12 DAs from published literature, 25 from google search, and 117 from the iTunes store. Forty-three decision aids met inclusion criteria and 111 were excluded. Extensive team meetings were held to clarify the IPDAS dimensions to ensure continuity among the research teams. A smaller research team consisting of one nurse and one economist were assigned DAs to review. DAs were scored independently by each researcher using a 1 if it met criteria or 0 if it did not. Scores were then compared and if scores differed widely, a third rater from the team reviewed the DA.

The second aim of the project was to query primary care providers to understand what decision aids they currently use in practice and why they use them over others. This aim was accomplished by creating an online survey in Qualtrics that was distributed via email (see Appendix A). Survey questions gathered information on how providers currently counsel patients on birth control methods, whether they think DAs are useful for contraceptive counseling, which decision aids do they prefer and why, and barriers to using DAs in practice.

Results

Aim 1 – IPDAS Scoring

Overall Scores

There was a total of 7 DAs evaluated with the IPDAS quality criteria framework. Total scores ranged between 13-32/36 displayed in Figure 1 and Table 1. The median score was 15/36.

Bedsider.org met the most quality criteria with a score of 32/36. Planned Parenthood score second highest at 31/36. Some of the poorest performers were The Office on Women's Health website scoring 17/36, Mayo Clinic app 15/36, Mayo Clinic website 14/36, Cleveland Clinic website 13/36, and CDC website 13/36.

Quality Dimension Scores

Two of the seven DAs, Bedsider.org and Planned Parenthood met all of the 8 items evaluating option effectiveness. Cleveland Clinic, The Office on Women's Health, and Mayo Clinic website all received a score of 0 for presenting at least one positive feature/advantages for each method, showing the negative and positive features of each option with equal detail, and the ability to compare the positive and negative features of each method. All 7 apps performed well on describing the birth control options available.

Outcome Probability Scores

Bedsider.org and Planned Parenthood website met all the 8 items assessing outcome probabilities. Mayo Clinic website was the worst performer meeting 0/8 of the criteria.

Clarifying Value Scores

Bedsider.org and the Mayo Clinic app was the only DAs that scored 4/4 and met all criteria under "clarifying values". The CDC website was the worst performer scoring 0/4. Planned Parenthood website scored 3/4, The Office on Women's health scored 2/4, and Cleveland Clinic and the Mayo Clinic website both scored 1/4.

Decision Guidance Scores

Bedsider.org was the only DA that met all criteria under "decision guidance". The Planned Parenthood website and The Office on Women's Health website scored 1/2, and

Cleveland Clinic website, Mayo Clinic app, Mayo Clinic website, and CDC website all scored 0/2. These 4 DAs who scored 0/2 did not provide a step-by-step way to decide or include worksheets/lists of questions to use when discussing options with a provider.

Development Process Scores

Bedsider.org was the only DA that met 6/6 criteria under "development process". The Planned Parenthood website was the second-best performer scoring 5/6. The Cleveland Clinic website, The Office on Women's Health website, Mayo Clinic app, Mayo Clinic website, and CDC website were the poorest performers meeting between 0-2/6 criteria.

Using Evidence Based on Scores

The Mayo Clinic website was the only DA who met 5/5 criteria under "using evidence". The second-best performers were The Planned Parenthood website and CDC website scoring 4/5. Bedsider.org, Cleveland Clinic, The Office on Women's Health, and Mayo Clinic app were the worst performers scoring between 1-2/5.

Disclosure and Transparency Scores

3/7 DAs met 2/2 criteria under "disclosure and transparency". These were Bedsider.org, Planned Parenthood, and CDC. The Mayo Clinic website scored 1/2. Cleveland Clinic, The Office of Women's Health, and May Clinic app were the worst performers scoring 0/2.

Plain Language Scores

Only 2/7 DAs, Mayo Clinic website and CDC website scored 1/1. Bedsider.org, Planned Parenthood, Cleveland Clinic, The Office on Women's Health, and Mayo Clinic app all scored 0/1.

Table 1

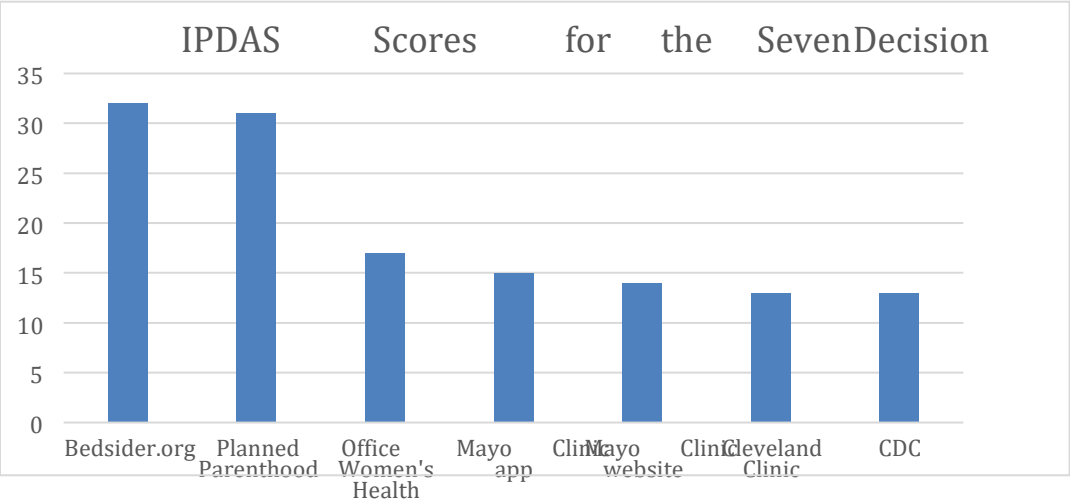
IPDAS Quality Dimensions (36 items)

Decision Aid	IPDAS Quality Dimension								
	Information about option efectiveness (8)	Outcome probabilities (8)	Clarifying values (4)	Decision guidance (2)	Development process (6)	Using evidence (5)	Disclosure and transparency (2)	Plain Language (1)	**Total: (36)**
Bedsider.org	8	8	4	2	6	2	2	0	**32**
Planned Parenthood Website	8	8	3	1	5	4	2	0	**31**
Cleveland Clinic	5	6	1	0	0	1	0	0	**13**
Office on Women's Health	5	6	2	1	1	2	0	0	**17**
Mayo Clinic app	5	4	4	0	0	2	0	0	**15**
Mayo Clinic website	4	0	1	0	2	5	1	1	**14**
CDC website	4	2	0	0	0	4	2	1	**13**
DAs meeting all criteria:	**2/7**	**2/7**	**2/7**	**1/7**	**1/7**	**1/7**	**3/7**	**2/7**	

Note: Table 1 displays IPDAS Quality Dimensions and the scores of the 7 decision aids.

Figure 1

IPDAS Scores for the Seven Decision Aids



Note: Total possible score is 35.

Provider Survey

Fifteen providers were sent the eleven-question survey via email and 6 responded. The 6 providers who participated were ARNPs with a range of experience from 4 to over 20 years in either primary care or specialty care (see Table 2). Discussion using clinical expertise was the most preferred method when educating patients about birth control, followed by websites, written documents, and tangible models. When asked which websites providers prefer to use when educating on methods of birth control, three ARNPS used bedsider.org, one used their hospital's intranet resources, and one provider reported using Reproductive Access and the U.S. Medical Eligibility Criteria. The next question asked if the providers received questions from patients about resources, they could use to read about methods of birth control. Two providers responded "yes, sometimes", two "once in a while", and two "never". Four of the six providers agreed that DAs are a useful tool to facilitate healthcare decisions and two chose yes, but it depends on the decision aid. Most of the providers reported using DAs, whether paper or electronic, to help patients chose a method of birth control. Time was the biggest barrier to using DAs in practice followed by preferring other methods of education and "other". Lastly, all six providers indicated it would be helpful to have a summary of existing DAs and their quality.

Table 2

Survey Demographics (N = 6)

Question	Result
Provider Credentials	
ARNPS	6
Physician	0
Physician's Assistant	0

Certified Nurse Midwife	0
Practice Setting	
Primary Care	5
Specialty Care	1
Urgent Care	0
Years of Experience	
0-5	3
6-10	2
11-20	0
21+	1

Note: See Appendix A for the Provider Survey Questionnaire

Discussion and Conclusion

IPDAS

In this project, we evaluated 7 DAs intended to help women choose a method of birth control using the IPDAS quality criteria framework. We concluded that Bedsider.org was the top performer meeting 6/8 quality dimensions with a total score of 32/36. The two quality dimensions Bedsider.org did not meet all quality criteria were "using evidence" and "plain language". It failed to provide a publication date, information about the proposed update policy, and report readability levels. However, Besider.org proved to be a comprehensive DA that was unbiased, presented outcome probabilities equally, sited sources of evidence and developer credentials, and thoroughly described each methods advantage and disadvantages. It also allowed easy comparison of methods and asked women to consider personal values/preferences to help chose a method that's right for them. Planned Parenthood was the second top performer with a score of 31/36. It performed well presenting information on option effectiveness, outcome probabilities, and disclosure and transparency. Planned Parenthood did not meet all the criteria under clarifying values, decision guidance, development process, using evidence, and plain

language. It's surprising that although it was the second-best performer, Planned Parenthood only met the criteria for 3 of the 8 IPDAS quality dimensions.

In reviewing how the 7 DAs performed overall, none of them met all 8 quality dimension criteria and 5 out of the 7 performed poorly. Additionally, it was interesting to find well-known websites such as Mayo Clinic and the CDC score lower than a website that is less well known such as Bedsider.org. This finding is important because well-known sources of health information may not necessarily provide a comprehensive and high-quality decision aid. It is our observation that these sources may provide a vast scope of medical information on thousands of topics, while Bedsider.org only focuses on family planning. We conclude our project further supports the need for national quality criteria standards consistent with previous reviews.

Provider Survey and Implications for Nursing Practice

The majority of the ARNPs who responded to the survey agreed that DAs can be a useful tool when it comes to making health care decisions. ARNPS were interested in learning about the results from our project indicating they value quality DAs. Although the sample size was small, half of the ARNPs used Bedsider.org as their DA of choice. It's reassuring that the providers who currently use Bedsider.org are utilizing a high-quality DA in clinical practice. Although time was listed as the biggest barrier to implementing DAs during a patient visit, our survey indicates providers find the time to use DAs in practice when education is required for contraceptives. It's important to note half of the ARNPS did not utilize Bedsider.org which implies an ongoing need for provider education, awareness, and training on what constitutes a quality DA.

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Appendix A

Provider Survey Questions

1.) What are your credentials?

a. Physician
b. ARNP
c. PA
d. Certified Nurse Midwife

2.) How long have you worked as an advanced practice provider?

a. 0-5 years
b. 6-10 years
c. 11-15 years
d. 15+ years

3.) What type of setting do you work in?

a. Primary Care
b. Specialty Care
c. Urgent Care

4.) What types of materials do you use to educate a patient about birth control options?

a. Electronic
b. Written
c. Discussion
d. Tangible model

5.) Do you use decision aids (paper or electronic) to help patients make decisions about birth control?

a. Yes
b. No

6.) Do patients ask about resources they can use to learn more about types of birth control?

a. Yes
b. No

7.) If you use websites to help educate patients on methods of birth control, which websites do you prefer?

8.) Do you think decision aids are useful tools to assist patients when making a decision about their health care?

a. Yes

B. No
C. Unsure.

9.) What are your perceived barriers to your use of decision aids for birth control during patient visits?

a. Decision aids are of unknown quality
b. Not enough time
c. I'm unaware of quality decision aids
d. I prefer other methods of education
e. I don't find them useful.

10.) Do you think decision aids for birth control are useful outside of a patient visit?

a. Yes
b. No
c. Unsure.

11.) Would it be helpful to have a summary of existing decision aids and an evaluation of their quality?

Note: Appendix A is the sample of the survey questionnaire sent out to the providers.