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Individual and neighborhood-level factors associated with non-prescription counseling in pharmacies participating in the New York State Expanded Syringe Access Program (ESAP)

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Abstract

Objective—To determine the individual- and neighborhood-level predictors of frequent non-prescription in-pharmacy counseling.

Design—Cross-sectional survey

Setting—130 pharmacies registered in the Expanded Syringe Access Program (ESAP) in New York City.

Participants—477 pharmacists, non-pharmacist owner/managers, and technicians/clerks.

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Main outcome measures—Frequent counseling on medical conditions, health insurance, and other products.

Results—Technicians were less likely than pharmacists to provide frequent counseling on medical conditions or health insurance. In terms of neighborhood-level characteristics, pharmacies in areas of high employment disability were less likely to provide frequent health insurance counseling and pharmacies in areas with higher deprivation were more likely to provide counseling on other products.

Conclusion—ESAP pharmacy staff is a frequent source of non-prescription counseling for their patients/customers in disadvantaged neighborhoods of NYC. These findings suggest that ESAP pharmacy staff may be amenable to providing relevant counseling services to injection drug using syringe customers and warrants further investigation.

Keywords

Expanded Syringe Access Program; in-pharmacy counseling; injection drug users; expanded services; New York City

Introduction

In May 2000, the New York State (NYS) legislature passed the Expanded Syringe Access Program (ESAP) a public health law allowing pharmacists to sell syringes without a prescription with the aim of reducing transmission of blood-borne diseases, namely, HIV, Hepatitis B, and Hepatitis C, among injection drug users (IDUs). As of November 30, 2008, NYS reported 3,289 registered ESAP providers, of which 96% were pharmacies.[1] When implemented, the law mandated an independent evaluation of the impact of ESAP on various outcomes including pharmacy and IDU practices, drug use, improper syringe disposal, accidental needle sticks, and drug-related crime. Overall, ESAP was not found to be associated with increased drug use, criminal activity, or improper disposal of needles.[2, 3] Most pharmacists reported none or only few problems, none of which resulted in discontinuing syringe sales through ESAP. IDUs reported gradually increasing use of pharmacies with decreasing trends in syringe sharing.[4] With pharmacies increasingly becoming a common source of sterile syringes for IDUs[5] coupled with the large number of ESAP participating pharmacies in New York City (NYC), the potential role of pharmacy staff members as public health providers has come to the forefront of pharmacy research and public health and should be further explored.

Through participation in ESAP, pharmacy staff members are uniquely positioned to offer additional services, such as counseling and referrals for other public health needs, to their IDU syringe customers. However, it is unclear if pharmacy staff members are comfortable and/or have the time to provide non-medication counseling (e.g., information on safe syringe disposal and use). While there has been one report suggesting that some pharmacists may be willing to counsel their IDU customers[6], it is unknown if pharmacy support staff members (cashiers, technicians, assistants) would be willing to provide counseling and/or informational services to IDU syringe customers since they are often the point-of-contact for IDUs purchasing syringes through ESAP. Pharmacy support staff members may also be in a position that enables them to develop a rapport with frequent, repeat syringe customers.

In-pharmacy counseling, defined as the on-site provision of health-related information or advice by pharmacy staff members to their customers, may be a particularly crucial health information source in underserved areas in NYC where many residents lack access to care but frequent pharmacies for other needs (e.g. non-prescription products). With few exceptions, counseling on over the counter products and other concerns has received little

attention.[7] Moreover, we have yet to understand the full extent to which neighborhood characteristics of the pharmacy may influence counseling. Ranelli and Coward reported that rural pharmacists counseled their elderly customers more frequently and for longer sessions than their urban counterparts on general, non-health topics.[8] This has public health impact given the poor access to health care experienced by rural communities characterized by few hospitals and long travel distances. Besides rural versus urban characteristics, neighborhood-level differences in counseling frequency have not been examined. Since neighborhood-level factors have been shown to influence access to other health care services (e.g. primary medical care), it is possible that the types of services people seek out and/or receive from pharmacy staff may be affected by neighborhood characteristics.[9] It is of public health importance to examine the association between neighborhood characteristics and frequency of counseling in order to assess whether pharmacists and pharmacy support staff members are more apt to engage in provision of extended public health-related services in communities where the need is high (e.g. low socioeconomic status, low health care access). Determining if ESAP-registered pharmacy staff members, individuals who are already engaged in providing a public health service to IDUs, are more likely to provide various types of counseling services when located in disadvantaged neighborhoods (compared to more advantaged neighborhoods), will provide more support for expanding counseling services specifically to IDU syringe customers. Since non-medication counseling and referral to services is of particular importance in populations who lack access to care, such as IDUs, the type and frequency of counseling that pharmacy staff members are more likely to give in these neighborhoods may help shed light on the feasibility of providing expanded non-medication services to IDU syringe customers. Furthermore, by connecting IDUs to these types of services, it will potentially enhance the likelihood of accessing medical care and the need for prescribed medications, which could translate into an increase in business.

Objectives

Baseline data from a pharmacy randomized community-based intervention trial targeting ESAP-registered pharmacies in NYC and their syringe customers was used for this analysis for the purpose of determining the neighborhood- and individual-level factors associated with frequency of in-pharmacy counseling for medical conditions, health insurance, and other products among their general patients/customer patrons. Specifically, we will focus on pharmacy staff and pharmacy characteristics (e.g., pharmacy staff position, volume of prescriptions filled) and neighborhood characteristics where the pharmacy is located (e.g. poverty level, foreign-born composition, minority composition) as independent factors associated with in-pharmacy counseling services to determine if there is evidence to support further investigation of providing expanded counseling services to IDU syringe customers in ESAP-registered pharmacies.

Methods

Study Design

The data for these analyses were obtained from the Pharmacists As Resources Making Links to Community Services (PHARM-Link) study. The overall objective of the PHARM-Link intervention study is to evaluate the delivery of drug treatment information, medical and social service referral, and safe syringe disposal information to IDUs by ESAP-registered pharmacy staff. We targeted ESAP-registered pharmacies in neighborhoods with high drug activity in four boroughs of NYC: Manhattan, Bronx, Queens, and Brooklyn. Manhattan has a high population density and therefore has more social services and pharmacies in comparison to the other boroughs which tend to be more residential relative to Manhattan. A list of ESAP-registered pharmacies was obtained from the NYS Department of Health. High drug activity neighborhoods in Upper Manhattan (above 96th street East of Central Park and

above 110th street West of Central Park), Lower Manhattan (below 14th street), Bronx, Brooklyn, and Queens were ethnographically mapped and ESAP-registered pharmacies in these neighborhoods were identified. Pharmacies were eligible to participate in the study if they had: 1) at least one non-prescription syringe customer a month; 2) a least one new non-prescription syringe customer a month that becomes a regular customer; 3) no requirements of additional documentation from customers during syringe transactions; and 4) willingness to sell syringes to IDUs. Three hundred and twenty-five pharmacies were screened for study participation, 172 were eligible and 130 agreed to participate. Of the 489 pharmacy staff in participating pharmacies, 477 pharmacy staff completed the baseline questionnaire (97.5%). Informed consent was obtained from all participants. Trained interviewers administered a baseline survey using Computer Assisted Personal Interviews to pharmacists, pharmacy technicians/clerks, and non-pharmacists owners/managers. The baseline survey assessed public-health oriented practices of pharmacy staff, willingness of pharmacy staff members to sell syringes to IDUs, and variables that affect pharmacy staff members' willingness to sell syringes to IDUs. The questionnaire was developed based on a previous ESAP evaluation instrument used among pharmacists[10] and informed by PHARM-Link focus groups that included pharmacists and pharmacy technicians. Research staff extensively performed survey piloting. Baseline data collected between January 2008 and March 2009 were combined and used in the present analysis. The PHARM-Link study was approved by the Institutional Review Boards of the New York Academy of Medicine and Columbia University.

Measurements

Outcomes

In-pharmacy counseling for 1) medical conditions; 2) health insurance; and 3) other products in pharmacy (i.e. non-prescription health-care products) were the three outcomes of interest. The following question was used to assess frequency for each type of counseling: "How often do you counsel or advise customers in your pharmacy?" Respondents ranked frequency on a 4-point scale: never; a few times a month; a few times per week; at least once a day or more. Counseling frequency was used as a dichotomous variable in the analysis where the response 'at least once a day or more' reflected frequent counseling and the other three responses (never, a few times a month, a few times per week) were collapsed to reflect infrequent counseling.

Individual-level characteristics

Individual-level variables included sex, race/ethnicity (African-American or Black, non-Hispanic White, Hispanic, Asian or Pacific Islander, South Asian), years worked in pharmacies, pharmacy staff position (pharmacist, technician/clerk, non-pharmacist owner/manager), and the level of perceived drug activity in the neighborhood of the pharmacy. The individual level of perceived drug activity in the pharmacy's neighborhood was ascertained with the question: "In the neighborhood of the pharmacy, would you estimate the level of illegal drug activity to be" with the following responses: 'very high', 'high', 'moderate',' low',' virtually none', and 'don't know'. For this analysis, the responses 'very high' and 'high' were combined to reflect high levels of drug activity and the responses 'low' and 'virtually none' were collapsed to represent low levels of drug activity.

Pharmacy characteristics

The following characteristics of the pharmacy were assessed: type of pharmacy (chain or independent), pharmacy location (Bronx, Brooklyn, Queens, Lower Manhattan or Upper Manhattan), and the number of all prescriptions filled weekly.

Neighborhood-level characteristics

Baseline data from the PHARM-Link study were linked to the US 2000 Census. Consistent with prior research[11], census tracts were used as proxies for neighborhood. The neighborhood-level data was retrieved only from census tracts where the study pharmacies were located. Characteristics of the neighborhood obtained from the census included median household income, percent of minority residents (Hispanic/Latino, Black or African American, Asian, Native Hawaiian or Pacific Islander, and American Indian or Alaska native), percent of foreign born residents, and percent of residents aged 16–64 with employment disability (defined as any physical, mental, or emotional condition that makes employment difficult). Each variable was transformed to a z score and used as continuous variables. The Townsend Index of deprivation[12] is traditionally derived from four census variables reflecting the proportion of adults aged 16 and over who are unemployed, household crowding, renter-occupied housing units, and housing units without a motor vehicle and has been used in prior research.[13, 14] Since NYC residents are largely reliant on public transportation, we used education level (measured as the percent of adults aged 25 and older with less than a high school diploma), rather than car ownership, since it is a well-established predictor of poor health outcomes and health behaviors.[15] The unemployment and crowded housing variables were log transformed, standardized, and summed together to generate a composite summary score with increasing values indicating increasing neighborhood disadvantage.

Statistical Analysis

Descriptive statistics for the characteristics of the pharmacy staff and neighborhood-level variables were calculated. Bivariate logistic regression models were used to determine unadjusted odds ratios. Variables indicating a p-value <0.10 in the bivariate analysis were used in the multivariate adjusted models. Race/ethnicity was forced into all multivariate adjusted models, regardless of significance due to its importance as an individual social factor. Generalized estimating equations (GEE) were used to fit marginal models assessing the association between the frequency of various types of counseling in the pharmacy, and the independent variables: pharmacy staff characteristics, pharmacy characteristics, and neighborhood characteristics. GEE accounts for the correlation between outcomes in neighborhoods and has been used extensively in prior research.[16,17] We realize that individuals may be clustered within pharmacies; however, when we accounted for this correlation, there were no significant changes in the beta estimates and therefore variable significance in the final model remained unchanged. The Townsend Index and the neighborhood-level variables were modeled separately to avoid issues of collinearity. All data management procedures and statistical analyses were performed using SAS version 9.0.[18]

Results

Of 130 pharmacies, 29 were located in the Bronx, 26 in Brooklyn, 15 in Queens, 33 in Upper Manhattan, and 27 in Lower Manhattan. The majority of the pharmacies (58.8%) were independent and 42.3% were chain pharmacies. In an average week, most pharmacies (73.4%) filled over 500 prescriptions. In these pharmacies, there was a total of 477 pharmacy staff: 217 pharmacists, 20 non-pharmacist owners/managers, and 240 pharmacy technicians/clerks. Pharmacy staff members were 39.8% male and 60.0% female. Most staff members were Hispanic (34.2%) followed by Asian/Pacific Islander (19.6%), African American (18.1%), White (13.1%), South Asian/Indian/Pakistani (10.3%), and Other (4.6%). Pharmacy staff members worked an average of 9.9 years in pharmacies. In terms of perceived drug activity in the pharmacy's neighborhood, most pharmacy staff members (52.7%) reported a high level, 24.8% a moderate level, 8.8% a low level, and 13.7%

responded ‘don’t know’. In terms of types of counseling performed, 57.2% counseled frequently on medical conditions, 69.2% on health insurance, and 79.7% on other products in the pharmacy (Table 1).

In the multivariate models (Table 2), we found that technicians/clerks (AOR=0.3, 95% CI: 0.2–0.6) compared to pharmacists, Lower Manhattan pharmacies (AOR=0.4, 95% CI: 0.3–0.8) compared to Upper Manhattan pharmacies, and persons who perceived a moderate level of drug activity in their pharmacy neighborhood (AOR=2.4, 95% CI: 1.1–4.9) were significantly associated with less frequent medical conditions counseling. In terms of health insurance counseling, technicians/clerks (AOR=0.5, 95% CI: 0.2–0.8) compared to pharmacists and neighborhoods with a higher percentage of residents with employment disability (AOR=0.6, 95% CI: 0.5–0.8) were significantly less likely to frequently counsel on health insurance. However, chain pharmacies (AOR=1.7, 95% CI: 1.1–2.8) compared to independent pharmacies were significantly associated with frequent health insurance counseling. Persons who worked more years in pharmacies (AOR=1.0, 95% CI: 1.0–1.1) and pharmacies in neighborhoods with a higher Townsend Index (AOR=1.2, 95% CI: 1.0–1.3) were significantly associated with frequent counseling in other pharmacy products.

Discussion

These data highlight a high level of counseling being performed by ESAP pharmacy staff, with other product counseling being the most common. These data also suggest that various pharmacy counseling services are being provided in lower income communities. For example, irrespective of staff position, those who perceived their pharmacy neighborhood to have somewhat higher levels of drug activity (i.e., moderate vs. low drug activity) were more likely to provide medical counseling, and the more years worked in a pharmacy translated into more frequent counseling on other products. Technicians, however, had a lower likelihood of medical and health insurance counseling compared with pharmacists, but did not differ with respect to other product counseling. In terms of pharmacy characteristics, chain pharmacies were more likely to provide counseling on health insurance, but volume of prescriptions filled did not influence frequency of any type of counseling. Finally, neighborhoods with higher levels of neighborhood deprivation tended to offer more counseling on other products while neighborhoods with a high percent of employment disability were less likely to provide health insurance counseling.

In terms of staff characteristics, past research on pharmacy counseling has focused on pharmacist age[19] but examination of other demographics and relevant characteristics such as staff position and amount of time worked in the pharmacy have not been explored. In this sample, white pharmacy staff members tended to provide more frequent medical condition counseling relative to African-American pharmacy staff members. This borderline significant association is likely explained by the fact that the majority of techs/clerks are Hispanic and/or black than that of pharmacists, and our sample is largely technicians/clerks who would be less inclined to deliver medical advice. Pharmacists in this sample were less likely to be black or African American and more often white or Asian. White pharmacists in particular are also more likely to speak Spanish and less likely to have language barriers than the Asian/Pacific Islander and South Asian pharmacists, and therefore can counsel more often. Staff position had a greater effect than the number of years one has worked in a pharmacy which may be due to the more specialized training pharmacists receive in counseling. These findings add to the limited research on the behaviors of pharmacy technicians and owners/managers. Federal legislation has mandated pharmacist counseling on prescription medication information and use for Medicaid patients [7]; we recommend that counseling in non-medication health issues become part of pharmacist certification training. Since structural factors, such as time and busyness, may limit pharmacists’ interactions with

customers, we also recommend that technicians/clerks receive training in counseling customers across different topics. More research is needed on other pharmacy structural factors that may affect counseling, including space, privacy, layout, and number of supporting staff members. Finally, the association between individual perceptions of neighborhood drug activity and medical counseling support provides evidence of increased counseling in lower socioeconomic status neighborhoods – where such services are needed most. Pharmacy staff members who perceived a high level of drug activity in the pharmacy neighborhood were slightly more likely than those who perceived a low level of drug activity to provide counseling. However, this finding did not reach significance. We take care in interpreting these results since there are a few different interpretations that might explain this finding. First, we may have been limited by power to detect an independent association for perception of high drug activity. Second, there may be a specific threshold at which counseling activities begin to occur more frequently because of need; this may begin to change as the neighborhood becomes more impoverished which may result in more non-prescription sales activities thereby reducing the need or time for medical counseling. Our data supports this interpretation since we observed an independent association between high poverty and more “other product” counseling. A third interpretation may be the possibility that those who reported ‘don’t know’ for this question may have been in a neighborhood with more (or less) drug activity which could impact the direction of this association if they had actually reported a perception.

With respect to pharmacy characteristics, previous research on prescription counseling has shown no difference in counseling frequency between chain and independent pharmacies.[19, 20] Our findings of increased health insurance counseling among chain pharmacies may indicate that in NYC, these pharmacies attract either a more uninsured population or individuals with health insurance but require assistance, which is plausible given recent changes in Medicaid. An alternate explanation could also be that discussion of health insurance with customers, insured or uninsured may be a component of a corporate business model, a practice that may result in increased business. Thus, further research is needed to explore these possible explanations. These data also indicated regional differences, namely, pharmacies in Lower Manhattan counseled less often on medical conditions versus pharmacies in Upper Manhattan, which could be related to cultural differences in populations served in these two areas of Manhattan. For example, Upper Manhattan has a larger Hispanic immigrant and migrant population who come from countries and U.S. territories where pharmacists are relied upon more frequently for medical advice (e.g., Dominican Republic and Puerto Rico). It is interesting to note that at first glance, the lack of association between neighborhood percent foreign-born and frequency of counseling services seems to counter this explanation. However, since migrants from Puerto Rico are not considered foreign-born in the census, they are not included in the percent foreign-born neighborhood measure. It is also possible that the neighborhood-level measure of foreign-born is confounded by individuals from countries where pharmacies do not necessarily play such a prominent role as those in Upper Manhattan. Thus, more research is needed to explore these possible explanations by investigating pharmacy characteristics as well as characteristics of their patrons. We found no difference between pharmacies characterized by high versus low patient prescription-filling and provision of counseling services indicating that high patient volume may not be a factor in providing extended counseling. This is inconsistent with other studies that showed that pharmacies with a heavier customer flow counseled a smaller portion of their customers.[19, 21] This inconsistency likely suggests differences between ESAP-registered pharmacies and non-registered pharmacies with respect to willingness to provide extended public health services.

In terms of neighborhood-level socioeconomic factors, neighborhoods with a larger percentage of employment disability were less likely to counsel on health insurance. This

could simply be explained by the possibility that high levels of employment disability may indicate high levels of individuals connected to the health care system who may not require health insurance counseling. Finally, neighborhoods with a higher Townsend Index were more likely to counsel clients on “other products” which is likely due to increased use of non-prescription products in pharmacies in more deprived neighborhoods. In any case, the extra time to counsel on non-medical or non-prescription topics supports the potential for pharmacy staff members’ willingness to provide services to their IDU syringe customers beyond what would be normally customary.

Limitations

There are limitations in this study that warrant mentioning. The sampling frame included only pharmacies in neighborhoods of high drug activity. If we included ESAP-registered pharmacies from all NYC neighborhoods we may have yielded different results. However, there is still considerable variability among low income neighborhoods with varying levels of resources.[22] Our results are only representative of pharmacy staff members employed in ESAP-registered pharmacies in NYC. Another issue that may contribute to selection bias is the fact that pharmacy staff members participated on a voluntary basis and may over-represent individuals who were willing to take the time to participate in a survey. However, we had a wide range of pharmacies reporting very high and relatively low volume of prescriptions filled suggesting potential external validity of our sample. In terms of measurement, the terms ‘counseling and advising’ were not defined to participants; however, a recent literature review found that 72% of pharmacists had used the term ‘counseling’ in regards to pharmacist/patient communication[7], demonstrating that pharmacists have a common notion of counseling. In addition, since we used an adapted form of the Townsend Index, we cannot compare our results to other findings that use the traditional scale. However, it is important to note that the scale still sufficiently measured neighborhood disadvantage since measures of educational attainment in a neighborhood are typically used to measure deprivation.[23] Finally, pharmacy staff members may feel inclined to overestimate the amount of counseling performed, contributing to social desirability bias.

There are several important strengths of this study including its focus on in-pharmacy counseling other than prescription-related counseling allowing for investigation of time and effort spent on both patients and customers. This analysis also adds to an existing body of literature through the inclusion of neighborhood-level effects on counseling behavior. Finally, it also includes counseling activities of pharmacy technicians which has been understudied.

Conclusion

With limitations acknowledged, these data suggest that ESAP-registered pharmacy staff members who currently provide a public health service to IDUs, are willing to take time to provide non-medical counseling services to their patients/customers and high prescription volume is not a barrier in providing such services. Thus, even busy ESAP pharmacies have the capabilities and willingness to provide non-prescription counseling. The heightened counseling for other products in more deprived neighborhoods provides further evidence that ESAP pharmacies may be viable venues for expanded health counseling services - communities where the need is the greatest. These findings highlight solid evidence for exploring an expanded counseling role among ESAP-registered pharmacy staff members targeted to their IDU syringe customers.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Characteristics of ESAP-registered pharmacies and pharmacy staff

Characteristic	n (%)
Sex	
Male	190 (39.8%)
Female	286 (60.0%)
Race/Ethnicity	
African American or Black	86 (18.1%)
White	62 (13.1%)
Hispanic or Latino/a	162 (34.2%)
Asian or Pacific Islander	93 (19.6%)
South Asian	49 (10.3%)
Other	22 (4.6%)
Staff Position	
Pharmacist	217 (45.5%)
Owner/Manager	20 (4.2%)
Technician/Clerk	240 (50.3%)
Mean number of years working in pharmacies (SD) Level of perceived drug activity in neighborhood	9.9 (10.4)
High	251 (52.7%)
Moderate	118 (24.8%)
Low	42 (8.8%)
Don’t Know	65 (13.7%)
Frequent counseling	
Medical conditions	273 (57.2%)
Health insurance	330 (69.2%)
Other products	380 (79.7%)
Pharmacy type	
Chain	55 (42.3%)
Independent	75 (57.7%)
Weekly prescriptions filled	
≤ 500	34 (26.6%)
> 500	94 (73.4%)
Pharmacy borough/area	
The Bronx	29 (22.3%)
Brooklyn	26 (20.0%)
Queens	15 (11.4%)
Upper Manhattan	33 (25.4%)
Lower Manhattan	27 (20.8%)

Table 2

Unadjusted and adjusted association between individual, pharmacy, neighborhood characteristics and frequency counseling services

Study Characteristics	Medical Conditions				Health Insurance				Other Products			
	OR	95%CI	AOR	95%CI	OR	95%CI	AOR	95%CI	OR	95%CI	AOR	95%CI
Sex												
Male	ref.				ref.				ref.			
Female	0.6	(0.4–0.9)[a]	1.0	(0.6–1.6)	0.9	(0.6–1.4)			0.7	(0.4–1.1)		
Race/ethnicity												
African-American	ref.		ref.		ref.		ref.		ref.			
White	3.5	(1.7 –7.4)[a]	2.4	(1.0–5.7)[b]	1.9	(0.8–4.5)	1.1	(0.4–2.9)	1.8	(0.8–4.1)	1.0	(0.4–2.4)
Hispanic/Latino	1.2	(0.7–2.1)	1.6	(0.9–3.1)	0.7	(0.4–1.2)	1.2	(0.7–2.1)	1.0	(0.6–1.9)	1.0	(0.5–1.9)
Asian or Pacific Islander	1.9	(1.0–3.8)[a]	1.4	(0.7–3.0)	0.9	(0.5–1.8)	0.7	(0.3–1.4)	1.4	(0.6–3.5)	1.0	(0.4–2.4)
South Asian	1.6	(0.9–2.9)	1.3	(0.7–2.7)	0.7	(0.3–1.4)	0.8	(0.4–1.9)	0.9	(0.4–2.1)	0.7	(0.3–1.6)
Other	1.3	(0.5–3.2)	1.3	(0.5–3.7)	1.0	(0.4–2.5)	1.4	(0.5–3.8)	1.0	(0.3–3.2)	1.0	(0.3–2.9)
Staff position												
Pharmacist	ref.		ref.		ref.		ref.		ref.		ref.	
Owner/manager	0.9	(0.4–2.3)	0.8	(0.3–2.1)	0.8	(0.3–2.1)	0.9	(0.3–2.5)	0.5	(0.2–1.2)	0.4	(0.2 – 1.1)[b]
Technician/clerk	0.3	(0.2–0.5)[a]	0.3	(0.2–0.6)[a]	0.5	(0.3–0.7)[a]	0.5	(0.2–0.8)[a]	0.5	(0.3–0.8)[a]	0.6	(0.3 – 1.1)[b]
Years worked in pharmacies	1.0	(1.0–1.1)[a]	1.0	(1.0–1.0)	1.0	(1.0–1.1)[a]	1.0	(1.0–1.0)	1.0	(1.0–1.1)[a]	1.0	(1.0–1.1)[a]
Perceived drug activity												
High	1.1	(0.6–2.1)	1.5	(0.8–3.1)	1.2	(0.6–2.4)	1.6	(0.7–3.6)	0.6	(0.2–1.7)		
Moderate	2.0	(1.0–4.0)[a]	2.4	(1.1–4.9)[a]	1.2	(0.6–2.7)	1.3	(0.6–3.2)	0.8	(0.3–2.3)		
Low	ref.		ref.		ref.		ref.		ref.			
Don’t know	0.8	(0.4–1.6)	1.1	(0.5–2.3)	0.4	(0.2–0.9)[a]	0.6	(0.2–1.3)	0.4	(0.2–1.2)		
Pharmacy Type												
Independent	ref.				ref.		ref.		ref.			
Chain	0.8	(0.5–1.2)			1.6	(1.1–2.4)[a]	1.7	(1.1–2.8)[a]	0.8	(0.5–1.2)		
Number of prescriptions filled												
<500	ref.				ref.				ref.			
>500	0.8	(0.5–1.3)			1.4	(0.9–2.3)			1.1	(1.0–1.3)		

Study Characteristics	Medical Conditions				Health Insurance				Other Products			
	OR	95%CI	AOR	95%CI	OR	95%CI	AOR	95%CI	OR	95%CI	AOR	95%CI
Borough/area												
The Bronx	0.7	(0.5–1.0)[b]	0.6	(0.4–1.0)[b]	0.8	(0.4–1.4)			1.1	(0.6–2.2)		
Brooklyn	0.6	(0.4–1.1)	0.6	(0.4–1.0)[b]	1.1	(0.6–2.3)			1.4	(0.7–2.8)		
Queens	1.3	(0.7–2.2)	1.0	(0.5–1.9)	1.0	(0.6–1.8)			0.9	(0.4–2.0)		
Lower Manhattan	0.5	(0.3–0.8)[a]	0.4	(0.2–0.8)[a]	1.1	(0.6–2.0)			0.9	(0.4–2.0)		
Upper Manhattan	ref.		ref.		ref.				ref.			
Townsend Index	1.0	(0.9–1.1)			0.9	(0.8–1.0)			1.0	(0.3–1.3)[b]	1.2	(1.0–1.3)[a]
Median household income	1.0	(0.8–1.2)			1.2	(1.0–1.4)[a]	1.1	(0.7–1.5)	1.0	(0.8–1.3)		
Percent minority residents	1.0	(0.8–1.2)			0.8	(0.7–1.0)	1.3	(0.8–2.2)	1.0	(0.8–1.3)		
Percent foreign-born	1.0	(0.8–1.2)			1.0	(0.8–1.2)	1.1	(0.9–1.5)	1.0	(0.8–1.3)		
Percent employment disability	0.9	(0.8–1.1)			0.8	(0.6–0.9)[a]	0.6	(0.5–0.8)[a]	0.9	(0.7–1.2)		

[a] $p \leq 0.05$

[b] $p < 0.10$