



Barriers to Purchasing Condoms in a High HIV/STI-Risk Urban Area

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Abstract

The Centers for Disease Control and Prevention (CDC) have identified Atlanta, Georgia as a high-risk environment for STI/HIV infection. Condoms are an inexpensive and effective method for preventing STI/HIV infection. The majority of individuals acquire their condoms through purchase, rather than through free condom distribution programs. However, individuals purchasing condoms in stores encounter numerous barriers. This study assessed the environmental and physical barriers surrounding condom purchases in stores in downtown Atlanta. The findings revealed a combination of high environmental and physical barriers, low visibility of condoms in stores and limited selection of safer sex supplies. In the most densely populated area of the city, stores which sold condoms were few ($n = 25$), equating to 1 store per ~7000 people. In 80% of stores, personnel were required in order to access the condoms. In 28% of stores, condoms were hidden underneath the counter. The majority of stores offered only one brand of male condoms with a limited selection of lubricants and no dental dams or internal condoms. Barriers and discomfort surrounding purchasing condoms can contribute to embarrassment, which has a negative impact on condom acquisition and ultimately on condom use. Efforts must be made to lower barriers in Atlanta and make condoms more readily available to high-risk populations. Community advocacy has been effective in removing barriers to condoms. Access can furthermore be improved by: installing condom vending machines in public locations, offering self-check-out in stores that do not have physical barriers and encouraging individuals to order condoms online.

Keywords Condom · Condom access · Sexually transmitted diseases · HIV · Barriers

Introduction

Sexually transmitted infections (STI) are on the rise in the US with 20 million new cases reported each year [1]. The Centers for Disease Control and Prevention (CDC) have identified Atlanta as a high-risk environment for STIs. One out of every four STI cases in the state is found in Atlanta, and the two counties composing Atlanta, Fulton and DeKalb, rank among the top 20 counties nationwide for STI rates [1]. In addition, thousands of STI cases in Atlanta remain untreated due to significant socioeconomic barriers to accessing care [2], thus presenting a risk for onward transmission of the infection.

Condoms are an inexpensive and effective method for reducing the risk of STI/HIV infection [3–5]. Every year

millions of free condoms are distributed through state/county health departments and community-based organizations. These condom distribution programs play a fundamental role in improving the accessibility, availability and acceptability of condoms [6–8]. However, the majority of individuals still choose to acquire their condoms through purchase, rather than through free programs [7, 9–11].

Individuals purchasing condoms and safer sex supplies in stores encounter numerous environmental and physical barriers [12]. Stores may not be located near populations at highest risk for STI or HIV infection or may not be open during hours when condoms are needed. Condom brand has the greatest influence on purchase decisions, even above pricing [13], therefore an individual may forego purchasing condoms if the store has a limited selection. Condoms may be in “hidden” locations in stores – situated among feminine products or behind a counter [12, 14]. Individuals may encounter intentional physical barriers in stores, such as locks around the condoms or the need to ask for assistance to access the condoms. Such measures have been implemented to prevent shoplifting of condoms [15–17]. However, these

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barriers act as deterrents in the condom purchase process for all individuals, particularly for high-risk populations such as young people ages 15–24 [1, 9, 13, 14]. Potential barriers and discomfort surrounding purchasing condoms, e.g. embarrassment, have a negative impact on condom acquisition and ultimately condom use [18, 19].

Given the high rate of STIs in Atlanta, it is important to understand which barriers exist when purchasing condoms in this high HIV/STI-risk urban setting. As part of a multi-year implementation project that aims to improve condom access throughout the city, this study assesses the environmental and physical barriers surrounding condom purchases in stores in downtown Atlanta.

Methods

This study was performed in Atlanta, Georgia from May to August 2018. The observational study design employed field research and a structured survey method to assess the barriers to commercial condoms in downtown Atlanta. Emory University’s Institutional Review Board determined this study to be exempt from IRB review (March 23, 2018). No personal data of any kind, e.g. of shop owners or cashiers, were collected during this study, and all data were captured through observation in public spaces.

The downtown district of the city of Atlanta corresponds neighborhood planning unit M or NPU M. NPU M is the most densely populated unit in the city. Table 1 shows that the ethnic composition and median age of this NPU are comparable with the greater city of Atlanta [20].

The research team used Internet searches to identify stores which might sell condoms or safer sex supplies. (For writing purposes, the term “condom” will be used to refer to all safer sex supplies unless further specification is needed). All stores located in NPU M were eligible for inclusion. Variations of terms including pharmacy, grocery, health, market, convenience store, adult store and drugstore were used until all possible locations were identified. Triangulation was performed with the Trojan Brand Store Locator online, entering in the zip codes

that correspond with NPU M, and comparing these store addresses with those found through the Internet search.

A survey was developed to capture observational data about the store and the condoms. The survey for Atlanta was adapted from the survey from Wilson and Ickes’ publication “Purchasing condoms near a college campus: environmental barriers [12].” An initial draft of the survey was developed using an online survey tool that was suitable for mobile data entry. The drafted survey was pilot-tested by six individuals with academic backgrounds in sexual and reproductive health and revised accordingly. It was then field-tested jointly by two researchers in three different types of stores: (1) to ensure that the survey tool from the college campus setting also applied to a metropolitan setting, and (2) to test the online survey collection method via a mobile device. Any discrepancies in survey collection methods were discussed between the researchers and resolved. The final version of the survey was then tested for its inter-rater reliability by two researchers, yielding an inter-rater reliability estimate of $k = 0.875$ (very good) [21]. The final survey entailed 32 questions grouped into five sections: store location and information, condom location and visibility, condom access, condom variety and pricing. The final survey can be found in the appendix.

One member of the research team visited each store identified through the search and completed the survey on a mobile device while in the store. If condoms were not immediately visible upon entering the store, the researcher asked personnel about condom availability. If the store did not have condoms, it was excluded.

Data analyses were performed with IBM SPSS Statistics version 25. Distances to stores from public transportation hubs was assessed using Google Maps and Excel. A condom visibility measurement was developed in order to compare condom visibility across the stores. The measurement tool consisted of seven questions from the survey (questions 11–17) which addressed: ease of finding condoms within store, signage, placement, and visibility of prices and brands from a reasonable distance. A score of 7 was considered excellent visibility, whereas a score of 0 was considered low/no visibility. Responses to questions 11, 14–17 were coded dichotomously: Yes = 1 point and No = 0 points. For questions 12 and 13, zero points were given if the condoms were found to be located in the back of the store or behind the register, as this would not contribute to better visibility. Visibility scores were further categorized into “high” (6 to 7), “moderate” (score of 3 to 5) and “low” (score of 0 to 2) in order to perform statistical analyses. Pearson’s Chi square test was used to determine the association between categorical variables. A p value of less than 0.05 was considered significant.

Table 1 Demographics of NPU M and the City of Atlanta

	NPU M	City of Atlanta
Population	26,886	420,003
Racial composition		
Asian	5.0%	3.1%
Black	56.0%	54.0%
White	34.0%	38.4%
Other/two or more	5.0%	4.5%
Median age (in years)	33.3	32.9

Results

Store Location and Information

Of the 33 stores identified in NPU M, six were permanently closed, and two were pharmacies that did not carry condoms. Reasons for not carrying condoms in the two pharmacies were: (1) business focuses exclusively on prescription medicine, and (2) condoms were a high-theft item. Twenty-five stores carried at least one type of condom and were included in the analysis.

Table 2 shows the characteristics of the 25 stores that were assessed. The majority of stores selling condoms were gas stations ($n = 10$, 40%). Half of the stores selling condoms were open 24/7 ($n = 12$, 48%); these were primarily gas stations (10/12). The stores were dispersed throughout the NPU, with a ratio of 1:1075 stores per inhabitant. Accessibility to the stores via public transportation was also assessed. NPU M is situated at the center of Atlanta's public rapid transit system, MARTA (Metropolitan Atlanta Rapid Transit Authority). NPU M has the highest number of MARTA stops compared with other NPUs, and all rail lines pass through this NPU. The distance from MARTA stops

to stores selling condoms ranged from 13 feet to 1.3 miles (0.49 miles on average). From MARTA, individuals must walk 11.08 min on average to reach a store selling condoms.

Condom Location and Visibility

Across the 25 stores, eight demonstrated high visibility (6–7 points), eight demonstrated moderate visibility (3–5 points) and nine demonstrated low visibility (0–2 points). The average of the visibility scores was 3.52 (SD = 2.29, median = 3.0). Pharmacies had the highest average visibility scores at 5.0 (SD = 2.65, median = 6.0), followed by gas stations at 3.1 (SD = 1.1, median = 3.0) and lastly by convenience/grocery stores at 2.0 (SD = 2.29, median = 3.0); there was a significant difference in visibility in the three settings ($p = 0.01$). One in five stores had signage indicating where the condoms were located in the store. Of those stores with signs, none explicitly stated “condoms” but instead used the terms “family planning” or “personal intimacy.” In the majority of stores ($n = 16$, 64%), condoms were located behind the cashier's counter. In one-quarter of the stores ($n = 7$, 28%), the condoms were hidden underneath the counter. The remaining stores placed condoms in the aisle ($n = 8$, 32%) or in front of the cashier's counter ($n = 1$, 4%).

Condom Access, Variety and Pricing

A number of physical barriers could be identified that prevented individuals from accessing condoms (see Table 3). Physical barriers included locked cases around the condom display, individually locking cases around the boxes of condoms, and condom placement behind registers with a plexiglass barrier around the cashier. In 80% of stores ($n = 20$), condoms could not be accessed without assistance from store personnel. Of the five stores which did not require assistance from personnel, three were pharmacies, one was a gas station and one was a convenience/grocery store. In 72% of the stores ($n = 18$), the condoms were under direct surveillance of personnel such as cashiers or pharmacists. There was a significant association between having physical barriers and low condom visibility ($p = 0.03$).

Table 2 Characteristics of stores selling condoms in downtown Atlanta ($n = 25$)

	N (%)
Type of store	
Gas station	10 (40)
Pharmacy	9 (36)
Convenience/grocery store	6 (24)
Environment around store ^a	
Stand-alone store	9 (36)
Strip mall	6 (24)
Gas station, non-residential	6 (24)
Mixed-use community	5 (20)
Gas station, residential	4 (16)
Store inside larger facility	2 (8)
Store hours	
Open 24/7	13 (52)
Open every day, various hours	6 (24)
Open only on weekdays	4 (16)
Did not post store hours	2 (8)
Distance to closest MARTA ^b stop	
Less than 0.1 miles	5 (20)
0.1–0.4 miles	9 (36)
0.5–0.9 miles	7 (28)
1 mile or more	4 (16)

^aMore than one environment possible

^bMetropolitan Atlanta Rapid Transit Authority

Table 3 Physical barriers to accessing condoms in stores in downtown Atlanta ($n = 25$)

	N (%)
Barriers in place	
Behind the counter	15 (60)
Individually locking case around condom pack	3 (12)
Locked case around all condoms	2 (8)
No barriers	5 (20)

Condom variety was limited, with a median of 1 brand per store (range 1–6, mean 1.96). A significant relationship was found between stores carrying only one brand of condoms and low visibility of condoms ($p=0.003$). Trojan is the leading condom brand in the US and was present in nearly every store in downtown Atlanta (24/25). In most cases ($n=14$, 56%), Trojan was the only brand offered. No internal condoms or dental dams were sold in the stores. Condom quantity ranged from singles up to 40 packs. The majority of stores offered singles and 3-pack boxes of condoms ($n=17$, 68%). Table 4 presents the findings on the condom display in the 25 stores.

The research team explored the prices of low quantity condom packs across the stores. The lowest quantity for purchase in stores was typically a single condom or 3-pack of condoms and was most often a Trojan brand ($n=16$, 64%). For this data subset, the average price of an individual condom was \$1.65 without tax (range \$0.41–\$2.49, median \$1.85). Average prices of condoms were higher at gas stations than at convenience stores or pharmacies (\$1.89 vs. \$1.45 and \$1.56, respectively).

Table 4 Safer sex supplies sold in stores in downtown Atlanta ($n=25$)

	N (%)
Safer sex supplies sold in stores	
Male condom XL	23 (92)
Male condom latex, lubricated	23 (92)
Male condom latex	13 (52)
Lubricant	7 (28)
Male condom latex-free	5 (20)
Internal condom	0
Dental dams	0
Products sold near condoms	
Chapstick/cigarettes/lighters	17 (68)
Pregnancy tests	6 (24)
Sex toys	5 (20)
Lubricant	5 (20)
Over the counter medication/vitamins	4 (16)
Emergency contraception	3 (12)
Feminine hygiene products	2 (8)
STI testing kits	2 (8)
Brands present in stores	
Trojan	24 (96)
LifeStyles	9 (36)
Durex	4 (16)
ONE	3 (12)
Other	9 (36)

More than one selection possible

Discussion

Condom use is influenced by many factors, one of which is condom accessibility. This study sheds light on the environmental and physical barriers which may prevent high-risk populations from accessing the tools they need to prevent unwanted sexual and reproductive outcomes. This is the first study to analyze condom accessibility in downtown Atlanta, an urban environment with exceptionally high rates of chlamydia, gonorrhea, syphilis and HIV [1]. The findings revealed a combination of high environmental and physical barriers, low visibility of condoms and limited selection of safer sex supplies. In four out of five stores, customers could not access condoms without requesting support from personnel. In one-fourth of stores, condoms were not visible to the public but were hidden underneath the counter. While all gas stations offered 24-h availability of condoms, 9 out of 10 placed the condoms behind or under the counter, limiting visibility and accessibility. Pharmacies had the highest visibility of condoms on average, but these stores were rarely open 24 h (1/9). The majority of stores offered only one male condom brand with a limited selection of lubricants and no dental dams or internal condoms.

The physical barriers encountered in downtown Atlanta mirror those in New York City, another high HIV/STI-risk area. An assessment of 195 sites in the Bronx that sold condoms showed that 82% of stores placed condoms in locked cases or behind the counter [15]. A Connecticut-based study found that 66% of stores placed condoms behind the counter or next to the pharmacist, yet additional barriers, such as locked cases, may have also existed for the condom displays located in aisles [22]. Barriers such as these are intended to deter condom theft [15–17]. While barriers may deter theft, they also deter condom acquisition, which is the first step towards consistent condom use [19]. Placing condoms behind locked glass or counters is an access barrier which negatively impacts the important public health role that condoms play in preventing STIs as well as unintended pregnancy [16]. Removing locks around displays may lead to increased theft, however economic analyses show that the condom sales will outweigh these losses [16].

Environmental barriers, specific to Atlanta, were examined in this study. In NPU M, we identified 25 points of sale for safer sex supplies, yielding a ratio of approximately 1 store per 1000 people. This corresponds with the ratio in the Bronx study, 1:1100 [15]. NPU M is home to 26,800 inhabitants, but as the epicenter of a city with a metro population of 5.7 million, it experiences a heavy influx of commuters and students each day. On a given weekday, the total population of NPU M increases to

200,000 [23], elevating the ratio from 1:1000 stores with safer sex supplies per person to 1:7000. Although other points of access such as student health centers and clinics may distribute condoms for free in this urban area, the ratio suggests an insufficient number of stores for the concentration of individuals who live, work and study in this area.

Condom brand is highly influential in condom acquisition, yet the majority of stores in downtown Atlanta only offered one brand. Condom brand has a greater influence on condom purchasing than the cost of the condom or the ease of purchasing [13]. Certain condom brands may cause a loss of sensation, discomfort or erectile difficulties for men, possibly perpetuating their resistance to use them [24, 25]. An essential component to increased condom efficacy relies on education surrounding the variation of male condom styles available in relation to users' bodies, as well as providing condom brands desired by users [25]. Dental dams and internal condoms were not found in any store in Atlanta; these safer sex supplies reduce the risk of STI transmission during oral and anal/vaginal sex, respectively. In the time frame of this study, internal condoms could no longer be sold over the counter but only with a prescription, and the price increased from \$3.50 to \$20 per internal condom for uninsured individuals; this renders internal condoms even less accessible to individuals who prefer this method of protection [26].

Overcoming barriers to safer sex supplies in Atlanta will require a multifaceted approach. In 2009, the "Change to Win" campaign in Connecticut pressured the nation's largest pharmacy chain, CVS Pharmacy, to unlock condoms in their stores [27]. A similar strategy could be leveraged by community advocacy groups in Atlanta. It has been shown that purchasing condoms is more embarrassing for individuals than using the condoms [9], and that by increasing anonymity in condom purchasing, the willingness to purchase condoms increases [28]. Greater anonymity can be achieved by installing condom vending machines in bathrooms or through self-check-out registers in stores which already unlock the condoms [18]. A number of e-commerce vendors sell condoms and sexual health supplies online; ordering condoms online has been shown to be more comfortable and more convenient for users [29]. Finally, non-profit organizations and clinics in Atlanta offer free condom distribution at locations throughout the city. These sites and services should be promoted more widely through social media in order to increase visibility to high-risk populations [30].

Limitations

The data for this study were sourced from only one NPU in Atlanta which could limit its generalizability for the city of Atlanta. For this reason, the next phase of this

implementation science project will compare NPU M with other NPUs in Atlanta, exploring condom access points per person, proximity to public transportation, as well as socio-economic characteristics of each NPU. Few survey tools exist for this type of observational study. We adapted a survey from a previous study [12], yet further validation beyond the inter-rater reliability will be performed in subsequent studies. While the survey had high inter-rater reliability, having a second researcher perform data collection and entry would have strengthened the methods.

Conclusion

Accessibility to condoms in downtown Atlanta is limited due to numerous environmental and physical barriers. Although the determinants of condom use are complex and multifactorial, condom carrying is a strong predictor of condom use [15, 31–33]. Efforts must be made to lower barriers for high-risk populations in Atlanta through community advocacy to remove locks, installing condom vending machines, promoting free condom distribution programs and highlighting online ordering as an alternative to in-store purchasing.

Compliance with Ethical Standards

Conflict of interest The authors declare they have no conflict of interest.

Appendix

Survey

Store location and information

1. Store name
2. Store address
3. Store types
 - Gas station
 - Pharmacy
 - Convenience/grocery store
 - Other _____
4. Environment around the store (select all that apply)
 - Strip mall
 - Gas station, residential area
 - Gas station, non-residential area
 - Stand-alone store
 - Mixed-use community
 - Other: _____

5. Store hours: M-Th
 - Open/close
6. Friday
 - Open/close
7. Saturday
 - Open/close
8. Sunday
 - Open/close
9. Are they closed any day of the week?

Condom location and visibility
10. Does this store carry condoms?
 - Yes
 - If no, ask cashier for the reason.
11. Are condoms openly visible in the store (could you find them without the assistance of an employee)?
 - Yes
 - No
12. In which area of the store can you find the condoms?
 - Front
 - Middle
 - Back
 - Other
13. Where are the condoms in the store?
 - Aisle
 - Behind the cash register/counter
 - In front of a counter with personnel
14. Is there any nearby signage indicating the location of the condoms?
 - Yes
 - No
 - n/a
 - What does the sign say?

Free response: _____

15. Can you see the selection of safer sex supplies (condoms, lubricant, etc.) clearly at closest proximity?
 - Yes/No
16. Can you see the selection of brands clearly at closest proximity?
 - Yes/No
17. Can you see the prices clearly at closest proximity?
 - Yes/no

Condom access and condom variety
18. What are the types of products surrounding the condom selection (select all that apply)
 - Sex toys
 - Lubricant
 - Feminine hygiene products
 - Pregnancy tests
 - STD Testing Kits
 - Baby section
 - Stand-alone section
 - Other:
19. Is there a physical barrier in the condom section?
 - Yes, a glass case
 - Yes, a locked glass case
 - Yes, each condom is in locked cases
 - Yes, other: _____
 - No
20. Are store personnel required to procure the condoms?
 - Yes
 - No
21. Is the condom section under direct surveillance by store personnel?
 - Yes, a pharmacist
 - Yes, a cashier
 - Yes, a security guard
 - No
22. Are the condoms in an area that is accessible during all open hours?
 - Yes
 - No
23. Which brands of condoms are available?
 - Trojan
 - Durex
 - Lifestyles
 - One
 - SKYN
 - Nuvo
 - Okamoto
 - Other: _____

- Other: _____
 - Cannot see selection
24. Which types of safer sex supplies are available?
- Male condom (latex)
 - Lubricated male condoms (latex)
 - Male condoms latex-free
 - XL
 - Flavored male condoms
 - Colored/novelty male condoms
 - Internal condoms
 - Dental dams
 - Other: _____
 - Cannot see selection
25. Is lubricant available?
- Yes
 - No
26. Does the store (if it's a chain) have their own brand of condoms?
- Yes
 - No
27. Which brands, if any, are offered at a discounted rate?
Condom pricing
28. What is the cheapest condom available at the lowest unit?
- Brand, type, count, price
29. What is the most expensive condom available at the lowest unit?
- Brand, type, count, price
30. What is the range of the amount of condoms in a package?
- Free response
31. How much does a 12-pack of Trojan Enz (red box) w/o lubricant cost?
- \$___ for ___ condoms
 - This condom is not available
 - Cannot see selection
32. How much does a 12-pack of durex extra-sensitive (purple box) cost?
- \$___ for ___ condoms
 - This condom is not available
 - Cannot see selection

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