Use of Health Information Technologies in Federally Qualified Health Centers Predicts High Colorectal Cancer Screening Rates

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Introduction: Federally Qualified Health Centers (FQHC) offer preventive health services, including colorectal cancer (CRC) screening, to low-income and under-insured individuals in the United States (U.S.). Some FQHCs utilize health information technologies (HIT) such as kiosks, patient portals, and automated preventive care outreach to improve patient engagement and collect social risk factor (SRF) data. We aimed to determine the relationship between the use of HIT for this purpose and CRC screening rates in FQHCs.

Methods: We used data from the 2022 Uniform Data System (UDS) that collects annual quality and utilization data from FQHCs. For each FQHC, we abstracted the 2022 CRC screening rate for patients aged 50-74 (screening data for individuals aged 45-49 was unavailable). We also collected data on FQHC patient demographics, and the use of HIT to assess patients' SRFs: food security, transportation accessibility, housing security, and financial strain. For FQHCs that did not use HIT for this purpose, we collected reported reasons for non-use. Finally, we used multivariable mixed effects linear regression to study the association between CRC screening rates and HIT use to assess SRFs, controlling for FQHC characteristics.

Results: Our study included 1,281 FQHCs and 7,016,181 patients aged 50-74. The median CRC screening rate was 41.2%. The population was 42.9% male, 40.9% non-Hispanic White, 18.2% non-Hispanic Black, and 16% uninsured (**Table**). The utilization of HIT to collect SRF was 67.0%, and the most used tools were patient portals (93.1%) and secure messaging (76.7%). CRC screening rates were significantly higher in FQHCs that used HIT to collect SRF data than in FQHCs that did not use HIT for this purpose (43.0% v. 37.3%, $p<0.0001$). FQHCs that used HIT to collect SRF data had a higher percentage of Medicaid patients (46.1% vs. 42.2%, $p=0.007$) and were more likely to be in an urban setting (61.9% v. 53.0%, $p=0.002$) than FQHCs not using HIT for this purpose. In our adjusted models, the use of HIT to collect SRF data was associated with significantly higher CRC screening rates (Coefficient: 2.68, 95%CI, 0.89-4.47). FQHCs collecting SRF data commonly used it for quality improvement (99.2%) and population health management (87.2%). FQHCs that did not utilize HIT to collect SRF data cited a lack of funding (19.0%) and challenges incorporating HIT in clinical workflow (18.0%) as reasons for non-use (**Figure**).

Conclusion: In our analysis of U.S. FQHCs, CRC screening rates were significantly higher in

FQHCs that used HIT to collect SRF data. FQHCs that have financial and training resources to use HIT likely have more resources overall, a greater focus on preventive services, or differences in the patient population. Future studies should determine how to use HIT to improve patient engagement and optimize preventive health services utilization.

FQHC Characteristics	All FQHC (n=1281)	Collect SRF via HIT (n=858)	Do Not Collect SRF via HIT (n=423)	p-value
Total 2022 CRC Eligible Patients (n)	7,016,181	5,034,231	1,981,950	n/a
Total 2022 Total Patients (n)	26,825,050	19,372,182	7,452,868	n/a
% Male [median]	42.9	43.0	42.9	0.851
% Homeless [median]	1.8	1.9	1.6	0.050
% Uninsured [median]	16.0	15.9	16.3	0.120
% Medicaid [median]	45.0	46.1	42.2	0.007
% >200% FPL [median]	5.4	5.6	4.8	0.098
% Non-English Language Preference [median]	12.9	13.5	11.9	0.303
Race/Ethnicity [mean]				
% White Non-Hispanic	40.9	41.4	39.8	0.400
% Black Non-Hispanic	18.2	18.3	17.9	0.140
% Hispanic	27.3	27.2	27.6	0.891
% Asian Non-Hispanic	3.1	3.1	3.1	0.083
% Other Non-Hispanic	5.7	5.2	6.7	0.362
Region [n, (%)]				<0.0001
West	360 (28.1)	213 (24.8)	147 (34.8)	
Midwest	267 (20.8)	205 (23.9)	62 (14.7)	
South	441 (34.4)	273 (31.8)	168 (39.7)	
Northeast	213 (16.6)	167 (19.5)	46 (10.9)	
Urban [n, (%)]	755 (58.9)	531 (61.9)	224 (53.0)	0.002
% Food Insecure [mean]	2.1	2.1	n/a	n/a
% Housing Insecure [mean]	2.1	2.1	n/a	n/a
% Financial Strain [mean]	3.9	3.9	n/a	n/a
% Lack of Transportation [mean]	1.7	1.7	n/a	n/a
2022 CRC Screening Rate [median]	41.2	43.0	37.3	<0.0001

FQHC: Federally Qualified Health Center; *SRF*: Social Risk Factor; *HIT*: Health Information Technologies; *CRC*: Colorectal Cancer; *FPL*: Federal Poverty Level
Variables reported as [n (%)] represent % out of total column n.
P-values reflect a comparison of FQHCs that collect SRF data to FQHCs that do not collect SRF data. Significance attributed to all $p<0.05$.

Table. Characteristics of the FQHC study population, stratified by the use of health information technologies (HIT) to collect social risk factor (SRF) data

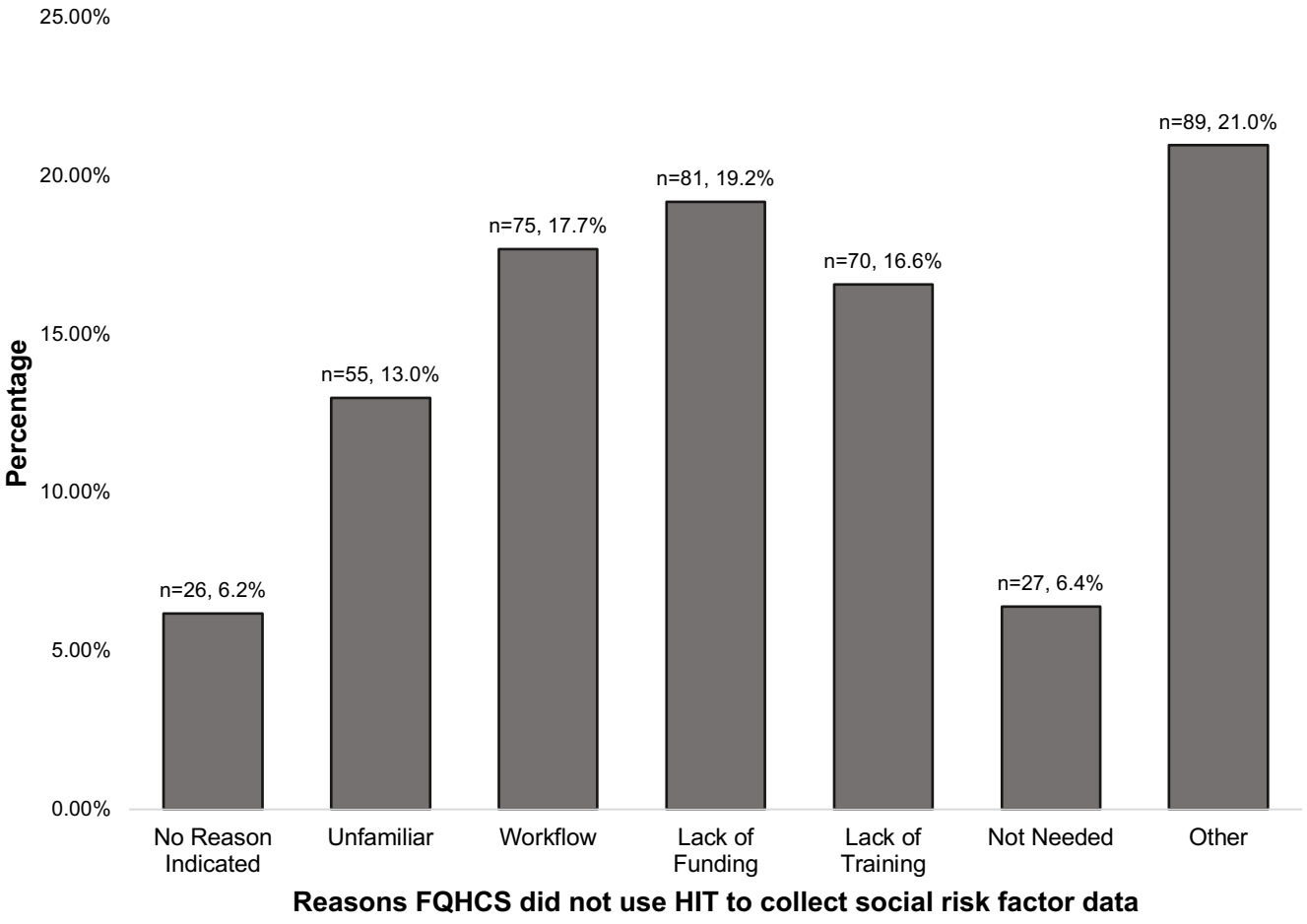

Figure. Frequencies for FQHC-reported major reasons for not using Health Information Technologies (HIT) to collect social risk factor data in 2022 (n=432)