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The importance of providing gender-affirming care in pharmacy practice

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ABSTRACT

Transgender and gender diverse (TGD) individuals face bias and discrimination across many health care settings including pharmacy. While there is evidence of successful interventions to increase provider awareness of the needs of TGD individuals in medicine, nursing, and social work, little work has been done by the pharmacy profession to recognize and meet the needs of this population. This commentary examines the gaps in pharmacy practice and pharmacy research with regards to the needs of TGD individuals and looks at allied health fields for potential solutions that can be adapted by the pharmacy profession.

We first examine the social pressures that TGD individuals face in multiple social contexts and describe how bias and discrimination spill over into their interactions with providers and health care systems. Solutions for improving pharmacy practice research's ability to identify TGD individuals and their needs follows as a measure that will lead to solutions for improving pharmacy practice. A discussion of TGD individuals' responses to actual and perceived discrimination by pharmacists is discussed next, and why their avoidance of pharmacy care can be problematic to their health. The remainder of the paper focuses on how pharmacy education can train future pharmacists to provide inclusive care to TGD individuals, and how interprofessional education and continuing education can enhance future and practicing pharmacists' ability to provide high quality care to TGD individuals.

Transgender and gender diverse (TGD) individuals often face discrimination across many social environments, including when they seek treatment from health care providers.[1] This can be for many reasons, ranging from purposeful discrimination by a provider, to lack of provider knowledge on how to best provide gender-affirming care.[2] Discrimination has led to disparities in the health and healthcare received by TGD individuals.[2–4] The depth of research on this issue is not evenly distributed through all health fields, and the dearth of research on the treatment of transgender and gender diverse individuals is apparent in pharmacy practice. As pharmacy services are an important component to the health care of TGD individuals, this gap in pharmacy practice is vitally important and must be addressed to achieve equal treatment of TGD individuals in pharmacy practice.

Terminology is important for understanding the different identities that are included in the TGD population. The distinction between the terms sex and gender is also necessary for understanding the difference between transgender and gender diverse. Sex refers to the biological characteristics that an individual has, depending on whether they were born as a biological male or biological female. Gender is rooted in societal norms and is how an individual identifies, whether it is as male, female, neither, or both.[2] For example, an individual who is male and identifies as a man is considered cisgender because his gender matches his sex. Transgender and gender diverse individuals may mistakenly be considered a single demographic of individuals; however, these are two distinct populations. Transgender describes an individual whose gender identity, and often expression, does not match the sex that they were assigned at birth. Gender diverse describes an individual whose gender expression differs from their expected expression based on their sex. Not all gender diverse individuals identify as transgender and similarly, not all transgender individuals are gender diverse.[5]

TGD individuals require pharmacy care as a component of their health care needs. TGD individuals report experiencing discrimination from pharmacists, whether intentional or unintentional, due to pharmacist bias or lack of experience with providing care to TGD individuals. In a survey done on 325 TGD individuals, it was found that most of the sample used pharmacy services, with 41.6% of individuals worrying about discrimination and 52.5% reporting pharmacists not being competent in providing gender-affirming care. The same researchers found that TGD individuals experienced being questioned about the legitimacy of their prescription, refused prescriptions, or were accused of insurance fraud by a pharmacist, because of the inconsistency of their appearance with the gender noted in their insurance files.[6] To avoid this experience with pharmacists, as well as when interacting with other health care professionals, TGD individuals may avoid care as a coping action and instead use emergency care services once their needs for care becomes too urgent to ignore.[7]

Abbreviations: TGD, transgender and gender diverse; SGBM, sex and gender based medicine.

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Mistreatment at the hands of medical professionals has negative impacts on the physical and mental health of TGD individuals. Results from the 2015 U.S. Transgender Survey (USTS) showed that one third of respondents experienced verbal harassment or were refused treatment due to their gender identity, resulting in potential mental and physical harm. The mistreatment faced by TGD individuals is not solely the fault of healthcare providers as TGD individuals face disparities and harassment from many sources, whether it is by their employers, at the hands of law enforcement, or at the hands of family members. The USTS reported 39% of its respondents suffered episodes of severe psychological distress in the month prior to taking the survey and 40% reported having attempted suicide in their lifetime, which is approximately nine times the rate of the total U.S. population.[8]

There are solutions for addressing inequalities in the health care of TGD individuals that are applicable pharmacy practice, including changes to health care policy, inclusion of proper training in school curricula, and improving research into the gaps that exist in understanding the health needs of TGD individuals.[7] Strategies used by other health fields for meeting the needs of TGD populations may be adaptable to pharmacy practice, however, pharmacy practice is currently behind other health fields in adapting these strategies. By taking actions to address the gaps in pharmacy care provided to TGD individuals, the care provided will be more inclusive as pharmacists are better prepared to meet the needs of this population.

Purpose

This paper aims to examine the gaps or problems that pharmacy practice and pharmacy practice research currently face when providing care to, or determining the health needs of, TGD individuals, as well as solutions for these gaps. Many of these solutions were studied for use in other health fields (e.g. public health, medicine, etc.); however, all of these solutions can be applied to pharmacy to ensure equitable care is provided to TGD individuals. The challenges facing the pharmacy profession with regards to providing care to TGD individuals, as well as their solutions, are presented by topic.

Understanding the social pressures on TGD individuals

TGD individuals face social pressures, including discrimination and bias, in many social contexts. These pressures can be reflected in the health care (including pharmacy care) that they receive, increasing the risk of negative health outcomes. The pressures faced by TGD individuals within their social lives and when accessing health care cannot be completely solved by pharmacy practice alone. However, as a branch of health care, pharmacy can play its role in improving TGD access to equitable care along with other health care sectors. If TGD individuals are going to achieve health equity in the United States (and ideally in other countries), there needs to be an effort that includes multiple and diverse partnerships among stakeholders, including those within health care systems, to end the stigma faced by TGD individuals.[9] Legal protection of the rights of TGD individuals may reduce the amount of discrimination they face in healthcare and other settings. Given that anti-TGD legislation in states such as Alabama and Texas are attempting to make access to gender-affirming care impossible for TGD individuals, legal protections for TGD individuals are needed.[10]

Discrimination in medicine in some ways reflects the bias and discrimination that TGD individuals face in other social contexts and ranges from working with providers who are inadequately trained in providing gender-affirming care, to being overly scrutinized by providers, denied care, or experiencing outright intolerance from providers.[11] This may prevent TGD individuals from accessing gender-affirming healthcare such as hormone therapy, top and bottom surgeries, puberty blockers, and mental health services, in addition to sexual health care and HIV prevention.[11–13] These forms of care are important for the mental and physical health of TGD individuals and in addition to discrimination from providers, TGD individuals cannot always access this care.[11]

TGD individuals who seek mental health care or gender-affirming care may be faced with barriers from their insurance company, as not all insurers cover care required to transition, even if their doctor has deemed it medically necessary. For TGD individuals, insurance or other cost-related barriers to care are key reasons why they cannot access the care they require.[11] Stigma from both non-medical and medical sources disrupts the mental health of many TGD individuals, resulting in feelings of isolation, depression, and suicidal ideation, which is one of the reasons why lack of access to adequate care should be solved.[12] Individuals may seek mental healthcare services, while others may be uncertain of where to find providers who specialize in providing mental health care that affirms their identity or addresses the specific needs of TGD individuals. Lastly, many TGD individuals are navigating health care systems where providers act under assumptions of cisnormativity (the assumption that all individuals are cisgender) and fail to understand the range of transgender, nonbinary, and genderqueer identities, forcing uncomfortable interactions for their patients. For many TGD individuals, having to teach their provider about their gender identity is a barrier to them receiving the care they need.[11]

It is important to put the accessibility of pharmacy services for TGD individuals in the context of other social pressures and stigmas faced by TGD individuals that may inhibit them from accessing this care. The actions or inactions of other stakeholders, such as policymakers, who have the power to help put an end to the social pressures on TGD individuals must also be recognized as contributing to the current attitudes towards TGD individuals. Making pharmacy care more sensitive to the needs of TGD individuals is not restricted to only the actions of pharmacists, but also depends on these barriers being broken down by individuals and organizations with the most power to do so. For example, Winter et al. describe how laws, policies, and protections do not always recognize or exist to protect TGD individuals' identities, rights, and privacy. This can lead to identifying documents having the individual's sex at birth indicated, even if the individual does not identify with the coordinating gender, thus betraying the individual's privacy.[13] Issues such as those described by Lewis et al., where TGD individuals' sex noted on their documents does not match their outward appearance, may lead to questions from or outright discrimination by pharmacists.[6] It needs to be recognized by pharmacists and other health care providers that there are multiple social pressures and stigmas that TGD individuals face, making their access to judgement-free health care even more restricted. While pharmacists cannot fix a societal issue on their own, they can be aware of the pressures faced by TGD individuals and do their part to act with compassion and not contribute to these difficult circumstances.

Growing pharmacy practice research

One of the hurdles that pharmacy, as well as other health professions, face when serving TGD populations is a lack of high-quality research on a diverse set of health topics that are concerns for TGD individuals. While this issue is more tangential and focuses on the larger picture of inequities faced by TGD populations globally, these inequities prevent all fields of health care from providing quality care to all individuals, regardless of their identity. Reisner et al. looked at multiple studies, spanning several countries, conducted on TGD populations. While the studies were found to cover several important topics and describe the social stressors faced by TGD individuals, the authors noted that none of the studies were successful at making causal links between TGD health concerns and the unique social stressors TGD individuals face.[9]

It is important for research in pharmacy and all other health fields to focus on social inequities that impact the health of TGD populations. Future research must not only identify direct solutions to health issues facing TGD individuals but must also focus on identifying which underlying social pressures on TGD populations are potentially harming their health. Reisner et al. suggest that future research focuses on the World Health Organization's social determinants of health, so that there is a better understanding of the health inequalities faced by the TGD populations facing social

inequalities.[9] Ideally, when these social and health inequalities are more clearly specified through research, health fields that have the best ability to reduce those inequalities will do so. It is unlikely that solely addressing a specific health issue or addressing a social pressure on its own is enough to fix a health issue that is collectively faced by TGD populations. Instead, further research in public health, pharmacy, or in other health fields will have to consider how to reduce the inequalities in access to resources, contextualize the factors putting TGD individuals at risk for certain health issues, and find interventions that are less reliant on the resources of the individuals who are meant to benefit.[14]

While a focus on the social determinants of health can be adapted to pharmacy practice research, this is a long-term solution, and it will take time for this to become a main research focus. An easy to achieve, short-term solution is to restructure research instruments such as surveys to better identify TGD individuals in the population. Winter et al. describe a two-step method for determining the actual size of TGD populations, by having individuals identify their sex assigned at birth and then describing their current gender identity.[13] This method more accurately allows for respondents to inform researcher on how they identify, instead of researchers only focusing on the most easily identifiable group of transgender individuals, those who seek gender-affirming care at specialty clinics.[13] Reisner et al. also suggest that researchers adapt this method to geographical and cultural understandings of sex and gender for the sample population, so that they can more accurately identify as transgender or another gender identity.[9] Adapting survey writing to be more inclusive of TGD individuals will hopefully result in a clearer understanding of the health statuses, concerns, and needs of various TGD populations.

Determining the full scope of how pharmacy practice research can be used to benefit the health outcomes of TGD individuals will be necessary to ensure that the correct interventions are implemented by pharmacists. One way to do this is by conducting a needs assessment, which is a systematic way of determining and addressing the unmet needs of a patient population, in this case, TGD individuals. Many health systems already incorporate needs assessments in the form of Community Health Assessments (CHA), for the purposes of greater community engagement and developing evidence-based interventions. Additional content that assesses the local TGD population's health needs could easily be added to a health system's current CHA.[15] It is also necessary for useful interventions to be sustainable if they are to benefit the population overall.[16] Population context is a consideration when determining the needs of a specific TGD patient population as well, as not all TGD populations, especially at a global level, have the same needs, face the same challenges, or have the same access to resources.[9,16]

Universities and professional organizations are both important for furthering pharmacy practice and can work together to conduct research that improves the inclusion of TGD populations in pharmacy practice, as well as ensure that research is relevant and targeted to specific TGD populations. University research often responds to the needs of both local and national populations, and has contributed to expanding pharmacy practice, as well as informing practitioners on how to better serve the immediate needs of patient populations. Professional organizations help pharmacy schools and universities better improve pharmacy practice through research by informing them on the required skillset for graduates as pharmacists' roles evolve.[16]

Discrimination in pharmacy settings

TGD individuals may potentially avoid pharmacy care as a coping mechanism to avoid providers who are unable to provide proper care, but also to avoid either direct or accidental discrimination by pharmacists. Though researchers could not prove causality, they found a correlation between perceived discrimination, having to teach providers about TGD individuals, and TGD individuals avoiding health care settings.[6] When TGD individuals are faced with the delays in diagnosis or care that are caused by poor quality health systems, whether it is their choice to delay, or the correct care is not given due to lack of knowledge on the part of the provider, positive health outcomes and timely care are much less likely to occur.[17]

This delay in care is also evident in pharmacy settings, such that TGD individuals will avoid interacting with pharmacy staff, and therefore delay services or care that could be provided by a pharmacist. Lewis et al. designed a survey study to better understand the coping mechanisms of TGD individuals who had experienced perceived discrimination in a pharmacy setting. They found that some TGD individuals chose to avoid pharmacies as a coping mechanism and respondents noted that they preferred using natural products in place of prescriptions, got their prescriptions through family or friends, or would obtain prescription medications from online pharmacies that did not require a prescription.[6] Respondents also indicated that they sought out hormone therapy from informal sources such as street sources or the internet. In addition to concerns about discrimination it should also be noted that part of the reason for the TGD individuals not seeking care was the perception that pharmacists were not trained to provide gender-sensitive care.[6] Lewis et al. conclude that if pharmacists were better trained to provide gender-affirming care, they could act as "portals to evidence-based healthcare," and prevent TGD individuals from being disenfranchised from health care and needing to rely on alternative, less safe, methods of care.[6] This leads to the next topic that needs to be addressed by pharmacy practice if it is to better serve TGD individuals, namely, educational reform.

Pharmacy education

Biological sex differences can influence the pharmacokinetics of medications. This makes for more challenging administration of drug therapies to TGD individuals whose sex may not match their gender presentation, or those who are undergoing biological changes due to hormone therapy for transition. For example, those assigned female at birth usually have a greater percentage of body fat than those assigned male at birth, which could increase the distribution volume of lipophilic drugs and cause faster drug clearance for those assigned female compared to those assigned male. Bioavailability of certain drugs, particularly for CYP3A substrates, may be greater in those assigned female than in those assigned male. Those assigned male have faster renal processes such as glomerular filtration, tubular secretion, and tubular reabsorption compared to those assigned female, which may also affect drug metabolism.[18] Public health concerns also differ for different genders, such as a nation-wide increase in opioid overdoses in women who are taking them to relieve injury related pain.[19] These are just some of the considerations that pharmacists should make when assessing the appropriateness of medications and dosages for a patient. These considerations become more complicated if the patient is a TGD individual who is undergoing hormone therapy, as this will have an impact on their metabolic processes and lean body mass. While these are important points for a pharmacist to consider when assessing drug appropriateness for a patient, pharmacists are not always formally trained in how to provide pharmacy care that considers the biological differences and different needs of male, female, or TGD patients. This is due in part to the ACPE not having a set standard for the inclusion of sex and gender differences in didactic or experiential Doctor of Pharmacy (PharmD) curricula and leaving the teaching of this material up to instructor discretion.[20]

Based on a survey of faculty from five midwestern schools of pharmacy conducted by Caruso et al., responding faculty spent no more than twenty minutes discussing physiological differences between sexes and genders over the duration of the course that they teach.[20] Often this discussion covered clinical presentation and treatment options as part of a discussion on a specific topic or illness, not as a stand-alone subject. When comparing the results of their survey to the results of other surveys conducted in medical schools within the United States and Canada, the inclusion of sex and gender differences was found to be less in PharmD curricula compared to medical school curricula. From the survey, some of the reasons why sex and gender based medicine (SGBM) was not included in PharmD curricula was due to time constraints and faculty not feeling as though the topic was relevant to the material they were teaching.[20] Another survey,

referenced by Heraty et al. found that pharmacy school teaching faculty do not see it as a topic that is relevant to their field (66.8% of 337 respondents indicating that they do not teach SGBM).[21] Additionally, the survey indicated that most faculty respondents would be comfortable teaching SGBM in their curriculum, but the challenge lies in helping them find the time to teach additional content, as well as see the value of SGBM within pharmacy. Teaching faculty need to be made aware of and given sufficient time to cover these topics, as pharmacists require in-depth education on the different needs of individuals of different sexes and genders to provide effective SGBM-grounded care and improve health outcomes for TGD individuals.

Once teaching faculty and staff are committed to adding SGBM as a component to their pharmacy school's curriculum, they need to decide on a model for teaching the material to students. One way to incorporate SGBM into curriculum is to reuse teaching models that have previously been used to incorporate new topics into PharmD curricula, such as the Taba model. One of the benefits of implementing the Taba model is that it requires collaboration between the leaders in the related field and the teachers who are going to educate the students on a subject, to collaboratively develop curricula. The resulting curricula provides students with well-rounded, experiential learning opportunities that reflect the knowledge that a student will use as a pharmacist.[22] The case study described by Portillo et al. used the Taba model to design a rural health course to build PharmD students' knowledge about rural pharmacy practice; however, a similar method could be used to develop an SGBM course with a focus on TGD individuals' health through the collaboration of pharmacy teaching faculty and staff and current experts in SGBM.

Another option for teachers in pharmacy education is to borrow ideas from medical schools that have effectively incorporated SGBM into their existing curricula. This route is possibly easier than designing a case study to determine if a teaching model is effective at educating students on SGBM. As some of the methods for incorporating SGBM into medical school curricula are applicable to pharmacy school curricula, this could be less time-consuming work for time-strapped teachers. For example, some medical schools have acquired additional library resources focusing on sex and gender, online interactive modules, and integrated SGBM into clinical simulation teaching.[23] A more specific example is from a medical school that created an SGBM elective for medical students. Though limited by a small sample size, students who took the elective course felt more confident about identifying sex and gender differences in different areas of medicine. A trend in increased perceived importance, familiarity, and knowledge of SGBM among students who took the course was also noted.[24] Such studies could be conducted in pharmacy schools to see if similar improvements occur in students' understanding of SGBM, as well as adding additional educational resources for students.

In addition to teaching students about the health differences between sexes and genders, training students to recognize and process their own implicit biases is needed. Personal reflection is required by future pharmacists to understand how their personal biases against TGD individuals may hamper the quality of care they provide as practicing pharmacists. PharmD courses with this goal are shown to improve students' ability to discuss sensitive topics such as racial bias and could be translated to discussing the topic of gender bias as well.[25] Courses that work on overcoming bias and are less effective taught in a lecture format and are best carried out in discussion and project-based formats.[25] Providing tools for PharmD students to explore their own potential biases against TGD individuals as well as learning more about the experiences of individuals of different gender-identities through small group discussion will potentially make them more thoughtful and careful providers to their future patients.

Providing safe and relevant pharmacy care

Community pharmacists can be used as an accessible resource within the health care field to ensure TGD individuals are aware of the care they need, in addition to receiving medications and information to support their health if they choose to undergo gender transition. Pharmacists are some of the most accessible health care professionals due to pharmacy visits rarely requiring appointments or extra fees for patients, as well as pharmacies having a wider range of operating hours compared to doctors' offices.[26] As such, pharmacists are well placed to assist with the unique medical needs of TGD individuals. For example, transgender men may require pap smears or help preventing unwanted pregnancy, while transgender women may still require prostate exams. While these are not tests that a pharmacist performs, the pharmacist can still play a role in keeping patients up to date and use gender inclusive language when talking with patients about these preventative measures that can be taken to preserve their health. More inclusive electronic medical records will allow pharmacists to keep up with the preventative health needs of TGD patients, as well as know when the patient they are working with identifies as TGD and cue them to use gender inclusive terms and the preferred name of the patient when interacting with them.[27]

Pharmacists who can provide gender-affirming care to TGD individuals are also important for providing accurate counseling for patients who are undergoing hormone therapy and help prevent adverse drug reactions that can occur with the process.[28] Pharmacists are key for helping TGD patients understand the results they can realistically expect from taking the medications and what some side effects of hormone therapy are. Pharmacists have the potential to be TGD patient advocates, especially in the realm of pharmacy care, when it comes to the patient's insurance company or within a larger healthcare system.[28]

As a medication expert, the pharmacist is especially well positioned to help TGD patients navigate taking medications that are not related to hormone therapy but that require altered dosing due to concurrent hormone therapy. This extends beyond the need of TGD individuals to be provided with gender-affirming care, as not all of their health concerns are related to their gender identity. For example, Webb et al. conducted a literature review and found evidence that hormone therapy affects both the lean body mass and creatinine clearance of individuals who are undergoing gender transition. These physiological changes can change the efficacy of different drugs from individual to individual. They note that there is no published guideline for how to evaluate the effects of hormone therapy on creatinine clearance and ideal body weight, but that these metrics are still effective for determining dosages, especially for TGD individuals whose physiological makeup may be rapidly changing. They also conclude that if the TGD individual has been undergoing hormone therapy for 6 months or more, it is beneficial to calculate creatinine clearance and ideal body weight (according to their gender identity), to dose medications correctly.[29]

Updated and inclusive electronic health records are again important for the pharmacist to have access to, so that they are aware that they are working with a transgender patient undergoing hormone therapy, as well as know the patient's latest creatinine clearance and lean body mass values. While this method of deciding safe medication dosages for TGD individuals undergoing hormone therapy is not yet generalized, these are still useful metrics that can be determined for individual patients, as well as be a pharmacist-driven effort for providing inclusive care.[29]

The role of IPE in training future pharmacists

Many pharmacy students take part in interprofessional education (IPE) experiences during their time in school. There are opportunities during IPE experiences to teach pharmacy students about caring for TGD individuals within an interprofessional group. McCave et al. describe an interprofessional education activity where students worked to provide care for a simulated transgender patient who was admitted to the emergency department after suffering a workplace assault. The authors note that the literature on IPE activities that focus on gender-affirming care is scarce, making this activity useful for understanding if students benefit educationally by having IPE experiences with a gender-affirming care focus. The students taking part in this IPE activity were from medicine, nursing, social work, occupational therapy, physical therapy, and physician assistant programs.[30] Pharmacy students were not included in this study, making it an example of how students from PharmD programs are not always included in, or do

not have access to, the limited number of IPE activities that focus on providing gender-affirming care.

Surveys that were taken by the students after completing the IPE activity referenced in McCave et al. found that 93% of the students found the experience of working with a simulated transgender patient "useful" or "very useful." Students also replied that the activity made them feel more prepared to meet the needs of transgender patients in a real medical situation and that they would be able to communicate to other professionals to help facilitate interprofessional care of a transgender patient.[30] Activities like these allow students to work through their uncertainties when working with TGD patients without risking harm to actual patients, which is part of the value of these IPE activities. An activity such as this could easily translate to including pharmacy students as more schools consider developing IPE activities that give students experience with simulated TGD individuals.

Accredited PharmD programs must provide IPE experiences to their students that fit the requirements of Standard 11 of the ACPE's standards for pharmacy education. These requirements emphasize that PharmD candidates be competent in working in a team of health care professionals to provide patient-centered care, though they do not specify what type of simulated or non-simulated patient care the students must gain competence in providing.[31] In other words, there are no specifications that students must be capable of providing care to certain types of individuals or populations of patients, such as TGD individuals and populations. This provides an opportunity to make Standard 11 more specific, so that it requires students to acquire the skill set needed to provide patient-centered care in an interprofessional group, with a focus on TGD patients' needs. This is one important opportunity that the ACPE can take to help ensure that PharmD students are knowledgeable and prepared for when they are tasked with the care of these patients as practicing pharmacists.

The role of continuing education for training practicing pharmacists

There is evidence that continuing education (CE) is an overall useful tool for helping health care professionals improve their knowledge and practice. Robertson et al., conducted a review and found several findings as to what makes CE effective in improving provider skills, knowledge, attitude, behavior, as well as patient health outcomes. These factors included focusing on which teaching strategies for CE courses are effective, ensuring CE is interactive, relevant, ongoing, and based on needs-assessments, and lastly, that CE must recognize the larger organizational context that professionals practice in, instead of only focusing on the professional and patient interaction.[32] An update to this article was published by Cervero et al., using more recent reviews of CE, which drew similar conclusions.[33] Both reviews concluded that CE must include social, political, and organizational factors that impact provider performance, which is very relevant to increasing the quality of care received by TGD individuals.

The studies referenced by both syntheses focused on physicians and medical practice, however, as pharmacists are required to earn CE credits to maintain licensure, the information can apply to their CE courses. CE courses for pharmacists that focus on SGBM can use these tactics for improving provider knowledge which may improve the quality of pharmacy care that TGD individuals receive.

As the needs of TGD patients become more recognized by health care fields, there also needs to be resources that focus on training pharmacists who are already practicing. There is limited research that observes if pharmacists' knowledge of caring for TGD individuals improves after taking CE courses, however, one small study from Puerto Rico provides some evidence that it can. In this study, a sample of 54 pharmacists participated in a three-hour CE course that included topics on gender-affirming hormone therapy and the health needs of transgender individuals. Compared to pretest results (taken before the course), pharmacists scored significantly better on the post-test, indicating a better understanding of the topics presented in the course.[34] What is important to consider with this example, is that it is only one study done with a small group of pharmacists, and so it cannot be assumed that these results are generalizable to all pharmacists in all geographic areas. Similar experiments could be conducted across different geographical regions with different populations of pharmacists to see if the same results occur.

Conclusion

Several health fields, especially epidemiology, social work, and medicine, have begun to better understand how to provide more effective and safe care to TGD individuals. These efforts include improved population research techniques, incorporation of SGBM topics in medical school courses, and testing the use of IPE and CE activities to improve student and provider understanding of how to provide gender-affirming care. Pharmacy practice has not made as much progress as these other allied health fields; however, pharmacy can now adapt similar models to practice and research without having to start from scratch finding novel solutions. While evidence will be needed to determine if these adapted solutions will work for enabling pharmacists to provide better gender-affirming care, modifications can be made to these solutions to better fit them to the needs of pharmacy practice and research. Lastly, the implementation of successful solutions, such as those previously described, may lead to inspiration for novel solutions in providing gender-affirming care, where no other solution has proven adaptable to pharmacy practice's needs.

Efforts must be taken to improve pharmacy practice research methods, incorporate SGBM into PharmD curriculum, reduce intentional and unintentional discrimination by pharmacists, ensure TGD patients are up to date on preventative health measures, and that they are optimally taking their medications for where they are at in their medical transition. By pharmacy practice becoming comfortable providing gender-affirming care, the practice may also, inadvertently or purposely, increase the scope of its care, expanding the ways in which pharmacists can help all individuals lead healthier lives. To meet its goals of diversity, equity, and inclusion for all individuals, pharmacy practice must strive to provide informed, safe, and relevant care to TGD individuals.

Declaration of Competing Interest

The authors declare that they have no competing interests.

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