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Mobile Health Clinics as a Healthcare Delivery Model to Address Community Disparities

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INTRODUCTION

The commentary by Rumalla et al.[1] observed the socioeconomic levels and corresponding healthcare disparities between Wyandotte and Johnson counties, which encompass the Greater Kansas City area. A salient observation was the notably higher exposure to primary care providers and lower preventable hospital stays in Johnson County, which also had a greater median household income and educational training. Since that commentary, there have been a number of public health initiatives that have been updated to improve concurrent local health disparities.[2-4] In particular, the Kansas City Community Health Improvement Plan (KC-CHIP) established numerous goals to improve public health infrastructure, which included educational funding in disinvested areas with lower property values for 2022-2027.[4] Moreover, there have been notable trends seen in the most recent data extracted from KC HealthMatters® (2015-2019) when compared to the 2014 extraction by Rumalla et al.[1] for the Wyandotte and Johnson counties (Table 1).[5]

In 2014, the median household income in Wyandotte County increased from $33,163 to $46,881.[5] Likewise, the median household income in Johnson County increased from $75,139 in 2014 to $89,087. What makes the income growth more encouraging, however, is that the Wyandotte County growth is over $10,000 more than the calculated United States Consumer Price Index inflation between 2014 to 2019 ($35,686).[6] The income growth in Johnson County was over $8,000 more than its inflation between 2014 to 2019 ($80,855).

The percentage of people aged 25 and older with a high school diploma or higher grew 0.3% in both counties (Wyandotte County: 78.9%; Johnson County: 96.0%).[5] However, the Wyandotte County growth rate can be of concern when considering that Wyandotte County has approximately 17% fewer people than Johnson County, therefore a greater increase would be desired to reduce healthcare disparity.

The number of primary care providers per 100,000 individuals has decreased 24.6% percent in Wyandotte County between 2014 and 2018, whereas this number has increased 19.2% in Johnson County.[5] This slower improvement seemed to make a weaker correlation to what was noted by Han et al.[7], which suggested income and resources for wealth were associated with educational success. From a primary care standpoint, a higher education attainment also was associated with higher measurements in health literacy, so the Wyandotte County measurements in health literacy were imperative to understand the socioeconomic climate.[8-10]

Moreover, poor health literacy was well established in literature to lead to increased hospital costs for the patient, as well as increased morbidity and mortality.[9-13] This issue further was compounded by the decrease in provider availability in Wyandotte County. This unfortunate decrease created a strain to the current network of available providers for patients in addition to the current healthcare infrastructure. This infrastructure included the concept of the healthcare safety net for first line emergency care in the form of emergency departments, emergency medical services providers (EMS), and public or free clinics.[11-13]

A potential solution provided by Rumalla et al.[1] was student-run free health clinics. This healthcare delivery model has been well-established in literature to address several healthcare disparities, including healthcare literacy, primary care screening, and education.[14-18] In addition, the student-run free health clinics create valuable learning opportunities for its student volunteers.[18,19] However, the growing strain on the local health safety net also may require additional interventions. This intervention could be additional student-run free health clinics.[20] This article aimed to provide a community level solution which may provide another distinctive solution that could work complementary to student-run free health clinics.

Mobile Health Clinics

A Mobile Health Clinic (MHC) is another community level intervention which can reduce the growing healthcare safety net strain.[21] Similar to student-run free health clinics, this intervention functions specifically as a delivery model for various medical services, including primary care and screening, preventative specialty care, and social interventions.[22-24] However, the unique quality which MHCs have is their ability to serve as a satellite medical facility that can allow for access to a wider demographic by geography. In addition, MHCs further remove the potential healthcare barrier of transportation for those who do not have a reliable source, and increase the convenience of healthcare access for the population who may have a reliable source of transportation.[23-25] The migratory characteristic carried by MHCs opens greater opportunities to establish patient rapport through a continued presence among communities which creates longitudinal care, and a foundation for greater provider trust by the patient.[26]

MHCs, by concept, create an environment which improves healthcare literacy for both the patient and provider.[22-25] Specifically, a patient having access to healthcare resources can create natural learning opportunities for themselves to improve healthcare literacy. However, the provider also gains a firsthand experience into physically being in their patients' community. This primary experience creates a greater sensory exposure which may not have been provided in the provider's training or a standard health clinic by being in one geographic location.

The fiscal implications of MHCs may create an encouraging proposition for their use in the community. In a community health survey by Attipoe-Dorcoo et al.[25], the types of healthcare services provided by 49 MHCs were recorded and an estimated mean cost range per patient visit was calculated to be lower than the standard costs for Medicare beneficiaries obtaining the same services at an institution. Community-level utilization of MHCs created a cost-savings environment in

Table 1. Temporal comparison of KC HealthMatters® data.[5]

	Wyandotte County		Johnson County	
	Measurement Period: 2014	Measurement Period: 2015-2019	Measurement Period: 2014	Measurement Period: 2015-2019
Median Household Income	$33,163	$46,881	$75,139	$89,087
People 25 and older with a High School diploma or higher	78.6%	78.9%	95.7%	96.0%
Primary Care Providers (per 100,000)*	61	46	104	124

*Most recent measurement period is 2018.

the form of reducing the number of avoidable emergency department visits.[22,27]

The current situation of MHCs in the state of Kansas is encouraging. According to the Mobile Health Map,[27] a collaborative network of MHCs in the United States which pool data on reported services and operation demographics (i.e., intended communities, mailing addresses, etc.), there are nine MHCs reported in Kansas. In comparison to the bordering states, Kansas had more reported MHCs than Nebraska (n = 6) and Oklahoma (n = 4), but far less than Colorado (n = 16) and Missouri (n = 27). Furthermore, six MHCs provided primary care services, and one also provided mammography screening, and another provided disaster relief services.[27] Based on the provided mailing address for each MHC, Johnson (n = 3), Shawnee (n = 3), Crawford (n = 1), Sedgwick (n = 1), and Saline (n = 1) provided MHCs. If an MHC will provide healthcare coverage to the county where it is located, then approximately 4% of the square area of Kansas is covered by at least one MHC. This implied that more MHC coverage, by county, could lead to more opportunities for individuals to receive healthcare services.

Additionally, these clinics rely on volunteers, including students, for day-to-day operative tasks like the student-run free health clinics discussed by Rumalla et al.[1] This volunteer opportunity provides students supplemental clinical exposure and practice to their medical training and was vital in exposing students to diverse patient populations. Finally, while MHCs create an overall beneficial healthcare delivery model, they also are not without limitations. The cost saving previously described also required an initial investment, which may require avenues to obtain this startup funding.[22-25,27] MHCs also must require carefully planned logistics and volunteers to provide equitable care for each location.[23,27] Despite these limitations, there were over 900 MHCs reported on Mobile Health Maps.[27]

CONCLUSIONS

Overall, the journey toward equitable health care will continue to require a multifaceted approach towards its delivery of care. Community level interventions such as MHCs are a promising concept which had unique characteristics that may lessen the burden on the healthcare safety net. This migratory delivery model allowed for greater geographic coverage, improvements in health literacy for both the patient and provider, fiscal impact, and education initiatives. Therefore, further studies to grow the literature on the community effects by MHCs is needed.

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