Healthy People 2030: Reducing the proportion of unintended pregnancies

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The possibility of pregnancy and the news of pregnancy are topics that are regarded differently by various women and can be a daunting health issue that may lead to some individuals confused about contraceptive options, misled regarding abortion options, or lost about how to access these resources. This can lead to unintended pregnancy and, according to Healthy People 2030, 43% of pregnancies among women 15-44 years were unintended in 2013.[1] In 2016, the Oregon State Health Assessment reported 69.2% of women at risk of unintended pregnancy endorsed using effective contraceptive methods at most recent intercourse, yet the most recent abortion data by the Oregon Health Authority reported over 23,000 abortions occurred in one year.[2,3] Unintended pregnancy has several negative effects including maternal depression, low birth weight, birth defects, and poor mental and physical health during childhood.[4] This calls for more contraception education and implementation for those at risk of unintended pregnancies or those with history of unintended pregnancy. However, while as a nation we are making improvements and the rate of unintended pregnancies are decreasing overall, there are obvious disparities among race/ethnic groups, age, income, and education level. Since 2008, unintended pregnancies, including teen pregnancy, have been decreasing however younger, low-income women of color are disproportionately affected with the highest rates of teenage pregnancy among African American, American Indian and Alaska Native, and Latina teens in Oregon.[2, 3] Therefore, unintended pregnancies are a public health issue that continues to impact the nation with a disproportion impact on the rural communities of Oregon. A community education outreach event for individuals of reproductive potential with uteruses in rural Oregon is essential to continue to improve the progress of decreasing the rate of unintended pregnancies.

Current sexual health education varies significantly across the country, and even across the state of Oregon, however the CDC has published twenty specific sexual health topics required to be taught in grades 6-12.[5] In the most recent School Health Profiles data report conducted by the CDC in 2018, the twenty specific sexual health topics required in grades 6-12 included: benefits of abstinence, how to

access reproductive health information, importance of using condoms, healthy relationships, preventive care to maintain sexual health, HIV/STDs, contraceptive methods, and sexual orientation, as well as several other topics.[5,6] Yet, only 23.3% of Oregon schools, grades 6-12 covered all twenty topics, the greatest covered topic being how to create and sustain healthy relationships at 85.3% of Oregon schools and the lowest covered topics including: how to obtain condoms, how to use condoms, sexual orientation, and gender roles, as low as 42.7%.[5,6] In comparison, neighboring states, 32.6% of Washington schools and 39.9% of California schools covered twenty of the specific sexual health topics.[5]

While Oregon is evidently not meeting CDC national standard of health education, it is imperative to analyze the policies and requirements in Oregon health education to determine what the adolescent population are learning about their reproductive rights and options. According to the Oregon Department of Education OAR 581-022-2050 statute, sex education is explained as comprehensive, emphasizing abstinence but not excluding condom and contraceptive education.[7] Yet, it is evident that some districts such as the Portland Public School district's sex education are compliant with the Oregon statute, while there are Eastern Oregon districts that impose "Sex Ed Sit Out" rallies that provide either abstinence-only education or no sexual health education at all.[6] This stark difference in education does not promote equal opportunity for reproductive health among adolescents predisposing those disproportionately affected to possible future implications including unintended pregnancy. While abstinence is the only 100% effective method to prevent unintended pregnancy, programs that promote abstinence-only education have repeatedly been found to be ineffective in delaying initiation of sexual intercourse or changing other sexually risky behavior.[8] In Oregon, individuals 15 years and older can make medical decisions for themselves and therefore abstinence education is beneficial, but for those that may be involved in sexual activity or plan on engaging in sexual activity, additional contraceptive counseling is essential so appropriate, educated decisions can be made regarding reproductive health.

Outside of abstinence, there are additional contraceptive options, of several forms and routes available that individuals of reproductive potential need to be aware of to make an informed decision. Contraceptive options include condoms, medications, implants, patches, and injections to name a few. According to the National Survey of Family Growth in 2019, the most common contraceptive methods included oral contraceptive pills (OCPs) (14%), long-acting reversible contraceptives (LARCs) (10.4%) and the male condom (8.4%) of the 65.3% of women using contraception.[9] The most common contraceptive option among women over 15 years is OCPs which are also described as short-acting reversible contraception and are divided into two categories: progestin-only pills (POPs) and combined oral contraceptives (COCs) which contain both estrogen and progesterone and both types of OCPs must be taken daily.[9,10,11] COCs are preferred over POPs because POPs are strictly administered at the same time.[11] Contraceptive counseling and education should include an emphasis on 'perfect use' and 'typical use' and encourage using a phone alarm and other reminders to aim towards perfect use. Although, some individuals have preconceived conceptions about OCPs that must be addressed in comprehensive sex education, including the dissuading the common myth that OCPs will impair future potential of fertility.[10] Most individuals experience the return of their menstrual cycles similar to their pattern prior to starting OCPs once they stop taking their daily pill, and if their 'typical use' falls to less than typical the chance of unintended pregnancy is increased.[10,11] Depending on timing of last menstrual cycle and most recent unprotected sexual intercourse, most individuals can start OCPs the day they are prescribed, with recommendations to use a second barrier method such as condoms for the first week. After starting OCPs for three months, the most reported side effect is break-through-bleeding, which if persistent may lead the individual and provider to alter the contraceptive method and increase the dose of their OCP (if containing estrogen) or if maximum dose is achieved, choose another OCP or consider other contraceptive methods.[11] This is not uncommon and is a relatively easy solution with no change in reproductive status as long as OCPs are continuously taken, while bridging to the next method.

Therefore, OCPs are the most chosen contraceptive method among those that use contraception, but it requires daily medication adherence and can result in individuals considering other options due to adherence problems or break-through-bleeding, although there remains no fertility risk long-term.

Fortunately, other contraceptive methods such as the vaginal ring and transdermal patch are available. These options are additional contraceptive methods that allow the individual to still have control over their menstrual cycle and reproduction. The vaginal ring, NuvaRing or Annovera, is a flexible, clear ring that can be placed intra-vaginally for three weeks and removed for menstruation and can function for up to 13 of these cycles.[12] This contraceptive method allows the individual to remove the ring for menstruation or continue use and prevent menstruation. Concerns for this contraceptive method include partners feeling the ring during intercourse, however this method allows the individual to remove the ring if they desire for intercourse, but it must be replaced within two hours to remain effective. Whereas, the transdermal patch, Ortho Evra (Xulane) and Twirla is a band-aid like adhesive that is applied to the buttocks, upper outer arm, lower abdomen, or upper torso while avoiding the breasts.[12] This method is applied weekly for three weeks, followed by a patch-free week that allows menstruation, which can also be skipped with application of another patch. Ultimately, the pill, patch, and ring are all comparably efficacious at preventing pregnancy with 99.7% with perfect use and 91% with typical use.[13] Therefore, selection of birth control between the pill, patch, and ring are primarily dependent on the personal choice of the patient and the most effective method to prevent pregnancy is truly dependent on personal use and selection of the particular contraceptive method, however any type of birth control is more effective than no birth control for a sexually active, or planning to be sexually activity individual.

Alternatively, according to the American College of Obstetricians and Gynecologists (ACOG), the first-line contraceptive method recommended for adolescents and young women is long-acting reversible contraception (LARCs).[4] This category of contraception includes intramuscular depo-provera

injections, intrauterine devices (IUDs), and contraceptive implants such as Nexplanon and it is anticipated that with increased population use of LARCs, the rate of unintended pregnancy will inversely continue to decrease.[4] All of these methods are intended for long periods of time, are reversible, and limit the possibility of lack of adherence, therefore improving efficacy, yet in women 15-44 years only 6.4% are using IUDs and 0.8% are using contraceptive impants.[4,13] This suggests that additional education needs to be provided on these excellent, first-line recommendations for adolescents and young women. The depo-provera injections are provided in clinic about 12-14weeks apart, and is immediately effective if administered within the first seven days of your cycle, otherwise other barrier methods such as condoms are recommended for one week.[14] However, while these injections are ideal in that the individual does not need to remember daily pills or weekly patches, the side effect profile is more concerning for some patients. Weight gain, headaches, acne, hair loss, and decreased libido are the most reported side effects in addition to some individuals find their menstrual cycles do not return for up to a year after stopping injections, therefore delaying pregnancy.[14] However, other LARCs are available and used in much greater frequency, such as the intrauterine device and the contraceptive implant, Nexplanon. The intrauterine devices available include the copper IUD approved for ten years, three levonorgestrel IUDs: two approved for up to three years, one approved for up to five years.[15] The copper IUD is unique in that it does not use hormones and works by preventing sperm motility and viability within the uterine cavity, however, the higher dosed levonorgestrel IUDs have better likelihood of completely stopping menstruation and break-through-bleeding.[16] The IUD is placed into the cervix by a provider during a pelvic examination and some women find this to be painful, requiring topical anesthesia during procedure and oral analgesics afterwards. Therefore, specific choice of IUD is unique to patient preference for additional benefits of birth control such as menstruation control, however one must also consider other LARCs provided through other insertion methods. For example, the four-centimeter, continuously releasing etonogestrel contraceptive implant, Nexplanon which is inserted into

the inner nondominant upper arm by a provider.[15] Similar to OCPs and IUDs, the Nexplanon implant's most commonly reported side effect is break-through-bleeding beyond the first three months after insertion. While this method is effective for three years, this side effect may lead an individual to change contraceptive method and the Nexplanon implant must also be removed by a provider but can be replaced the same day in a different location in the same area if continuing with this method.[15] Consequently, there are many positive and negative aspects to each form of birth control, however following ACOG's recommendations, LARC is the first-line, most effective, aside from abstinence, contraceptive method and have been found to be 20 times more effective than OCPs, pills, patches, or rings.[15] Yet, LARCs continue to be used a lesser rates nationally in comparison to other contraceptive methods, indicating a strong need for more comprehensive sex education that encompasses all contraceptive options, including LARCs.

However, while LARCs and OCPs among other contraceptive methods are recommended and preferred, in 2016, the Oregon State Health Assessment reported 69.2% of women at risk of unintended pregnancy endorsed using effective contraceptive methods at most recent intercourse, yet the most recent abortion data by the Oregon Health Authority found over 23,000 abortions of which nearly 16,000 reported no contraceptive use.[2,3] Once again this implies the strong necessity of education and access to contraceptive methods for women of reproductive potential. However, contraception use, or not, abortion is a viable option for unintended pregnancies and is currently available to individuals over 15 years in Oregon of any gestational age. Approximately 25% of all pregnancies are terminated in induced abortion, which yields a significantly lower chance of a woman dying when performed by a trained clinician than dying from pregnancy carried to term.[17] Abortion is a necessary, fundamental aspect of women's reproductive health care and necessary to be implemented into education available to those of reproductive potential.

However, similar to contraceptive options there are several abortion options as well, including surgical and medical methods available depending on gestational age. Although there is increased risk with increased gestational age at time of termination, complication rates remain low and equivalent between surgical and medical methods. Surgical abortion includes uterine aspiration by manual or electric vacuum until 14 weeks gestation and dilation and evacuation (D&E) from 14 to 26 weeks gestation.[17] These can be intimidating terms and therefore education should include layman terms as well as a comprehensive side effects and complications review. Aspiration is safer and less painful than D&E, involving a small rigid or flexible cannula or vacuum inserted through the cervix to evacuate the contents through suction, taking a total of five to six minutes. The major complication of hemorrhage secondary to laceration, requiring repair, occurs in less than 0.1% of aspiration abortions, according to a systematic review of 57 studies.[17] As gestational age progresses, D&E is more effective and recommended over aspiration at successful complete abortion. A D&E involves the use of cervical priming agents, like misoprostol over a period of hours or mifepristone over a day, which softens and opens the cervix, facilitating the aspiration of the amniotic fluid and the contraction of the uterus, allowing the elongated forceps to remove the pregnancy (fetus and placenta) with lower risk of trauma. This procedure takes 10-25 minutes and requires a short, same-day recovery in clinic. However, complication rates including infection and uterine perforation remain low, but do occur more commonly, 0.2-0.8%, in comparison to surgical aspiration.[17] It is therefore evident that these surgical abortive procedures are safe, effective, and available within the first two trimesters of pregnancy, but there is necessary consideration for those of later gestational ages or those who are not amenable to surgical procedures due to barriers to healthcare, cost, or location.

Medical abortion is another abortive option and the proportion of abortions occurring under 13 weeks' gestation and the proportion of medically induced abortions have increased and it is suggestive that these two variables are related.[17] The most effective medical abortion regimen includes 200mg

mifepristone orally followed 1-2 days later by misoprostol 800mcg buccally, sublingually, or vaginally.[17] The expected outcome of a medically induced abortion is heavy bleeding and cramping as the pregnancy is passed over the next few hours after the second set of pills, misoprostol. It is important to note that this form of abortion is most effective early in pregnancy and it has been documented in the largest cohort study of mifepristone-misoprostol abortion, of women between 13- and 21-weeks' gestation, 8.1% required a uterine evacuation to remove the retained placenta.[17] However, while a small percentage of individuals have to continue with additional abortive methods, complications following medical abortion are rare including hemorrhage risk of 0.03-0.06% and even less risk of infection.[17] Comparatively, randomized studies have indicated that women have primarily positive experiences with uterine aspiration and D&E as opposed to medical methods.[17] In Oregon the individuals that desperately deserve this comprehensive sex education are those of reproductive potential, focusing on those that are 15 years or older, of which up to 28.7% are reporting being sexually active and 56% report using hormonal contraceptive methods.[13] This leaves roughly half of those reporting as sexually active susceptible to unintended pregnancy, potential requiring access and education on abortive options. However, the teenage birth rate in Oregon is 10.1 births per 1,000 females according to the CDC, and just under 2,500 abortions were performed in one year in those aged 10-19 across all Oregon counties.[3,18] Regardless, trained providers and facilities should provide both surgical and medical abortion methods in addition it is necessary to provide abortion education to those of reproductive potential that have the capability of consenting to abortion.

However, while abortion is an available option for pregnant individuals over 15 years of age, some choose to pursue pregnancy and it is worth investigating the comparison of those that chose abortion to those that chose to pursue childbirth to better understand the reason why the reduction of unintended pregnancy needs to be addressed. The Turnaway study, a 5-year prospective cohort study, is one of the largest and most reported studies of abortion in the United States, conducted between 2008

and 2010.[19,20] This study followed over a thousand women seeking abortion at 30 abortion facilities in the US to evaluate the physical health of women who seek and receive or are denied an abortion.[19] This study focused on self-reported overall health including chronic pain (abdominal, pelvic, back, joint), chronic headaches/migraines, obesity, asthma, gestational and nongestational hypertension and diabetes, as well as hyperlipidemia semiannually for five years.[19] The study specifically analyzed first-trimester (328 individuals) versus second-trimester (383 individuals) versus no abortion (163 births).[19] Of note, at five years, 27% of women who gave birth reported fair/poor health, in comparison to 20% of women who had first-trimester abortion and 21% who had second-trimester abortion, indicating that those who proceeded with abortion suffered no additional health complications than childbirth.[19] Additionally, women who gave birth also reported more chronic headaches/migraines and joint pain, suggesting that abortion has less long-term complications than childbirth, but it was found that overall maternal mortality did not differ significantly between abortion-status or childbirth.[19] However, as studies of pregnant individuals is limited due to the efficacy of performing research on a protected population, this study was additionally limited as it was self-reported and relied on the individuals to complete surveys and questionnaires and follow-up with additional appointments, thus causing a small amount of bias.[19] Although, the Turnaway study underwent a secondary analysis to assess the effects of various factors on the likelihood of subsequent unintended pregnancy as the data was readily available.[20] It was found that after five years, the rate of unintended pregnancy was 42% of women, with no difference between those that had an initial abortion or those that pursued childbirth.[19,20] Indicating that while abortion is an option available it has no influence on subsequent future of unintended pregnancies, suggesting that these abortion opportunities need to be educational regarding future contraception methods and reproductive potential. Additionally, this secondary analysis of the Turnaway Study examined the effects of age, education, nativity, parity, and mental health history on subsequent unintended pregnancies. This research was corroborated by several other studies to find

that more adverse effects and additional unintended pregnancies are more closely correlated with younger age (thought to be associated with decreasing reproductive potential with aging), lower education level (high school/GED), higher parity, and a history of depression. Consequently, while some may argue that abortion is detrimental to women's health, data is indicative that physical health is, if anything, better than women who proceeded with childbirth and abortion has no influence on future subsequent unintended pregnancy.

Consequently, to reduce the proportion of unintended pregnancies, additional measures need to be taken in Oregon, in particular the implementation and addition of comprehensive sex education for adolescents. While several steps are necessary such as education, access to resources, and insurance/finances to reduce the rate of unintended pregnancies, one such method could an interactive reproductive rights and options presentation for individuals of reproductive potential, particularly adolescents. While ACOG recommends evaluation and counseling of women to determine if a discussion on preventing unintended pregnancy is necessary starting at 13 years old, additional research indicates that timely education should be incorporated prior to first intercourse as this reduces the likelihood of unintended pregnancy.[13,21] Therefore, a target audience would ideally be those as young as 13 but inclusive of those who are menstruating. This community intervention should aim to incorporate the information and statistics regarding the various forms of contraceptive methods as well as abortive options in the state of Oregon, as mentioned previously. Additionally, the goal should be to demonstrate the importance and relevance of this in Oregon counties, emphasizing rural populations, specifically the one this intervention will be conducted in, as these populations are at highest risk. Additionally, questions should be encouraged throughout to make sure the presentation is effective, and the audience is understanding their options entirely. Lastly, it would be effective to include a pre-quiz and post-quiz to compare how much individuals retained regarding their reproductive rights and contraceptive options, to ensure that material is presented in a comprehensive manner. Partnering with

the local Planned Parenthood or other contraceptive clinics or abortion support groups for hand-outs and pamphlets available in multiple languages with the goal of providing additional information that can be referenced later for those that attend. There should also be the consideration of opening this community event to support networks inclusive of family, parents, guardians, etc., modeling the Linking Families and Teens (LiFT) program geared toward increasing family connectedness and youth's self-efficacy, knowledge, and sexual health skills for rural families.[22] Therefore, with these different approaches, as supported by previous studies and programs, this educational intervention will allow communities the comprehensive reproductive education that is personally applicable to participants' community with the goal of reducing the proportion of unintended pregnancies. This will ideally encourage individuals to seek the opportunity to pursue contraceptive or abortive methods if they so choose, by accessing local community resources.

In conclusion, comprehensive reproductive education inclusive of contraceptive methods and abortion options is essential in the prevention of unintended pregnancies. Through community outreach events, those of reproductive potential will be provided an interactive, applicable presentation, comprehensive quiz, and pamphlets focused on local community resources to access these resources. This is a proactive measure towards meeting Healthy People 2030's goal of reducing the proportion of unintended pregnancies among women 15-44 years and reducing the proportion of women at risk of unintended pregnancy in Oregon, with emphasis on those in rural communities.

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