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ORIGINAL ARTICLE

"Knowing" your population: who are we caring for at Tulane University School of Medicine's student-run free clinics?

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Abstract

Aim The purpose of this study is to provide a deeper analysis characterizing the current health status of Tulane University School of Medicine's student-run free clinic patients. Only one prior study by Rebholz et al. (South Med J 106(3):217–223, https://doi.org/10.1097/SMJ.0b013e318287fe9a, 2013) has explored the demographics in this population. Ultimately, this study will allow for easy interpretation of the demographics of the student clinic system as a whole and for the individual clinics participating in this study. This information will allow clinics to better customize care for their respective populations and ultimately improve health outcomes.

Subject and methods Patient demographic data was collected from five preceptor-based clinics from December 2016 to May 2019 and submitted via a REDCap survey. Survey fields included patient age, sex, gender, race, ethnicity, insurance status, chief complaints, past medical history, social history, and medications. Gross data was analyzed in Excel and subsequently stratified by clinic for inter-clinic comparison.

Results A total of 772 patient responses were collected from five different student-run clinics; 56% were male and 44% were female. The three most common reasons for a clinic visit were complaint-free wellness visits (26%), musculoskeletal complaints (16%), and respiratory complaints (11%). The three most common comorbidities included smoking and/or tobacco abuse (28%), psychiatric conditions (19%), and illicit drug abuse (15%).

Conclusion Future applications derived from this study may include redistribution of resources for patient education, social services, medical inventory, and preventative health services based on patient clinical needs.

Keywords Student-run · Free clinics · Demographics · Homeless · Substance use · Preventative

Background

The need for student-run free clinics (SRFCs) at Tulane University School of Medicine (TUSOM) came about after the closure of Charity Hospital post-Hurricane Katrina in 2005. The bed capacity in Orleans Parish instantly fell from 4083 to 1971 by mid-July of 2006 (Rudowitz et al. 2006). The loss of this large capacity safety-net hospital established the need for community-based clinics to fill the new gap in health care coverage for the insured and uninsured alike.

The SRFCs in place today were originally founded by local community leaders and were eventually staffed by Tulane medical students as the new, rudimentary safety-net system matured. The student clinic council (SCC) at TUSOM was subsequently formed to unite the independent SRFCs together under a unified oversight system for the purpose of strengthening the quality of services at each individual clinic. The SRFCs at TUSOM currently provides care to hundreds of underserved and clinically diverse patients per year. One national study of student-run clinics by Simpson and Long (2007) showed that an average of 610 patients are seen annually, while another similar study by Gertz et al. (2011) reported 550 patients per annum.

According to the Society of Student Run Free Clinics, there are currently 152 SRFCs across the nation aimed at providing interprofessional care for underserved populations. SRFCs are

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largely managed and operated by medical students with oversight by attending physicians. These clinics serve as a safety-net in many communities as they offer affordable health services to bridge disparities in healthcare access (Zhang et al. 2019; Lee et al. 2017). The student-run nature of the SRFCs proved its success in serving its target populations as a survey by Lu et al. (2018) reported that 91% of patients were either satisfied or very satisfied with the care they received. The high rate of patient satisfaction with care demonstrates the integral role that these safety-net resources have in communities across the nation.

Many unique target populations are present in this community ranging from the homeless seeking refuge to those battling substance use disorder. As a result, several niche clinics formed to address the specific health needs of each patient population. There are currently nine preceptor clinics that are members of the SCC. Preceptor clinics allow medical students the opportunity to obtain a history, to perform a physical exam, and to present their assessment and plan to an attending physician. SRFCs have a very limited budget and must be cost-conscious due to the nature of providing care to primarily uninsured individuals. Student clinic leaders must minimize excess cost while aiming to provide the highest level of care possible. TUSOM SRFCs thus offer many cost-effective preventive services, including mental health screenings, counseling services, TB testing, HIV testing, and much more.

The purpose of this current study is to provide a deeper analysis characterizing the current health status of TUSOM's SRFCs patients. To our knowledge, only one prior study by Rebholz et al. (2013) has explored the demographics the New Orleans population. This study offers ease of interpretation for each participating clinic and for the SCC as a whole for the purpose of better customizing care and ultimately improving health outcomes. A paper by Cadzow, Servoss, and Fox describing a detailed health risk assessment of their population in Buffalo, NY shares a common insight that "not all underserved patient populations are the same; they are a heterogenous population and care must be adapted to the unique circumstances of local communities" (Cadzow et al. 2007). This paper aims to take this recommendation one step further by addressing the specific populations of each clinic and clearly delineating how their clinics may benefit from an in depth analysis of their population.

Methods

A retrospective, multi-site chart review was conducted on all patients ($N = 772$) examined from December 2016 to May 2019 at five student-run preceptor clinics, including Ozanam Inn, New Orleans Mission (NOM), Bridge House, Grace House, and Ruth Fertel. Each clinic joined the study at different points of time over the course of the study.

The study was conducted in accordance with the standards established by Tulane IRB office study number 944206. Patient records were collected from the clinics' history and physical intake form and entered into REDCap, a HIPAA compliant web application. Tulane IRB-approved components of the H&P regarding patient age, sex, gender, race, ethnicity, insurance status, chief complaints, past medical history, social history, and medications were entered into REDCap, a secure HIPAA compliant web application for building and managing online surveys. The data was compiled into a Microsoft Excel spreadsheet, de-identified, and stratified by clinic site. Chief complaints were free-typed and had to be qualitatively categorized into relevant organ systems for analysis. Many chief complaints did not fit into an organ system (requiring a wellness visit, requiring a medication refill, and having an injury) were assigned their own categories. Non-repeating chief complaints were assigned to "Other" for simplicity. Analysis was carried out separately by several authors for replicability.

Results

Five of nine student-run preceptor clinics operating under Tulane's SCC currently participate in this study:

- Ozanam Inn's clinic is a men's homeless shelter re-established in January 2010 after opening in the 1990s and running through the early 2000s. The Sunday clinic is available to the entire community, but predominantly serves men who use Ozanam's resources.
- New Orleans Mission (NOM) is a co-ed homeless shelter serving the New Orleans area since 1989. Its open-door policy allows for a diverse patient population. The clinic expanded its services in 2015 to include a weekly preceptor clinic.
- Bridge House clinic was founded in 1999 by a third year Tulane medical student to provide health services to those participating in a men-only drug rehabilitation program. Men are required to be seen at the clinic upon program initiation and on a monthly basis.
- Grace House was established in 2010 as a "sister program" to Bridge House. Women are similarly required to be seen at the women-only clinic upon program initiation and on a monthly basis.
- Fleur de Vie Ruth Fertel Clinic operates jointly with Access Health Louisiana at the Tulane Community Health Center to deliver primary care to an underserved patient population.

From December 2016 to May 2019, 772 responses were recorded. Ozanam Inn and Grace House had the greatest contributions with 317 and 304 respective entries. Table 1

Table 1 Patient demographics from December 2016 to May 2019

Clinic	Ozanam Inn	Bridge House	Grace House	Mission	Ruth Fertel	Total
Responses	317 (41.1)	83 (10.8)	304 (39.4)	59 (7.6)	9 (1.2)	772
Age, mean	50	39	49	49	64	50
Gender						
Male	296 (93.4)	73 (88.0)	0 (0)	49 (83.1)	6 (66.7)	424 (54.9)
Female	17 (5.4)	9 (10.8)	299 (98.4)	8 (13.6)	3 (33.3)	336 (43.5)
Other	4 (1.3)	1 (1.2)	5 (1.6)	2 (3.4)	0 (0)	12 (1.6)
Race						
Black	206 (65.0)	19 (22.9)	52 (17.1)	26 (44.1)	5 (55.6)	308 (39.9)
White	92 (29.0)	60 (72.3)	233 (76.6)	26 (44.1)	2 (22.2)	413 (53.5)
American/Alaskan	4 (1.3)	0 (0)	6 (2.0)	0 (0)	0 (0)	10 (1.3)
Hawaiian/PI	0 (0)	0 (0)	1 (0.3)	0 (0)	0 (0)	1 (0.1)
Asian	2 (0.6)	0 (0)	3 (1.0)	0 (0)	0 (0)	5 (0.6)
Other	6 (1.9)	1 (1.2)	7 (2.3)	1 (1.7)	2 (22.2)	17 (2.2)
Did not ascertain	7 (2.2)	3 (3.6)	2 (0.7)	6 (10.2)	0 (0)	18 (2.3)
Ethnicity						
Hispanic	8 (2.5)	2 (2.4)	7 (2.3)	3 (5.1)	3 (33.3)	23 (3.0)
Not Hispanic	202 (63.7)	65 (78.3)	190 (62.5)	52 (88.1)	6 (66.7)	515 (66.7)
Did not ascertain	50 (15.8)	14 (16.9)	51 (16.8)	0 (0)	0 (0)	115 (14.9)
No response entered	57 (18.0)	2 (2.4)	56 (18.4)	4 (6.8)	0 (0)	119 (15.4)
Education: less than high school or GED						
Yes	56 (17.7)	18 (21.7)	49 (16.1)	1 (1.7)	5 (55.6)	129 (16.7)
No	79 (24.9)	57 (68.7)	197 (64.8)	12 (20.3)	2 (22.2)	347 (44.9)
Did not ascertain	130 (41.0)	8 (9.6)	42 (13.8)	0 (0)	0 (0)	180 (23.3)
No response entered	52 (16.4)	0 (0.0)	16 (5.3)	46 (78.0)	2 (22.2)	116 (15.0)
Homeless						
Yes	263 (83.0)	28 (33.7)	97 (31.9)	56 (94.9)	0 (0)	444 (57.5)
No	25 (7.9)	48 (57.8)	157 (51.6)	3 (5.1)	9 (100.0)	242 (31.3)
Did not ascertain	24 (7.6)	7 (8.4)	36 (11.8)	0 (0)	0 (0)	67 (8.7)
No response entered	5 (1.6)	0 (0)	14 (4.6)	0 (0)	0 (0)	19 (2.5)
Prior incarceration						
Yes	113 (35.6)	56 (67.5)	21 (6.9)	2 (3.4)	1 (11.1)	193 (25.0)
No	68 (21.5)	17 (20.5)	19 (6.3)	11 (18.6)	7 (77.8)	122 (15.8)
Did not ascertain	101 (31.9)	10 (12.0)	164 (53.9)	0 (0)	0 (0)	275 (35.6)
No response entered	35 (11.0)	0 (0)	100 (32.9)	46 (78.0)	1 (11.1)	182 (23.6)
Insurance						
Uninsured	49 (15.5)	3 (3.6)	15 (4.9)	7 (11.9)	2 (22.2)	76 (9.8)
Medicare	49 (15.5)	7 (8.4)	8 (2.6)	4 (6.8)	2 (22.2)	70 (9.1)
Medicaid	132 (41.6)	54 (65.1)	224 (73.7)	13 (22.0)	2 (22.2)	425 (55.1)
Unknown	56 (17.7)	13 (15.7)	23 (7.6)	13 (22.0)	3 (33.3)	108 (14.0)
VA	12 (3.8)	0 (0)	0 (0)	0 (0)	0 (0)	12 (1.6)
Other	21 (6.6)	12 (14.5)	18 (5.9)	1 (1.7)	1 (11.1)	53 (6.9)

Frequency (n[%])

PI, pacific islander; VA, Veterans Affairs

summarizes demographic data that are subsequently stratified by clinic for comparison.

The majority of patients across clinics identified as male (54.9%), except for at Grace House (the women-only clinic),

where 98.0% identified as female. Race across clinics was predominantly White (53.5%) or Black (39.9). Of note, Ozanam Inn and Grace House each displayed race predominance with 65.0% Black and 76.6% White, respectively. The majority of patients across clinics identified as Non-Hispanic (66.7%).

Only 44.9% of all patients endorsed having completed high school or a GED. The highest rate of high school or GED completion was seen at Bridge House (68.7%), the lowest rate of high school or GED completion was seen at Ruth Fertel (55.6%). The majority of all patients (57.5%) reported being homeless, with Ozanam Inn and NOM having the highest rates at 83.0% and 94.9%, respectively. Lastly, Medicaid was the predominant insurance for the total population (55.1%). "Unknown" was the second most common insurance status at 14.0%, followed by "Uninsured" at 9.8%.

Table 2 summarizes medical demographics, including chief complaint, and past medical history. Each section is also subsequently stratified by clinic for comparison. The "other" category indicates any chief complaints or past medical history that did not fit into the predetermined categories. Illicit drug abuse includes marijuana, cocaine, heroin, and methamphetamine abuse.

The top reasons for clinic visits are as follows:

- Ozanam Inn - Musculoskeletal (23.3%), Respiratory (18.3%), and HEENT (13.6%);
- Bridge House - Wellness Visit (38.6%), Other (14.5%), and Musculoskeletal (12.0%);
- Grace House - Wellness Visit (52.0%), Musculoskeletal (9.9%), and Other (8.9%);
- NOM - Respiratory (33.9%), Musculoskeletal (18.9%), and Skin (10.2%); and
- Ruth Fertel - Gastrointestinal (22.2%), Musculoskeletal (22.2%), Medication refill (22.2%), and Diabetes (22.2%).

The most prevalent comorbidities present at each clinic are as follows:

- Ozanam Inn - Tobacco use (53.9%), Hypertension (37.9%), and Psychiatric conditions (26.8%);
- Bridge House - Tobacco use (51.8%), Illicit Drug Use (53.0%), and Psychiatric conditions (38.6%);
- Grace House - Psychiatric conditions (71.4%), Tobacco use (56.9%), and Illicit Drug Use (52.0%);

Table 2 Chief complaint and past medical history of all clinics from December 2016 to May 2019

Chief complaint	Ozanam Inn	Bridge House	Grace House	Mission	Ruth Fertel	Total
Respiratory	58 (18.3)	4 (4.8)	6 (2.0)	20 (33.9)	0 (0)	88 (11.4)
Skin	41 (12.9)	8 (9.6)	6 (2.0)	6 (10.2)	0 (0)	61 (7.9)
HEENT	43 (13.6)	7 (8.4)	11 (3.6)	5 (8.5)	0 (0)	66 (8.5)
Gastrointestinal	14 (4.4)	1 (1.2)	14 (4.6)	4 (6.8)	2 (22.2)	35 (4.5)
Musculoskeletal	74 (23.3)	10 (12.0)	30 (9.9)	11 (18.6)	2 (22.2)	127 (16.5)
Medication refill	24 (7.4)	2 (2.4)	8 (2.6)	1 (1.7)	2 (22.2)	37 (4.8)
Cardiovascular	17(5.4)	1 (1.2)	5 (1.6)	3 (5.1)	0 (0)	26 (3.4)
Trauma	5 (1.6)	0 (0)	1 (0.3)	1 (1.7)	0 (0)	7 (0.9)
Substance abuse	1 (0.3)	0 (0)	0 (0)	1 (1.7)	0 (0)	2 (0.3)
Neurologic	5 (1.6)	1 (1.2)	4 (1.3)	2 (3.4)	0 (0)	12 (1.6)
Psychiatric	4 (1.3)	2 (2.4)	8 (2.4)	1 (1.7)	0 (0)	15 (1.9)
Wellness visit	9 (2.8)	32 (38.6)	158 (52.0)	0 (0)	1 (11.1)	200 (25.9)
Diabetes	1 (0.3)	2 (2.4)	2 (0.7)	0 (0)	0 (22.2)	7 (0.9)
Endocrine	0 (0)	0 (0)	1 (0.3)	0 (0)	0 (0)	1 (0.1)
Genitourinary	7 (2.2)	1 (1.2)	23 (7.6)	0 (0)	0 (0)	31 (4.0)
Other	14 (4.4)	12 (14.5)	27 (8.9)	4 (6.8)	0 (0)	57 (7.4)
Past medical history						
Diabetes	38(12.0)	9(10.8)	22(7.2)	7(11.9)	2(22.2)	78(4.1)
Hypertension	120(37.9)	27(32.5)	59(19.4)	26(44.1)	1(11.1)	233(12.2)
Vascular disease	17 (5.4)	4 (4.8)	11 (3.6)	1(1.7)	0(0)	33(1.7)
HIV	3 (0.9)	2 (2.4)	2 (0.7)	2 (3.4)	0 (0)	9 (0.5)
HCV	31 (908)	11 (13.3)	54 (17.8)	5 (8.5)	0 (0)	101 (5.3)
COPD	26 (8.2)	5 (6.0)	16 (5.3)	8 (13.6)	0 (0)	55 (2.9)
Psychiatric	85 (26.8)	32 (38.6)	217 (71.4)	18 (30.5)	0 (0)	352 (18.4)
Tobacco	171 (53.9)	43 (51.8)	173 (56.9)	27 (45.8)	2 (22.2)	416 (21.8)
Alcohol abuse	60 (18.9)	26 (31.3)	69 (22.7)	0 (0)	1 (11.1)	156 (8.2)
Illicit drug abuse	76 (24.0)	44 (53.0)	158 (52.0)	4 (6.8)	0 (0)	282 (14.8)
Asthma	17 (5.4)	2 (2.4)	24 (7.9)	6 (10.2)	0 (0)	49 0 (2.6)
Chronic pain	11 (3.5)	0 (0)	34 (11.2)	0 (0)	0 (0)	45 (2.4)
Oher	23 (7.3)	3 (3.6)	72 0 (23.7)	0 (0)	1 (11.1)	99 (5.2)

Frequency (n[%])

HIV, human immunodefiency virus; HCV, hepatitis c virus; COPD, Chronic obstructive pulmonary disease; HEENT, Head, Eyes, Ears, Nose, Throat

- NOM - Tobacco use (45.8%), Hypertension (44.1%), and Psychiatric conditions (44.1%);
- Ruth Fertel - Diabetes (22.2%) and Tobacco use (22.2%).

Table 3 summarizes current medications. The most frequently reported medications at each clinic are as follows:

- Ozanam Inn - Antihypertensives (11.0%), NSAIDs (10.1%), and Psychiatric medications (8.8%)
- Bridge House - Psychiatric medications (44.6%), Antihypertensives (31.3%), and Gabapentin (21.7%)
- Grace House - Psychiatric medications (49.7%), Other (32.6%), and Gabapentin (15.8%)
- NOM and Ruth Fertel did not report any medications.

The average systolic and diastolic blood pressures were reported:

- Ozanam Inn - 132.0/82.2 mmHg (Stage 1 Hypertension)
- Bridge House - 130.5/83.0 mmHg (Stage 1 Hypertension)
- Grace House - 122.3/78.3 mmHg (Stage 1 Hypertension)
- NOM - none reported
- Ruth Fertel - 141.0/85.5 mmHg (Stage 2 Hypertension)

Discussion

By understanding trends in patient demographics at community clinics, health care providers can more effectively treat their patients. Clinics can be tailored to meet the needs of those patients based on the most common chief complaint, medications, and past medical histories as they vary across each clinic.

At Ozanam Inn, preparing for more musculoskeletal complaints may entail creating workshops for students focused on pertinent physical exam maneuvers. The need for addressing musculoskeletal pathologies may be supported by the fact that NSAIDs are the most common medication prescribed at Ozanam Inn. Thus, we may further address the chief complaint by prioritizing the budget for NSAIDs for short-term pain management in this homeless population that cannot afford over the counter medications.

Table 3 Current medications of all clinics from December 2016 to May 2019

Chief complaint	Ozanam Inn	Bridge House	Grace House	Mission	Ruth Fertel	Total
Antihypertensive	35 (11.0)	26 (31.3)	34 (11.2)	0 (0)	0 (0)	95 (11.4)
Diuretics	7 (2.2)	5 (6.0)	10 (3.3)	0 (0)	0 (0)	22 (2.6)
Antibiotics	9 (2.8)	3 (3.6)	14 (4.6)	0 (0)	0 (0)	26 (3.1)
Diflucan	1 (0.3)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.1)
Inhaled bronchodilators	12 (3.8)	6 (7.2)	12 (3.9)	0 (0)	0 (0)	30 (3.6)
Insulin/oral antidiabetics	16 (5.8)	7 (8.4)	11 (3.6)	0 (0)	0 (0)	34 (4.1)
Psychiatric	28 (8.8)	37 (44.6)	151 (49.7)	0 (0)	0 (0)	216 ()26.0
NSAIDs	32 (10.)	12 (14.5)	33 (10.9)	0 (0)	0 (0)	7 (9.3)
Antihyperlipidemics	5 (1.6)	8 (9.6)	3 (1.0)	0 (0)	0 (0)	16 (1.9)
PPls/antacids	8 (2.5)	6 (7.2)	14 (46)	0 (0)	0 (0)	28 (3.4)
Allergy relief	11 (3.5)	1 (1.2)	13 (4.3)	0 (0)	0 (0)	25 (3.0)
Cough/cold relief	10 (3.2)	1 (1.2)	2 (0.7)	0 (0)	0 (0)	13 (1.6)
Topical steroids	1 (0.3)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.1)
Smoking cessation	0 (0)	2 (2.4)	5 (1.6)	0 (0)	0 (0)	7 (0.8)
Acetaminophen	8 (2.5)	0 (0)	3 (1.0)	0 (0)	0 (0)	11 (1.3)
Gabapentin	0 (0)	18 (21.7)	48 (15.8)	0 (0)	0 (0)	66 (7.9)
Opioids	2 (0.6)	5 (6.0)	16 (5.3)	0 (0)	0 (0)	23 (2.8)
Seizure	2 (0.6)	3 (3.6)	13 (4.3)	0 (0)	0 (0)	18 (2.2)
Other	13 (4.1)	10 (12.0)	99 (32.6)	0 (0)	0 (0)	122 (14.7)
Systolic, mean	132.0	130.5	122.3	–	141.0	N/A
Diastolic, mean	82.2	83.0	78.3	–	85.5	N/A

Frequency (n[%])

NSAIDs, non-steroidal anti-inflammatory drugs; PPls, proton pump inhibitors; N/A, not applicable

Bridge House and Grace House patients are required to have monthly wellness checks during their stay at their respective rehabilitation centers. Students can better prepare for these visits by practicing a sensitive and detailed history with a thorough head-to-toe physical assessment.

New Orleans has taken strides toward addressing homelessness. The number of chronically homeless and of nightly homeless individuals have been in a steady decline for the past 11 years with just a small increase in 2019. According to the Annual Homeless Assessment Report, the Point-in-Time estimates that New Orleans had 1188 homeless persons overall, with 50% of them being sheltered; 57.5% of patients seen in all clinics described themselves as homeless. Efforts aimed toward helping these populations have been focused at Ozanam Inn where those who seek shelter are offered free health care by both TUSOM and Louisiana State University School of Medicine students. Other groups, (e.g., Street Medicine) aim to combat this discrepancy in services by mobilizing on foot to well-known homeless areas and providing care directly.

Prior incarceration was found in approximately 25.0% of patients overall. Recommended care for prior incarcerated individuals, according to the American Academy of Family Physicians (AAFP) (Davis et al. 2018), include screenings for HIV, HCV, syphilis, latent TB, psychiatric and substance use disorders, and blood glucose levels for those overweight or obese. Ozanam Inn, Bridge House, and Grace House all provide these services in accordance with AAFP guidelines, demonstrating adherence to evidence-based medicine.

There were approximately 10.0% uninsured individuals across the nation in 2018 (Tolbert et al. 2019). Due to the expansion of Medicaid in June 2016, Louisiana enrolled almost 500,000 individuals within the first 6 months (Norris 2019). This decrease in uninsured individuals is reflected in the number of patients uninsured at the student-run free clinics reported as 9.8% overall. Of note, the vast majority of patients at Ozanam Inn, Bridge House, and Grace House are enrolled in Medicaid. The presence of case workers who actively enroll patients into Medicaid may explain the high rate of insured patients seeking care at these free clinics.

A large portion of patients seen at these clinics have comorbid conditions including psychiatric, tobacco use disorder, and illicit drug use disorder. Students volunteering at the rehabilitation centers should therefore undergo specialized training on psychosocial history taking skills and motivational interviewing.

Interestingly, Grace House has the lowest blood pressure and a relatively low rate of antihypertensive usage suggesting a more normotensive population. This could also be attributed to the supermajority of females seen at this clinic, because women generally have lower blood pressure than men. Ruth Fertel's high average blood pressure may be due to artifact from low sample size.

Limitations One of the main limitations of this study is the variability in data. User error may play a role as first- and second-year students were responsible for completing the surveys with no formal training. Students either did not ask some of the questions, leading to an automatic "No response entered" for non-required questions, or they selected "Did not ascertain" for required questions that they had difficulty addressing or forgot to ask.

User error may also be due to the investigators during the analysis phase. Interpretation of chief complaints may vary in categorization into the predetermined options depending on investigators' preference. This bias may reduce the reliability across studies; however, this study attempted to minimize the effect of the error by assigning chief complaints to organ systems ad hoc (Appendix A).

Another limitation is the question of external validity. Each clinic specializes in specific patient populations making inter-clinic comparison and generalizability to the New Orleans metropolitan area challenging. There is also the issue of regional differences and the difficulty of generalizing to the general population and specific homeless or substance abuse populations outside of New Orleans.

The low response rates of NOM and Ruth Fertel weakens the ability to compare demographics across clinics. NOM's clinic closed in April 2017 due to renovations, and Ruth Fertel's clinic closed shortly after joining TuPACT's survey due to internal structure reorganization.

It is important to note that as a descriptive study, this paper's primary goal was to summarize the distribution of disease at TUSOM's SRFCs without testing of a hypothesis. Future quantitative studies are required to explain the observed trends and offer more in-depth recommendations.

Conclusion

TUSOM's SRFCs constantly aims to improve the care they provide to a historically underserved population. With limited resources available for patient education, social services, and medical inventory, clinics should employ data-driven decisions for appropriate clinic resource allocation. The evidence indicates a need for preventive medical services and smoking cessation programs. This update to the current demographic information of this patient population has future applications in improving the delivery of personalized clinical care for patients and better experience for healthcare providers.

Although the SRFC's limited resources makes application of this study challenging, future directions remain abundant. Information from this study may help medical student volunteers become even more familiar with the underserved populations they serve. Other school systems can model their approach to studying their own population's student-run free clinics. For example, the implementation of a standardized history and physical form across all clinics to reduce student error may prove beneficial in other school systems. Because

of the limited resources of SRFCs, this study can serve as evidence to administration that SRFCs have an essential role in the growth of students' clinical skills as well as a true benefit to the communities they serve.

This is a foundational demographic survey designed to understand the patient population that TUSOM SRFCs serve. The variability in the patient population in New Orleans is ever changing and will require constant updates to remain in cadence with the evolving nature of comorbid diseases.

Compliance with ethical standards

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

Ethical approval Not applicable.

Appendix

Chief complaints were categorized according to the most pertinent organ system involved.

- Respiratory complaints included shortness of breath and cold-like symptoms.
- Skin complaints included bug bites, wounds, localized swelling, cold sores, burns, and discolorations.
- Head, Eyes, Ears, Nose, Throat (HEENT) complaints included headaches, fever, eye dysfunction, vertigo, tooth pain.
- Gastrointestinal complaints included abdominal pain, bloody stools, and acid reflux.
- Musculoskeletal included joint and bone pain. Medication Refill simply involved refills for current medications.
- Cardiovascular complaints included hypertension, chest pain, and grossly swollen legs.
- Trauma complaints included injuries.
- Substance abuse was reported as a chief complaint only if the patient thought that was their main problem.
- Neurology complaints included vision problems, sciatica, and foot paresthesia.
- Psychiatric complaints included anxiety.
- Wellness Visits included regular check-ups, blood work, sexually transmitted infection testing, and tuberculosis testing.

– Of note, monthly Wellness Visits are required for participants of the Bridge House and Grace House sobriety programs.

- Endocrine complaints included work up for possible Cushing's disease.
- Genitourinary complaints included malodorous discharge.
- Other included any complaint not listed.

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