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How Can Pharmacists Support STI Prevention and Treatment Among Female Adolescents and Young Adults?

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Abstract

Sexual and reproductive health is a critical focus area for adolescents and young adults (AYAs). Of the 20 million newly diagnosed Sexually Transmitted Infections (STIs) annually, nearly half of them are contracted by young people between the ages of 15 to 24. It has become increasingly necessary to improve awareness and prevention of STIs during adolescent years. The knowledge gained through appropriately relevant sexual and reproductive health education may persist as adolescents transition into adulthood. Community pharmacists interact with AYAs frequently and are therefore well positioned to engage this vulnerable population in conversations about their sexual and reproductive health through use innovative and interactive technologies. For instance, mobile applications are easily accessible to AYAs and can allow pharmacists to disseminate relevant medication information to smartphone users that download adolescent-tailored mobile applications. Although many medication adherence apps are currently available on the market, none of these apps are tailored towards sexual reproductive health information for female AYAs. A mobile-based program designed to provide a pharmacist-guided sexual and reproductive health education to female AYAs may help to address the lapses in current adolescent-aged school health classes. In the future, usage of this intervention would improve the accuracy and comprehension of female adolescents and young adults' awareness and knowledge of their sexual and reproductive health. As a result, further research should be conducted to develop mobile applications conducive to adolescent and young adults to address sexual and reproductive health issues.

Key Words: Female Adolescents and Young Adults, Sexually Transmitted Infections, Sexual and Reproductive Health Education, Technology Use, Community Pharmacists, Pharmacies

Introduction

The term sexual and reproductive health (SRH) cannot simply be defined as the absence of a disease, dysfunction, or illness relating to sexual health and the reproductive system. The evolving definition of SRH must also encompass an individual's complete physical, mental, emotional, and social well-being relating to their reproductive system and its functions, and their sexuality and sexual relationships.¹ Currently, sexually transmitted infections (STIs) are a large SRH public health concern among adolescents and young adults. Adolescents and young adults (AYAs) more susceptible to acquiring STIs for a combination of behavioral, biological, and cultural factors.² Of the 20 million newly diagnosed STIs annually, nearly half of them are contracted by young people between the ages of 15 to 24.³ The high prevalence of STIs among AYAs can be due to multiple barriers including inadequate STI knowledge-base, difficulty accessing STI preventative services, confidentiality concerns, transportation, and discomfort with facilities and services designed for adults.²

Unfortunately, much of the present research regarding sexual and reproductive health education is geared toward adults.

Not only is SRH an important component of health for an adult individual, but it also plays an important role in the present and future health and well-being of AYAs. Therefore, when considering the delivery of SRH education, methods of maintaining a robust sexual and reproductive health should be primarily directed at AYAs.

However, current research may suggest that we are missing an entire subset of individuals, specifically adolescent females. Currently, about 1 in 4 sexually active teenage girls are infected with an STI.⁴ Specifically, females are more vulnerable to STIs compared to males because their anatomy is more sensitive to sexually transmitted organisms.⁵⁻⁷ As women age, these anatomical barriers become more protective, leading to less newly diagnosed STIs.⁵⁻⁷ Healthy People 2020 has targeted AYAs and sexually transmitted diseases as important topic objectives.⁸ This clearly demonstrates that young females need more assistance navigating their way through their sexual and reproductive health during adolescence and as they transition into adulthood.

While female AYAs have a need for routine screenings, preventative treatment, and effective STI medication management, these services are suboptimal among this vulnerable population.⁹ Pharmacists in the community interact with female AYAs daily, and therefore are well positioned to be an integral resource for STI awareness, prevention, and treatment. There are over 70,000 pharmacies across the

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United States, making pharmacists the most accessible health care professionals to female AYAs in the community.¹⁰ Although STIs are a major concern among this underserved population, few pharmacies have implemented supportive services to improve STI prevention and treatment among female AYAs. As a result, we shed light on the need for patient-centered AYA care, which “improves communication, promotes AYA involvement in care, creates a positive relationship with the pharmacist, and results in improved adherence to treatment plan”, for further development of a safer and higher-quality model of healthcare.¹¹

The National Health Service in England strongly recommends provision of pharmacy services focused on SRH including optional advanced medication use review, provisional screening, and treatment for patients.¹² However, pharmacies in the United States are not currently mandated to provide SRH services. The rise in STIs among female AYAs shows the pressing need for these services. Although increasing efforts have been made to improve female AYAs SRH, most health services do not emphasize STI treatment and prevention.¹³ This globally unmet need for educational tools that promote STI awareness, prevention, and treatment among female AYAs in pharmacies offers significant opportunities for pharmacists to develop innovative patient care models that improve the health of young people in the communities in which we live and work.

Clinical Relevance of Sexual and Reproductive Health Education

SRH education is especially important for the adolescent population. As they transition to a more independent lifestyle, AYAs become more responsible for maintaining their own proper healthcare. This age group is categorized by a change in hormone levels and exploration of sexuality, two aspects of their health that they may have never had to consider before. In conjunction with their newfound self-reliance, SRH education is a vital resource to ensure that they make informed decisions that affect the proper functioning of their entire body.

SRH education is particularly important with regards to the prevalence of STIs among AYAs. Young adolescents and adults, ages 15-25, make up about one quarter of the sexually active population but contract about half of the reported sexually transmitted diseases each year.¹⁴ The most common STIs seen among AYAs include human papillomavirus, chlamydia, trichomoniasis, gonorrhea, and HIV.¹⁵ One study examined the prevalence of Human Immunodeficiency Virus (HIV) in populations that contracted an STI as an adolescent and those who did not. Participants who reported an STI diagnosis during adolescence had a greater likelihood of contracting HIV as they age.¹⁶ One possible cause for this correlation is a biologically-driven mechanism that allows STI contraction to make a person more susceptible to HIV.¹⁷ Even among AYAs who were

diagnosed with HIV at birth, poor treatment adherence may bolster the spread of HIV among others. Growing independence coupled with “treatment fatigue” caused this population to experience decreased medication adherence as they transitioned from childhood.²³ Healthcare professionals’ active roles regarding treatment personalization and diagnosis education improved adherence to HIV medications.¹⁸

STI contraction among AYAs is also a major financial concern. In the year 2004, the estimated annual cost associated with the diagnosis and treatment of adolescent STIs, including HIV, was 17 billion dollars.¹⁹ This statistic alone suggests that there is a subset of AYAs that are not receiving the education and resources needed to become informed decision makers when it comes to preventative care for their sexual and reproductive health.

In addition to the challenges that accompany STI acquisition, female AYAs also face other barriers due to biological and societal characteristics. Females were shown to have a greater chance of acquiring STIs in part due to their reproductive anatomical structure, which allows for easier contraction of an STI.¹⁶ Not only are females more likely to acquire an STI, but they also are more likely to be asymptomatic, leading to an increased risk of complications.²⁰ STI contraction increases the chance of pregnancy complications among adolescent and adult women.²¹

Other obstacles that STIs pose for female AYAs are derived from more social causes amongst the female population. Women who use pregnancy tests are more likely to become pregnant, acquire an STI, engage in risky behaviors, and have less medication adherence than females who do not use pregnancy tests.²² This finding suggests that women may not be adequately educated about their responsibilities in maintaining their sexual and reproductive health. Furthermore, female AYAs have inaccurate perceptions about STIs that may adversely affect their own health and that of others. One study found that female AYAs tend to believe that STIs are only contracted by women of certain lifestyles and that they are personally immune to acquirement.²⁴ Of those diagnosed with an STI, a stigma is associated with contraction that may prevent AYAs from telling current and future partners about it, which may lead to an unknown spread of the infection.²⁴ Female AYAs must face additional considerations regarding STIs that further demonstrates the importance of adequate SRH education.

Delivery of Sexual and Reproductive Health Education

Currently, most sexual and reproductive health education is provided throughout an adolescent’s schooling. As of January 2015, 22 states and the District of Columbia require public schools to teach sexual and reproductive health education.²⁵ However, only 19 of those states require that the SRH education provided must be medically, factually, or technically

accurate, either through a review by the department of health or by mandating that the curriculum is based on published information.²⁵ Additionally, 35 states and the District of Columbia allow parents to opt-out of SRH education on behalf of their children.²⁵ For instance, education about HIV and AIDS as a part of school SRH education are required by only thirty-three states and the District of Columbia.²⁵ Because all states are not required to provide SRH education and some children are opted-out by their parents, there are many AYAs that are unable to receive this information and the resources that they need to make educated decisions regarding making healthy life-style choices.

The SRH education that AYAs receive in school does not provide any information for safe and effective medication use to prevent STIs.²⁶ With privacy and confidentiality regarding sexual and reproductive health information being a top priority, AYAs sometimes seek SRH information in alternative ways. In a 2011 study, 89% of adolescents between the ages of 13 and 24 admitted that they use the Internet as their first and primary source for confidential sexual and reproductive information.²⁸ Although the Internet is a quick and easy source of confidential information, many sources contain misleading and sometimes inaccurate information that can put an individual at risk for negative health outcomes. AYAs need a non-judgmental and private source of sexual and reproductive health information that is convenient and most importantly medically accurate.

AYAs Healthcare Services for Sexual and Reproductive Health

Existing SRH services are located in places such as physician's offices, county health departments, and community health centers. Currently, these service locations provide various challenges for the adolescent population. For one, it is hard to access these services due to dependency on parent transportation and financial burdens associated with STI testing.⁹ AYAs are often embarrassed to reveal their sexual behaviors, making them reluctant to discuss sexual activity with health professionals. This leads to avoidance of care due to the stigmas surrounding STI testing, requesting SRH services, and confidentiality concerns.⁹ AYAs have inadequate sexual and reproductive health discussions, which results in the absence of knowledge of STI signs and symptoms.²⁹ The challenges associated with current offered SRH services for AYAs makes the existing delivery of STI services ineffective.

Chandra-Mouli, et al. evaluated existing services and programs for AYAs and an intervention that facilitated sexual and reproductive health education. It was concluded that AYAs' use of SRH services can be increased utilizing a system that integrates four complimentary approaches: (1) health care professionals are trained to be nonjudgmental; (2) health facilities are welcoming and appealing; (3) communication and outreach activities inform AYAs about services and encourage them to make use of services; and (4) community members are

supportive of the importance of providing health services to AYAs.³⁰ In conjunction with this multi-targeted approach, it is important to gain the perspectives of AYAs for an effective delivery of STI prevention and treatment services.

In a 2009 study, a team of researchers interviewed 40 women on their experiences and perceptions on the services they received at a clinic in San Francisco, California. They were asked what they value and prefer in these services and their perspective on what constitutes a good or bad service experience.³¹ Through the 40 interviews, eight themes emerged which included accessibility, information provision, attention to client comfort, personalization of care, service organization, provider's empathy and concern, technical quality of care, and respect for decision-making and autonomy.³¹

These women were seeking a convenient location for information regarding their sexual and reproductive health. Convenient hours and walk in services were important for them, as well as comprehensive information regarding relevant medications that impact their sexual and reproductive health. These women also valued personalized health care that placed an importance on their own opinions and feelings, instead of a dogmatic approach, only insisting on what the provider believed was right for the patient.³¹ Pharmacists can help relieve the demands put on inpatient clinics by offering comprehensive and convenient care for not only all patients, but specifically adolescent and young adult women seeking personalized information regarding their sexual and reproductive health.

The Need of Patient-Centered Pharmacy Services for AYAs

Management of STIs among female AYAs requires a multidisciplinary approach to care. The World Health Organization Department of Child and Adolescent Health has expressed that research, policy, and service delivery options for STI prevention and treatment is a healthcare priority.¹³ This demand for expanding healthcare services allows an opportunity for pharmacists to play a larger role in female AYAs STI prevention and treatment.¹³ Implementing pharmacy-based SRH services for female AYAs can significantly improve medication safety and their overall quality of care.⁹

Recently, The United States Department of Health and Human Service's Office on Women's Health launched the "Know the Facts" public health campaign to increase young female's awareness of STIs and reduce the number of those affected.³² Studies have shown that preventative STI services have been developed, but have not been successfully implemented in clinical practices such as accredited patient-centered medical homes.³¹ Pharmacists can fulfill the "Know the Facts" campaign to more actively engage female AYAs in STI

prevention and treatment education to reduce the number of those infected. There has been limited research conducted to identify innovative strategies that facilitates pharmacists–physician collaboration and engagement with female AYAs to increase STI awareness, prevention, and treatment.³³

Community Pharmacists May Offer a Solution

Community pharmacists may be ideally placed within the healthcare system to address the needs female AYAs face concerning STI education. The predominant belief of consumers is that pharmacists' most important contribution to healthcare is medication distribution.³⁴ Despite this perception, community pharmacists' scope of practice is quite comprehensive and unique. Community pharmacies are not only conveniently located in most grocery and department chains and on every other block in larger cities, but their hours are convenient for patient care as well. Many pharmacies can accommodate walk in hours and as long as the patient fills all their medications at that specific pharmacy, the pharmacist has access to the name, strength, and dose of the patient's medications, and the pharmacist is able to provide personalized and comprehensive care.³⁵ These characteristics of community pharmacists is especially valuable in the outpatient setting. Recently, pharmacy has taken steps to provide more patient-centered care, stepping away from a role as only a dispenser and engaging in opportunities to provide hands on care to patients.³⁵ Unlike inpatient care, the different areas of healthcare for patients in an outpatient setting are understood primarily to operate separately. Considering their abilities and accessibility, community pharmacists may be able to serve to increase the effectiveness of outpatient care as in inpatient care through a more thorough examination of a patient's medications. Ideally, community pharmacists could serve as liaisons between other providers by being patients' central point of contact.³⁶

From a pharmacy standpoint, female AYAs are rarely directly counseled or educated on their medications, usually due to absence at pickup.³⁷ However, research has shown that many AYAs, despite not receiving medication counseling, are taking an independent role in managing their own medications.³⁷ The aforementioned study had also found that these AYAs were comfortable receiving education about their medications from pharmacists, but specifically wanted to be educated on how their medications worked and affected their bodies.³⁷ Focus needs to be shifted toward the adolescent and young adult age group to make them aware of the implications their medications can have on their overall health, and specifically what medications they are taking that can have an effect on their sexual and reproductive health. Not only are pharmacists equipped to counsel in this way, but they can also be an accessible, convenient, and confidential resource for adolescent and young adult SRH education and information if given the right resources and training. Studies have shown that many individuals are comfortable with their pharmacists

taking on other roles besides dispensing. After a survey of 164 individuals, 79.9% expressed support of a pharmacist acting as their STI educator.³⁸ In addition, 93.9% were comfortable discussing their STI results with their pharmacist and 97.6% of individuals supported pharmacists working under a collaborative practice agreement with a physician.³⁸

Developing STI Interventions targeting Female AYAs in Community Pharmacies

Little to no research has been done examine successful approaches for facilitating adolescent and young adults' interactions with pharmacists to provide medication-related SRH education. Evidence based research is needed to change the current structure of the pharmacist's intervention with female AYAs sexual and reproductive health. We propose developing a patient-centered intervention using the perspectives collected throughout the interviews and surveys. The intervention can be shaped with what Female AYAs perceive are most important resources and information to have available in pharmacies. The utilization of mobile technology may also be useful and effective. In one study, a sample of HIV-positive women living in an urban environment were surveyed about their Internet usage. Of those who use the Internet, the vast majority own a mobile phone. Relatively few individuals were found to have computers (desktop or laptop).⁴³ It can be inferred that the potential audience for a mobile phone-based program is comparatively greater than one designed for a webpage.

Within the same study, a sample of females of both adolescent and adult ages revealed that only a third of those interviewed accessed the Internet daily, though a great majority used the Internet.⁴³ A program that can only be utilized through the Internet may show inconsistent usage, which may affect the scope of its educational outcomes. Furthermore, a separate survey of AYAs found that over 90% of respondents used the Internet in some capacity, though the frequency and modes of Internet access used were not reported.⁴⁴ Therefore, some Internet usage within the program may prove to be useful especially in consideration of the ease and speed of information dissemination it offers.

In addition to examining Internet usage among AYAs, the popularity of text messaging was investigated. A British survey's sample, comprised mostly of AYAs, showed that only a slight majority of respondents use text messages. Nonetheless, using text messaging to promote sexual and reproductive health proved to be universally effective in a variety of ways such as improved appointment attendance after reminders were sent, being the preferred method of obtaining test results and diagnoses, and easier communication between healthcare professionals with their patients.⁴⁵ Though a significant amount of respondents did not use text messaging, the concept of having an automatic alert appear on mobile phones seems to be an effective model.

Synthesizing the information collected across various sources, a possible model to connect community pharmacists to female adolescents and young adults' STI education may be to create a customizable mobile application with reminder capabilities. Additionally, the application should be engaging, entertaining, and relevant to attract and maintain users. In this program, the central educational content of the program would be stored in the application, available immediately upon download. Such information may include information about STI symptoms and prevention, general advice on practicing safe sex, using condoms correctly, sexual assault, and the dangers of drug-drug interactions with medications. For users that have Internet access, a section of the application would allow users to enter an email address into a form to send a message to community pharmacists regarding questions they may have. Additionally, there would be several options that users would be allowed to toggle on or off to create a more personalized experience. Such options would include the ability to schedule reminders for appointments and medications or to deliver reminders to email instead of a mobile notification.

Once the mobile application has been developed, a pilot project can be implemented in a community pharmacy. To determine the effectiveness of the program in increasing female adolescent STI knowledge, a combination of interview-based and quantitative measures would be analyzed. Before the initial trial of the application, participants would take a diagnostic quiz that tests their initial understanding about STIs; it should be comprehensive but not burdensome to take. Additionally, information contained in the quiz should be addressed by the native content in the application (i.e. information that does not require Internet access). During the trial period, the app should measure the number of times and dates it is accessed, as well as the usage of the different features provided. The purpose for this record is two-fold – to measure usage consistency of the program and to provide information for later analysis. Once the predetermined trial period ends, the participants would take a final evaluation that mirrors the diagnostic exam and a questionnaire that inquires about the user experience and program ease of use. This information can be used to improve the intervention so that it can be disseminated in other community pharmacies other than the study practice sites.

Conclusion

Currently, female adolescents and young adults are not receiving an adequate education on their sexual and reproductive health to prevent STI contraction. A possible intervention could be commenced by first researching the perspectives of pharmacists, AYAs, and parents and culminating into the development of an education mobile application. This program may be an effective means to allow community pharmacists to share their specialized knowledge with the female adolescent and young adult population.

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