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Cross-Sectional Survey of Perceived Barriers Among Community Pharmacists Who Do Not Immunize, in Wayne County, Michigan

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ORIGINAL RESEARCH

Cross-Sectional Survey of Perceived Barriers Among Community Pharmacists Who Do Not Immunize, in Wayne County, Michigan

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ABSTRACT

Introduction: The goal of the study was to identify perceived barriers to implementation of vaccination services encountered by independent and small-chain community pharmacies in an urban setting.

Methods: Pharmacists in independent and small-chain pharmacies located in 29 Michigan ZIP codes were visited and asked to complete a 5- to 10-min semi-structured interview.

Results: A total of 93 independent and 12 small-chain pharmacies participated ($n = 105$; 61%). The pharmacies filled an average of 700 prescriptions each week with 1.1 pharmacist full-time equivalents and 57 h of technician time. The most common services that participating pharmacies provided were dispensing outpatient medication (99%), medication therapy management (MTM, 65.7%), disease management or coaching (54.3%), point-of-care testing (34.3%), and dispensing medications to inpatient facilities (16.2%). Only seven pharmacies (6.7%) administered vaccinations. When pharmacists were asked to identify what it would take to start to administer vaccines, the most common responses were increased demand from patients (37.1%), adequate time (19%), appropriate space (17.1%), appropriate amount of staff (14.3%), change in attitudes or beliefs of the owner or pharmacists at that pharmacy (13.3%), increased profit related to vaccines (11.4%), and increased awareness among patients about the importance of vaccines (11.4%). The majority of pharmacies (65.3%) reported that only one factor would need to change to start to administer vaccines.

Conclusion: Independent and small-chain community pharmacies in an urban, primarily low-income area identified several barriers that have prevented implementation of vaccination services. However, the majority of pharmacies reported that only one factor would need to

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change in order to begin to administer vaccines. Interventional efforts necessary to address commonly cited barriers may include providing education to pharmacists about the need for community pharmacy-based immunization programs in addition to services provided by physician offices, as well as the importance of proactively providing immunization-related recommendations to patients.

Keywords: Community pharmacy; Immunization; Primary prevention; Urban

INTRODUCTION

Immunization rates among adults continue to fall below Healthy People 2020 goals [1]. The uptake of preventive medical services, including vaccines, has been known to vary widely across the United States. Disparities in the uptake can be on the basis of race and ethnicity, insurance status, access to health care services, and geography [2]. Potential reasons for disparities in uptake of vaccine services include differences in attitudes and beliefs, previous experience with the health care system, whether the vaccine is directly recommended by a health care provider, and differences in vaccine-seeking behavior [3–6]. Strategies to increase immunization rates include increasing access to vaccination services, increasing community demand for vaccinations, and provider- or system-based interventions [7].

Pharmacists in all 50 states have the authority to administer one or more types of vaccines as a result of support from federal agency stakeholders including the Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC) [8]. Requirements for pharmacists to provide immunization services include: (1) completing a recognized training program approved by the Accreditation Council for Pharmacy Education (ACPE); (2) obtaining legal authority, such as via state law, collaborative practice agreement, or prescription; and (3) maintaining basic or advanced cardiac life-support certification [9]. Over 200,000 pharmacists are trained to administer vaccines [10]. The majority of states and territories ($n = 27$) do not have any minimum age restrictions, although 13 of those states either require prescriptions for pediatric patients or limit vaccines to certain age groups [11]. In the state of Michigan, all immunizations administered to individuals less than 20 years of age must be uploaded to the Michigan Care Improvement Registry (MCIR), and the advent of electronic health information has resulted in many community pharmacies providing administration information for all of their patients [12, 13].

The American Pharmacists Association introduced the term "immunization neighborhood", which refers to collaboration, coordination, and communication among immunization-focused stakeholders, and in 2013, the CDC promoted this concept as a means to increase immunization rates including through engagement with community pharmacists [14]. While the impact of this concept specifically on rates of immunizations is not clear, ~20.1% of adults who were vaccinated against influenza during the 2011–2012 influenza season received their immunization at a community pharmacy [15]. It has been reported that pharmacists' ability to vaccinate offers a model that improves access in many areas including medically underserved communities [16]. Benefits of pharmacist-delivered vaccine services include the convenience of hours of operation (i.e.

evening and weekend hours), walk-in appointments, and ease of billing.

Even though pharmacists are able to administer a wide variety of immunizations and pharmacies are widely available in the United States, in some cities there is not an even distribution of pharmacy-based vaccination services. In a recent study, 503 community pharmacies across 63 ZIP codes in Wayne County, Michigan, were surveyed in order to determine the availability of selected pharmacy services and out-of-pocket medication costs [17]. It was identified that >95% of chain pharmacies (>5 pharmacies within the same company) offered vaccination services. However, only 11% of independent pharmacies (1 store) and 22% of small-chain pharmacies (2–5 stores) provided this service. In over 40% of ZIP codes, fewer than 40% of pharmacies offered vaccines. Furthermore, vaccination services were less likely to be found in lower-income areas as well as areas with a higher proportion of minority residents. It is possible that a lack of community-pharmacy-based vaccination services could further exacerbate disparities related to immunization rates.

The objective of this study was to identify perceived barriers that prevent implementation of vaccination services in urban independent and small-chain community pharmacies. As community pharmacies have generally done more work implementing immunization services for adult patients, and it may be more feasible for pharmacies to offer immunizations to this patient population than pediatric patients, the decision was made to focus only on adults for this survey [18]. This information will be used to develop community-level interventions designed to overcome modifiable barriers in order to improve access to pharmacist-delivered vaccination services, particularly in communities with a low vaccination rate among community residents or limited access to pharmacy-based delivery of vaccinations.

METHODS

In June 2015, a list of all licensed pharmacies in the state of Michigan was obtained from the Michigan Department of Licensing and Regulatory Affairs. The study Principle Investigator reviewed the names of all pharmacies across 29 ZIP codes with low rates of pharmacies providing vaccinations and removed those that were part of a national large corporate chain. ZIP codes that were included had either fewer than 40% of pharmacies providing immunization services during a previous survey ($n = 26$) or there were community linkages between a study investigator and community organization that might provide an opportunity for future collaborative work ($n = 3$). A total of 205 pharmacies were identified as meeting the inclusion criteria for the study. Pharmacies with more than five locations were excluded from the study as they were classified as being a chain-type pharmacy.

An introductory letter was mailed to each eligible pharmacy explaining the purpose of the study and asking for their participation. After completing training, a student pharmacist or research assistant (typically working in pairs) visited each pharmacy and ask that one pharmacist participate in the 5- to 10-min face-to-face survey. Surveys were conducted between July and September 2015. Pharmacists were eligible to participate if they were aged 18 years or older and they were currently employed at the pharmacy selected for study participation. If a pharmacist expressed interest in completing the survey but was unable to at

that time, the student pharmacist or research assistant revisited the pharmacy at another time or a copy of the survey was provided to the pharmacist with a stamped envelope. If a pharmacist was not interested in participating, the pharmacy was excluded from the study. This study was deemed not regulated by the IRB as it focused on organizational research. All pharmacists who began the survey received a certificate valid for three credit hours of online continuing education.

Information that was collected by the survey related to the pharmacy included the type of pharmacy, days and hours of operation per week, the type of services provided, the number of prescriptions dispensed per week, the number of pharmacists employed, and the number of hours of pharmacist and technician time allotted per week. The pharmacist was asked whether the pharmacy currently provided vaccination services. If the pharmacy did not provide vaccination services, the interviewer asked if the pharmacy ever provided vaccinations as well as reasons that the pharmacy does not currently provide vaccinations. Participants were asked to select barriers to implementing vaccination services, as well as to identify what would need to change in order for the pharmacy to implement vaccination services. The survey list consisted of 11 barriers derived after reviewing the medical literature, using keywords such as "community pharmacist," "community pharmacy," "immunization," "vaccination," and "barrier" as well as input from the study team. The respondents were given an "other" option to provide barriers not included in the predetermined list. The majority of questions with a numeric response (e.g., hours of technician help) were open-ended, whereas questions that the investigators determined may have a finite list of responses (e.g., job title) included a list of options that typically included "other" or "do not know" as a response.

If vaccines were provided, pharmacists were asked about the pharmacy's collaborative practice agreements, administration of five common adult vaccines (hepatitis B; influenza; pneumococcal; tetanus, diphtheria, and pertussis; and zoster), advertising, and reasons for administering vaccines. Descriptive statistics and thematic analysis was used to analyze the data.

Compliance with Ethics Guidelines

This article does not contain any new studies with human or animal subjects performed by any of the authors.

RESULTS

A total of 205 pharmacies were visited, of which 29 were closed either permanently or during stated business hours, 4 were identified as being part of a chain, and 67 declined participation. A total of 93 independent pharmacies identified as being a single location, 12 small chain pharmacies identified as having two to five locations participated ($n = 105$, 61%), and 70% of the pharmacists completing the survey were either the pharmacy owner or pharmacy manager. The participating pharmacies filled an average of 700 prescriptions each week with 1.1 pharmacist full-time equivalents and 57 h of technician help. Only 11 pharmacies incorporated pharmacy interns. The most common services provided were dispensing outpatient medications (99%), medication therapy management (MTM) (65.7%), disease management or coaching (54.3%), point-of-care testing (34.3%), and dispensing medications to inpatient facilities (16.2%) (Table 1). In

Table 1 Services by pharmacy type

Pharmacy type/service	Number of independent pharmacies offering service, $n = 93$ (%)	Number of small chain pharmacies offering service, $n = 12$ (%)	Total number of pharmacies offering service, $n = 105$ (%)
Dispense outpatient medications	92 (98.9)	12 (100)	104 (99.0)
Provide medication therapy management	59 (63.4)	10 (83.3)	69 (65.7)
Provide disease management or coaching	48 (51.6)	9 (75)	57 (54.3)
Provide point of care testing	29 (31.2)	7 (58.3)	36 (34.3)
Dispense medications to inpatient facility	16 (17.2)	1 (8.3)	17 (16.2)
Administer immunizations	4 (4.3)	3 (25)	7 (6.7)
Administer travel immunization	2 (2.2)	0 (0)	2 (1.9)
Provide pharmacogenomics testing	1 (1.1)	0 (0)	1 (1)

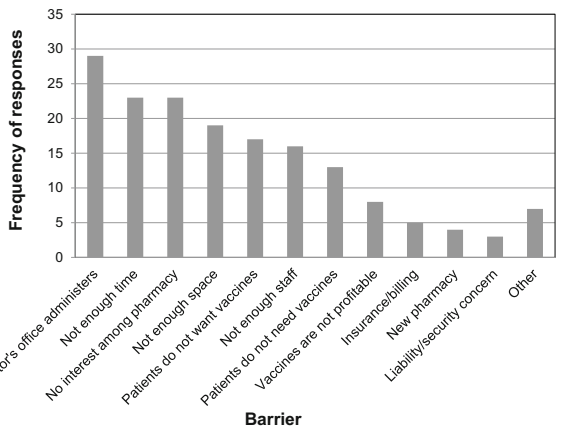

Fig. 1 Barriers to implementation of vaccination services. *Other* included being not equipped (2), lack of demand (2), difficulty receiving CPR certification (1), patients' not being able to afford vaccines (1) difficulty maintaining cold chain (1)

comparison, only 7 pharmacies (6.7%) administered vaccinations.

Pharmacists were asked to identify barriers to administering vaccines from a survey list and to describe any additional barriers not included in the predefined list (Fig. 1). The most common barriers were doctors' offices administering vaccines (29.6%), not having enough time (23.5%), there being no interest among the pharmacy staff (23.5%), not having enough space (19.4%), patients not wanting vaccines (17.3%), not enough staff (16.3%), and patients not needing vaccines (13.3%).

Pharmacists were then asked to identify what it would take to start administering vaccines. Pharmacists could select as many options as necessary from a pre-defined list and provide additional considerations. The most common responses were increased demand from patients (37.1%), adequate time (19%), appropriate space (17.1%), appropriate amount of staff (14.3%), change in attitudes or beliefs of owner or pharmacists at that pharmacy (13.3%), increased profit related to vaccines (11.4%), and increased awareness among patients about the importance of vaccines (11.4%). Approximately 15% of pharmacists provided a response related to doctors' offices giving vaccines; however, they did not indicate whether the physicians' offices were providing immunizations and whether as a result they felt that it was not necessary for the pharmacy to do so. Less common responses included needing easy access to a Cardio-Pulmonary Resuscitation (CPR) certification course (3.8%), supplies

necessary to maintain the cold chain (3.8%), increased pharmacist education about vaccines (1.9%), legal reasons (1%), and help with billing insurance (1%). The majority of pharmacies (65.3%) reported that only one factor would need to change to start to administer vaccines and 77.6% of pharmacies reported two or fewer factors (range 0–11). There was no overarching theme about what the most important factor was, as pharmacies reported a wide range of key barriers.

Pharmacists working at pharmacies that administered vaccines ($n = 7$) reported that their collaborative practice agreements allow administration of herpes zoster vaccine (85.7%), influenza vaccine (71.4%), pneumococcal 13 or 23 vaccine (71.4%), hepatitis B vaccine (42.9%), and tetanus/diphtheria or tetanus/diphtheria/pertussis vaccine (42.9%). The median number of types of vaccines authorized by the collaborative practice agreement was 3 (range: 1–5). Pharmacies carried an average of one type of vaccine (range: 0–2), and the most common types included influenza (57.1%), pneumococcal (28.6%), and herpes zoster (28.6%). Pharmacists reported administering an average of one type of vaccine (range: 0–2) over the past year, including influenza (57.1%), pneumococcal (28.6%), and herpes zoster (14.3%). The most common reasons for administering vaccines were that it promotes public health (57.1%) and that it advances the role of the pharmacist (42.9%). Less common responses included because it is an underserved area, convenience for patients, and there is a demand for vaccines by patients.

DISCUSSION

Among the independent and small chain pharmacies that were studied, few provided immunization services. Perceived barriers that were internal to the pharmacy included lack of staff, space, and interest among pharmacy staff, while perceived external barriers included doctors' offices administering vaccines and patients not wanting or needing vaccines. Most pharmacies identified that only one factor would need to change in order to begin to administer vaccines. There are opportunities to address some of the factors in order to increase the likelihood that these pharmacies will provide vaccination services.

It is important to note that, while pharmacists are generally considered the most accessible healthcare professional, the accessibility of pharmacy services is limited in some underserved communities [17, 19, 20]. For example, not all underserved communities have access to national drugstore retailers with established pharmacy-based immunization programs. During the 2009–2010 influenza season, it was reported that Walgreens immunized 1.7 million individuals in pharmacies located in nationally recognized Medically Underserved Areas (MUAs) [16]. Although this was a substantial increase in the delivery of pharmacy-based immunization services, populations that reside in MUAs without large-chain pharmacies rely on independent and small-chain community pharmacies for pharmacy services. In Wayne County, Michigan, there are 20 designated medically underserved areas and populations [21]. Furthermore, in this study, an average of 71.4% (range 33.3–100%) of pharmacies per ZIP code were classified as independent or small-chain pharmacies and only 7% of pharmacies participating in the study offered immunization services.

Of the 93% of pharmacies studied that do not provide immunization services, the most commonly cited barrier was that doctors' offices administer vaccinations. In Michigan, the

Health Resources and Services Administration (HRSA) Data Warehouse reported Wayne County to have the most severe shortage of primary healthcare professionals in the state [22]. Furthermore, live-tracking of influenza vaccines, including from pharmacy claims data, indicate that Medicare beneficiaries in Wayne County have low utilization (less than 45%) of influenza vaccines compared to fringe counties (great than 50%) [23]. Pharmacists in this area may not be aware that there is a shortage of primary healthcare professionals who could provide immunization services, as well as the low uptake of immunizations. Nationally, other communities are experiencing physician shortages and are looking to physician extenders such as nurse practitioners, physician assistants, and pharmacists to aid the situation [24]. Emphasis on preventative healthcare in the Affordable Care Act necessitates an expanded healthcare workforce to deliver these services. Further implementation of pharmacy-based immunization services in this community can open access, including for those that traditionally did not have insurance coverage for these types of services in the past.

In this study, it was surprising to find that 65.7% and 54.3% of pharmacies offer MTM and disease state management programs, respectively, yet immunization delivery programs were uncommon. An opportunity exists for pharmacists to expand their MTM and disease state management services to include vaccine assessment, assessment of knowledge about vaccinations, and education to fill in knowledge deficits and eradicate misperceptions about vaccinations. Trust and advice of physicians has been reported as a major factor that influence vaccination decisions among ethnic minority patients [25]. Trusted pharmacists can use personal one-on-one encounters to educate patrons about vaccination services [26]. Future studies should assess how these types of educational interventions during MTM and disease state management programs impact demand for immunization services. There may also be opportunities for pharmacists to promote vaccinations using other strategies, such as the use of reminder (when immunizations are due) and recall (when immunizations are late) systems across a variety of patient populations and settings [27]. One way this may translate into the community pharmacy setting is by systematically asking all patients about vaccination needs (e.g., influenza vaccine during autumn and winter months) when they are dropping off a prescription. Another important consideration is the use of pharmacy technicians to help facilitate immunization programs, such as through documentation, billing, facilitating communication, and helping to report adverse events [28]. Finally, if space is an issue, pharmacies can consider holding offsite immunization clinics, such as at schools, nursing homes, and employer sites, particularly as these locations may be even more accessible to community members.

Several limitations to this study have been identified. First, this study focused on independent and small-chain community pharmacies in an urban, low-income area and the results may not be generalizable outside of this population. The survey was completed with the pharmacist-on-duty during standard hours of operation. This may have made it difficult for the pharmacist to provide detailed information about the pharmacy operations or reason for decisions related to vaccinations services. However, as stated above, 70% of the pharmacists who completed the survey were either the pharmacy owner or pharmacy manager, which may decrease this limitation.

Finally, it is possible that pharmacists provided responses to questions about perceived barriers based on what they thought the study team member was looking to hear as opposed to their true preferences or beliefs. The primary strategy that was used to combat this included asking participants to first select all of the perceived barriers, then identify the biggest barrier, and then finally select all of the changes that would need to happen in order for the pharmacy to begin to administer vaccines. Pharmacists were encouraged to supply additional responses that were not part of the pre-defined list.

CONCLUSION

Independent and small-chain community pharmacies in an urban and primarily low-income area identified a variety of barriers that have prevented implementation of vaccination services. However, the majority of pharmacies reported that only one factor would need to change in order to begin to administer vaccines. Interventional efforts necessary to address commonly cited barriers may include providing education to pharmacists about the need for community pharmacy-based immunization programs in addition to services provided by physician offices, as well as the importance of proactively providing immunization-related recommendations to patients.

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