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Time spent on eye disease screening, optical care, and care navigation within a federally qualified health center

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Abstract

Purpose: To quantify time spent on eye disease screening, optical care, and care navigation tasks during the Michigan Screening and Intervention for Glaucoma and Eye Health through Telemedicine (MI-SIGHT) program at a federally qualified health center (FQHC) in Michigan, with the goal of anticipating workforce needs to inform the scalability of similar programs in low-resource settings.

Design: Cross-sectional study.

Methods: Ophthalmic technicians recorded time spent with MI-SIGHT participants on eye disease screening tasks and optical care over 22 days from October 1 to October 31, 2023, and care navigation tasks over 22 days from December 4, 2023, to February 2, 2024. Eye disease screening tasks included a health history, measuring visual acuity, contrast sensitivity, intraocular pressure, pachymetry, taking external and fundus photos and macular and retinal nerve fiber layer optical coherence tomography images. Optical care tasks included refraction, ordering glasses, coordinating glasses pickups, dispensing and fitting glasses, and handling returns. Care navigation tasks included scheduling follow-up appointments, assisting with insurance, and providing medical interpretation and education. Minutes spent on tasks were summarized with descriptive statistics (mean, standard deviation, median, minimum, and maximum). Full-time equivalent (FTE) was calculated as the percentage of full-time hours over 22 days.

Results: 154 participants receiving care through the MI-SIGHT program were included. Technicians spent 21.4 % of an FTE on eye disease screening, 23.6 % on optical care, and 12.1 % on care navigation, with remaining FTE spent on other tasks including outreach, study coordination and research (42.9 %).

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Conclusions: Integrating optical care and care navigation services within a free eye disease screening program is time-intensive but can help deliver comprehensive, accessible eye care to low-income populations. The MI-SIGHT program offers a model for expanding eye care services in FQHCs and improving vision outcomes for medically underserved communities. This study provides insights into personnel needs to guide the scaling of similar programs in low-resource settings.

Precis: The Michigan Screening and Intervention for Glaucoma and Eye Health through Telemedicine (MI-SIGHT) program offers a novel approach to eye care by providing free eye disease screenings, optical services, and care navigation at a federally qualified health center to improve vision outcomes and eye health in underserved communities. This time study provides workforce estimates to guide the scaling of similar comprehensive eye care programs in low-resource settings.

Keywords

Time analysis; Eye disease screening; Optical care; Care navigation; Federally qualified health center; FQHC

Introduction

The Michigan Screening and Intervention for Glaucoma and Eye Health through Telemedicine (MI-SIGHT) program exemplifies a novel approach to eye care by providing free eye disease screenings, optical services including low-cost glasses, and care navigation support to attend recommended eye care follow up in communities with high rates of poverty.¹ Ophthalmic technicians are trained to perform eye disease screenings, provide optical services, and act as patient navigators to address barriers to care, a role that has been shown to increase follow-up attendance among patients.² By centralizing these services at a federally qualified health center (FQHC), MI-SIGHT reduces the need for multiple appointments, overcoming common barriers such as scheduling and transportation challenges. The MI-SIGHT program has demonstrated its effectiveness in identifying high rates of eye disease in the community, including a 1.5 times higher rate of visual impairment, 2.6 times greater rate of glaucoma, and 2.1 times greater rate of diabetic retinopathy compared to national averages.³ Quantifying the resources needed to scale such a program is necessary for expansion.

In the United States (US), approximately 7 million people are living with visual impairment (VI) or blindness,⁴ a figure projected to double by 2050.⁵ The most common cause of VI, uncorrected refractive error (URE),⁶ is easily correctable with eyeglasses. However, despite the negative impacts on quality of life and economic productivity,^{7,8} access to necessary optical services and affordable glasses remains a significant under-met healthcare need. Additionally, many people do not receive recommended eye disease screening,^{9–11} and significant racial and ethnic disparities persist. Black and Hispanic populations face disproportionately higher rates of VI and blindness compared to the non-Hispanic White population and are less likely to utilize eye care services.^{12,13} MI-SIGHT sought to improve accessibility by integrating eye disease screening with optical services to ensure that at-risk

populations, who have limited contact with the healthcare system, received necessary eye disease screenings.

The MI-SIGHT program offers a model for expanding eye care services in FQHCs, integrating eye disease screening with optical care to improve vision outcomes and eye health in underserved communities. Planning for the potential scale-up of similar programs requires a clear understanding of the resources and time needed to sustain operations. This study quantifies the time ophthalmic technicians dedicate to eye disease screening, optical care, and care navigation tasks within the MI-SIGHT program to provide workforce estimates to inform the scalability of eye care services in low-resource settings.

Methods

The MI-SIGHT program is a telemedicine-based eye disease screening initiative located within an FQHC in Flint, MI and a free clinic in Ypsilanti, MI that integrates eye disease screening with optical care and care navigation services.¹ The typical workflow of ophthalmic technicians is shown in Fig. 1. A time study was conducted over two distinct time periods to assess the minutes spent on eye disease screening, optical care tasks, and care navigation tasks within the program at the FQHC site (Hamilton Community Health Network). Times to provide eye disease screening and optical care tasks were reported over a 22-day period between October 1, 2023 and October 31, 2023. Care navigation tasks were reported over a 22-day period between December 4, 2023 and February 2, 2024. The period of 22-days is equivalent to a month of full-time work, excluding weekends. Two ophthalmic technicians recorded the time during separate periods to ensure precise measurements. Technicians independently recorded the start and stop times for each task during the time study period. For each participant, the technicians documented the clock times at the beginning and end of each task, which were then recorded in the Excel spreadsheet for analysis.

The following tasks were timed for each participant seen during the time study period: (1) Eye disease screening tasks included taking a health history, measuring visual acuity, autorefraction, manifest refraction, best corrected visual acuity, contrast sensitivity, pupillary response, anterior chamber angle by penlight, extraocular movements, confrontation visual fields, intraocular pressure (iCare), pachymetry, taking external and fundus photos and macular and retinal nerve fiber layer optical coherence tomography (OCT) images. (2) Optical care tasks included refraction refinement with trial frames, assisting participants in selecting and ordering glasses (Zenni Optical, Novato, California), phone calls to coordinate glasses pickups, dispensing and fitting glasses, handling glasses returns, and miscellaneous tasks including ordering additional pairs of glasses. (3) Care navigation tasks included providing educational materials about eye disease screening results and scheduling follow-up appointments if needed, assisting with insurance applications, providing medical interpretation, and miscellaneous tasks such as connecting participants to food pantry resources and scheduling appointments for additional medical and social services at the FQHC. Ophthalmic technicians underwent training with an optician to learn to fit eyeglasses and worked with the social workers at the FQHC to learn about available community resources. Other tasks performed by technicians for the MI-SIGHT program but not

measured in the time study included: (1) Outreach included posting flyers in various community locations including senior apartment buildings, low-income housing buildings, food pantries, and churches and attending community outreach events. (2) Scheduling included contacting patients with diabetes already established at the FQHC who were overdue for their annual eye exam, coordinating referrals from primary care physicians, and scheduling initial appointments. (3) Research related activities included data entry, data management, survey administration, IRB related activities, and attending research-related meetings.

Minutes spent on tasks were summarized with descriptive statistics (mean, standard deviation [SD], median, minimum, and maximum). Time spent on each task was compared between those who screened positive for glaucoma and those who screened negative for glaucoma using Wilcoxon rank sum tests. The percentage of time spent on each task was calculated from a month full-time equivalent (FTE) of a single technician. Monthly FTE assumed an 8-hour workday, including half an hour lunch break, over a 22-day period (8 h/day x 22 days = 176 h). Although we had two technicians serving the MI-SIGHT program, for FTE analysis we summed the time for each task across technicians and provide percentages based on the monthly FTE of one technician. This calculation represents the percentage of monthly time these tasks would take a single technician to perform should they do all these tasks themselves. Characteristics of participants included in the time study and their program satisfaction were summarized and compared with the first-year MI-SIGHT cohort³ using two-sample *t*-tests for the continuous measures and chi-square or Fisher's exact tests for the categorical measures. This comparison was conducted to verify that this time study subsample was representative of the larger first-year MI-SIGHT cohort in terms of program satisfaction. Significant chi-square or Fisher's exact tests were followed by post-hoc pairwise comparison. Holm's procedure was used to adjust for multiple comparisons. A pie chart was used to display the proportion of FTE spent on each task in one month. Statistical analysis was performed using R version 4.4.0 (R Foundation for Statistical Computing, Vienna, Austria).

Results

A total of 154 participants receiving care through the MI-SIGHT program were included in the time study. Technicians provided eye disease screening to 79 participants taking a total of 50.3 h. Each eye disease screening took an average of 38.2 ± 11.6 min (range 19–78 min). Technicians provided optical care to 118 participants taking a total of 41.6 h, of whom 79 received refractions (Table 1). The average refraction time was 13.5 ± 4.4 min. Technicians assisted 64 participants with the selection and ordering of glasses, taking an average of 12.6 ± 5.7 min. The average time spent on dispensing and fitting glasses ($n = 54$) was 5.1 ± 2.5 min. The average time spent on phone calls ($n = 73$) was 1.2 ± 0.7 min. There were other optical care tasks, including reordering glasses, ordering additional pairs of glasses, and showing the optical website to the participants. For the twelve participants who had these other optical care tasks, the average time spent was 14.0 ± 9.6 min (range 5–38 min). During the study period, there were two eyeglasses returns that technicians performed on behalf of participants; the average processing time was 43.5 ± 41.7 min and included packaging and transporting returns to the post office.

Technicians provided care navigation to 59 participants taking a total of 21.3 h. The average time taken to schedule appointments ($n = 35$) was 12.8 ± 13.2 min. The average time taken to provide educational materials about eye disease screening results ($n = 17$) was 26.2 ± 29.2 min. The average time taken to assist with insurance ($n = 13$) was 13.4 ± 10.7 min. The average time spent on interpretation services ($n = 5$) was 32.6 ± 22.1 min. Technicians spent time on other care navigation tasks, such as discussion of the follow-up care with a physician, connecting participants to food and social work resources, and calling participants to remind them of their follow-up care visit with the physician, if requested. The average time spent on these other care navigation tasks ($n = 34$) was 9.6 ± 9.5 min (range 1 - 45 min).

Though not statistically significant, technicians trended towards spending more time on each task for those who screened positive for glaucoma or suspected glaucoma compared to those who screened negative for glaucoma. Specifically, the average times spent on eye disease screening, optical care task, and care navigation for those who screened positive for glaucoma versus those who screened negative were 39.7 ± 13.5 min vs 37.8 ± 11.2 min ($p = 0.7$), 25.8 ± 12.2 min vs 20.2 ± 13.3 min ($p = 0.05$), and 24.5 ± 21.6 min vs. 16.6 ± 12.6 min ($p = 0.5$), respectively.

Fig. 2 displays the hypothetical percentage of monthly FTE for a single technician over a 22-day working period given they performed all participant eye disease screenings, optical care tasks, and care navigation tasks for the study time period. A technician would spend approximately 21.4 % of an FTE on eye disease screening exams, 23.6 % on optical care tasks, and 12.1 % on care navigation tasks. The remaining 42.9 % FTE time would be spent on program outreach, study coordination, and research tasks. If a technician were to provide full time clinical care (eye disease screening, optical care, and care navigation), a technician could deliver these services to 117 patients in a month (165 h a month/(1.35 h per patient + 0.5 hour daily breaks)) or 29–30 patients in a week. This assumes that the technician is not doing any of the scheduling or reminder calls.

The 154 participants included in the analysis were on average 52.6 years old (SD = 15.9), 62.7 % female, 39.7 % identified as Hispanic ethnicity, 49.6 % identified as Black race and 27.7 % identified as White race, 50.7 % reported having high school education or less, 51.0 % reported less than \$30k of annual household income, and 16.9 % reported that they had no medical insurance (Table 2). The time study cohort and the larger first-year MI-SIGHT cohort were not significantly different by age, sex, education, and medical insurance status (all $p > 0.05$). However, the time study cohort had a larger percentage of participants who identified as Hispanic (39.7 % vs 10.5 %, $p < 0.0001$), a larger percentage of participants who identified as Other race (22.7 % vs 7.7 %, $p < 0.0001$), and a smaller percentage of participants identified as Asian (0 % vs 4.4 %, $p = 0.0133$) compared to the first-year MI-SIGHT cohort. All participants that identified as Other race in the time study cohort identified as having Hispanic ethnicity, while only 49 % of participants identified as Other race in the first-year MI-SIGHT cohort identified as having Hispanic ethnicity. No significant pairwise differences in any pairs of income group were observed between the time study cohort and the first-year MI-SIGHT cohort (all Holm-adjusted $p > 0.05$). Almost all participants reported being satisfied with their glasses order (97.4 %), very satisfied with

the eye screening visit (95.3 %), very likely to recommend the program to a family member or friend (95.3 %) and found the program to be very convenient (95.9 %) (Table 3). No participants reported dissatisfaction with the eye screening visit or found the program to be inconvenient. No significant differences in satisfaction with the program or glasses ordering were observed between the time study cohort and the first-year MI-SIGHT cohort (all $p > 0.05$).

Discussion

This study provides a detailed time analysis of various optical care tasks and care navigation within a free eye disease screening program, providing data on the personnel needs to inform future program scaling. An ophthalmic technician would expect to spend 21.4 % of their time on glaucoma and eye disease screening, 23.6 % of their time on optical care, and 12.1 % of their time on care navigation. Remaining time was spent on scheduling appointments, making reminder calls, program outreach, study coordination, and research activities. While optical care and care navigation services required more time than eye disease screening alone, we feel they are critical components of participant engagement, program satisfaction, and, ultimately, improved participants' vision-related quality-of-life. Being able to access affordable glasses that participants felt good about wearing and improved their vision was reflected in the very high (97.4 %) satisfaction rates with the glasses orders. If a technician's full-time job was dedicated to optical care, glaucoma and eye disease screening, and care navigation, and scheduling and reminder calls were done by a clerk, the technician could screen and care for thirty patients per week or six patients per day. At our institution, a technician is expected to work up 16 patients per day, but their tasks are limited to obtaining a brief history, measuring vision and pinhole acuity, refracting if needed, checking pupils, extraocular motility, confrontation visual fields, intraocular pressure, and administering dilation drops. In contrast, technicians in the MI-SIGHT program take on a broader range of responsibilities both due to the absence of additional support roles, such as photographers and care navigators, and the increased responsibilities of the screening process. The technicians who run the MI-SIGHT program take a more comprehensive health history, measure visual acuity, pinhole acuity, auto refraction, manifest refraction, contrast sensitivity, intraocular pressure, pachymetry, pupils, ocular motility, confrontation visual fields, instill dilating drops, obtain external photos, photos of the posterior pole, obtain optical coherence tomography images of the macula and retinal nerve fiber layer, and help the patient navigate the online glasses retailer website to choose and order low-cost glasses. If a patient screens positive for eye disease, the ophthalmic technician also acts as a patient educator and care navigator to educate the patient about the outcome, helps the patient schedule the appointment, and arranges for any needed additional services such as transportation and interpretation. If a patient needs assistance with insurance, the ophthalmic technician assists with preliminary forms for charity care at the University and assists the patient in connecting with a social worker for additional support. The ophthalmic technician also schedules all screening appointments and follow-up appointments. When photography, care navigation, and optical care tasks are included, the number of patients a technician can see decreases. However, these added responsibilities provide significant value by allowing the technician to offer a broader range

of needed services to patients in a community context. FQHC leadership could consider re-allocating some of this workload amongst various staff such as social workers, community health workers, and clerical staff if they wanted the ophthalmic technicians to assist a higher volume of patients with eye disease screening and vision care.

FQHCs provide primary care to many people living with low-income in the US, including people who are publicly insured and those who do not have insurance. The network of FQHCs is well-positioned to provide comprehensive eye disease screening and vision care in communities that are medically underserved, yet, as of 2021, only 32 % of FQHCs provide some form of eye care and of those FQHCs that provide eyecare, only 2.6 % of people receiving medical care have also received eye care services.¹⁴ The MI-SIGHT program paradigm, where eye disease screening is performed by ophthalmic technicians and interpreted by eye doctors that can either be remote or on-site depending on the resources of the FQHC, and where the service is coupled with the ophthalmic technicians dispensing glasses and providing care navigation, could serve as a framework for expanding eye care in FQHCs. This paradigm could help improve vision outcomes for those who are medically underserved in the US. Assessing the costs associated with ophthalmic technician performing these screenings is helpful for determining the scalability of this comprehensive eye care model in an FQHC. An ophthalmic technician earns an average of \$47,780/year, plus benefits.¹⁵ When adjusting for a 30.4 % benefit rate, as done in a micro-costing analysis from a similar glaucoma screening program in New York,¹⁶ the total annual cost for a technician is approximately \$54,481. Having an ophthalmic technician conduct the screening prior to an eye doctor visit allows for more efficient scheduling of patients at vision clinics within FQHCs, e.g., 30 min for a detailed exam if eye pathology is detected and 10 min for a routine wellness check if no pathology is found. If the vision clinic were able to add six patients daily to their volume, an FQHC could generate additional revenue of \$249,120 annually, based on the Michigan FQHC Prospective Payment Services (PPS) rate of \$173/patient (personal communication, Sherry Pace, COO Hamilton Community Healthcare Network, 2022) and assuming 48 working weeks. This additional revenue more than covers the cost of the ophthalmic technician's salary and supports the financial sustainability of such a screening program within the vision clinic. Training ophthalmic technicians to help fit glasses purchased online can be particularly beneficial in low-resource settings like FQHCs, where hiring a separate optician may not be feasible. The system could be made more efficient by involving community health workers in care navigation, interpreters for interpretation, and clerks for appointment scheduling.

There were no significant demographic differences in age, sex, education level, and medical insurance status between this study cohort and the first-year MI-SIGHT cohort suggesting similar social risk factors between the two groups. The main difference between the first year MI-SIGHT cohort and this study cohort was that there were more participants who spoke Spanish in the time study cohort compared to the first-year MI-SIGHT cohort. While this may have increased the need for interpretation services outside the eye care setting, in terms of the glaucoma and eye diseases screening and optical care, the times should be appropriately captured as both ophthalmic technicians in this program were bilingual and spoke English and Spanish. Therefore, it is reasonable to assume that these time distributions likely represent the average times for the MI-SIGHT program in general.

We observed high patient satisfaction with glasses orders and a low rate of glasses returns, with only two instances of participants requiring a remake. There were no significant differences in satisfaction with the program overall or glasses ordering between this study cohort and the first-year MI-SIGHT cohort.³ The VA Technology-Based Eye Care Services (TECS) program, a telehealth initiative that uses a remote eye screening framework similar to MI-SIGHT, reported comparable findings of high patient satisfaction and low glasses remake rates, but they did not use an online vendor to purchase the glasses.¹⁷ Previous research has found that patients, especially those with low-income, were skeptical of purchasing glasses online and were concerned about the quality.^{18,19} We hypothesize that our refraction process, which included autorefractometry with subjective refinement in a phoropter, verification using trial frames, and a conversation between participant and technician about frame selection where participants could try on a selection of frames, all contributed to our high satisfaction rates and low glasses remake rates. Ophthalmologists reviewed the autorefractometry results, subjective refraction, and best-corrected visual acuity to make the final decision on prescribing glasses. The technicians measured interpupillary distance and placed the online glasses order, decreasing potential errors in patient data entry into online systems that could potentially lead to poor satisfaction with online glasses. The ophthalmic technicians adjusted participants' glasses when they came to pick them up at the clinic to help ensure a proper fit. The glasses were returnable within two weeks for a full refund and within 30 days for an exchange. We honored the retailer's return policy and facilitated the return process for participants. When a return was needed, it took a very long time (43.5 ± 41.7 min) as the glasses needed to be returned to the post office and a new glasses order was then needed. Minimizing the return rate was imperative to maintain programmatic efficiency, which is why we used the tripartite refraction method: autorefractometry, subjective refinement in the phoropter, and trial frame adjustment. The ophthalmic technicians, with optical training, were able to successfully dispense and fit glasses in a way that was affordable to participants with low income - without a subsidy - by leveraging an available low-cost online glasses retailer. Having the ophthalmic technicians fill this role did add to their patient care time, but it also obviated the need to hire an additional FTE for an optician and to have a full space dedicated to an optical shop. Instead, we had two portable cases of glasses frames displayed and showed additional pairs online, if needed. Depending on an eye clinic's volume and patient resources, this form of task-shifting may make sense and can be an avenue towards providing patients with quality glasses.

The MI-SIGHT program effectively closed the care loop for patients by integrating eye disease screening, optical care services, and care navigation at a single location, helping to minimize the risk of patients being lost to follow-up between services when components are conducted at multiple locations. Previous studies have reported low follow-up adherence rates at ophthalmologist appointments following community-based eye screening.²⁰⁻²³ A community eye screening program in Baltimore found that only 41 % of patients who screened positive and were scheduled for a definitive eye exam at a separate site attended the follow-up appointment.²⁰ The SToP Glaucoma program reported that 57 % of those referred for definitive exam after community screening attended their follow-up appointment.²⁴ Lack of transportation is a common barrier that often impedes the utilization of eye

care services.^{25–27} As such, care navigation was an essential component of our program. Technicians served as patient navigators, guiding patients through the complex healthcare system²⁸ and addressing barriers to care, including cost concerns and transportation challenges, among others.²⁹ Providing care navigation as a service filled 12 % of the ophthalmic technician's time. Redistributing this task to community health workers or social workers could improve efficiency, allowing technicians to focus on the eye screening and optical care responsibilities. Other studies have shown that patient navigators have led to improved adherence to follow-up eye care.² We hypothesize that our use of care navigation will impact our rate of attendance at recommended follow-up care, and we will assess this in future work. Exploring the drivers for attendance at recommended follow-up care is also planned for future analyses.

This study has several strengths, including a detailed time analysis of various optical and care navigation tasks within the MI-SIGHT program, providing valuable insights into technicians' effort distribution in the free eye disease screening program. Comparison of participant demographic characteristics between this study cohort and the larger first-year MI-SIGHT cohort revealed no significant differences in age, sex, education level, and medical insurance status. However, the time study cohort had a higher proportion of Hispanic participants and higher income levels (49 % income $\geq$ \$30,000 in the time study cohort vs 30 % income $\geq$ \$30,000 in the first-year cohort). Despite these demographic variations, there was no significant difference in program satisfaction between the cohorts, suggesting that the program's success, as measured by satisfaction with the services rendered, is likely generalizable to other diverse populations. This study has practical implications as it details personnel needs for different components of a glaucoma and eye disease screening program and can inform future implementation efforts at other FQHCs. Detailing task durations helps identify opportunities to reallocate responsibilities among personnel, such as community health workers, interpreters and clerical staff, tailored to the site's specific operational needs. While MI-SIGHT technicians currently handle all tasks, some responsibilities could be redistributed among other staff members depending on availability and capacity to improve workflow. However, it is important to ensure that all tasks are completed to provide comprehensive eye care. Our study has limitations. The single site design at an FQHC may limit the generalizability of the findings to other healthcare settings. While we assessed overall satisfaction with the program and glasses ordering, we did not specifically evaluate satisfaction with care navigation. Additionally, this study was conducted during a single period, which may not fully capture the variability in task durations. Given that some of the technician's time was spent on data collection, analysis, and research coordination, the study likely underestimates the number of patients that could be helped by one technician FTE. Measuring contrast sensitivity, which took approximately 2 min per patient, was conducted for research purposes and does not reflect routine clinical practice, and therefore overestimated our disease screening times.

Integrating optical care and care navigation services within an eye disease screening program at an FQHC takes additional resources but we believe it to be essential for providing comprehensive eye care for a low-income population. Providing eye disease screening without subsequent care navigation for those who screen positive for eye disease makes it less likely that patients will ultimately receive the recommended eye

care. Providing eye disease screening without providing accessible, affordable, desirable glasses does not address the leading cause of visual impairment in the US, uncorrected refractive error.⁶ This study serves to provide workforce estimates for scaling this type of eye care by offering insights into task durations that can guide the redistribution of responsibilities among staff. By detailing the time required to operate a comprehensive eye disease screening program, this study aims to equip healthcare leaders with the knowledge needed to effectively plan and allocate resources to support the sustainable implementation of similar eye care programs in FQHCs or other low-resource settings.

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Declaration of interests

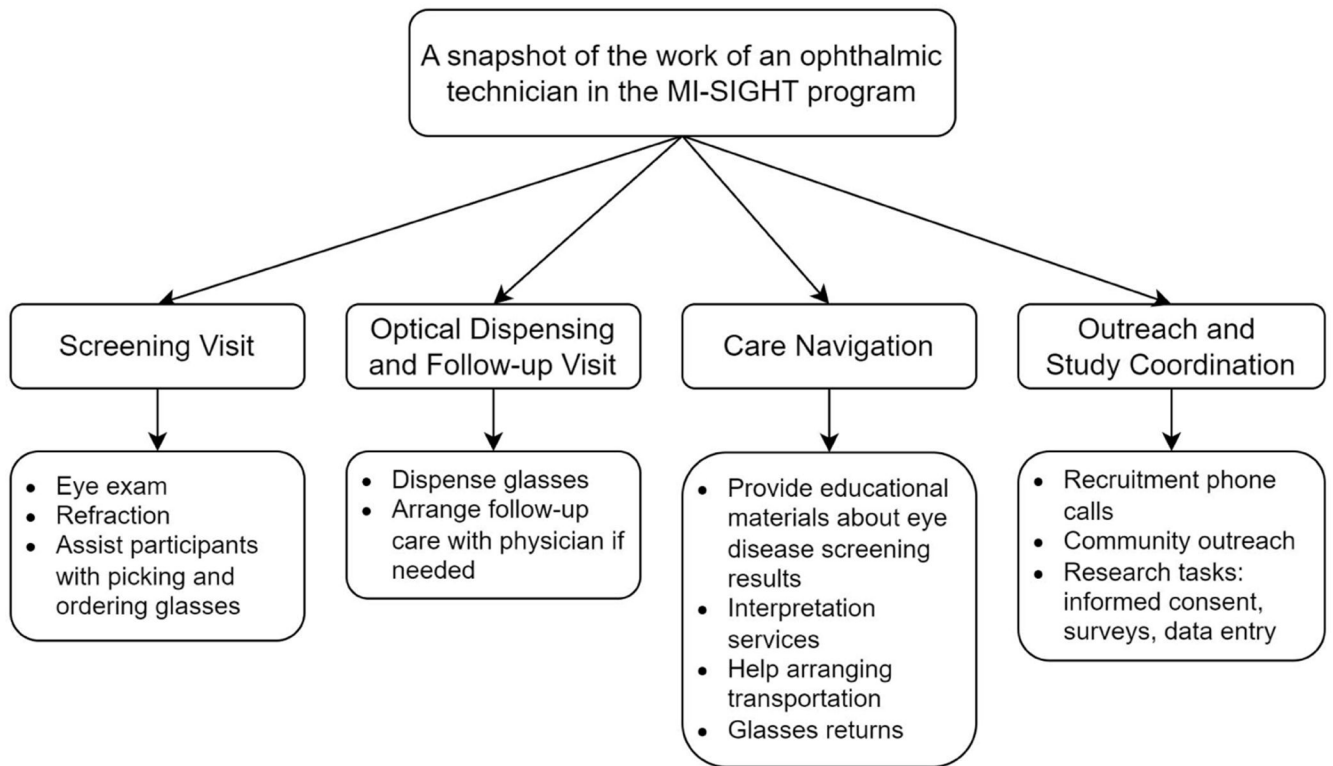
The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

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**Fig. 1.**

A flowchart displaying the typical work of an ophthalmic technician.

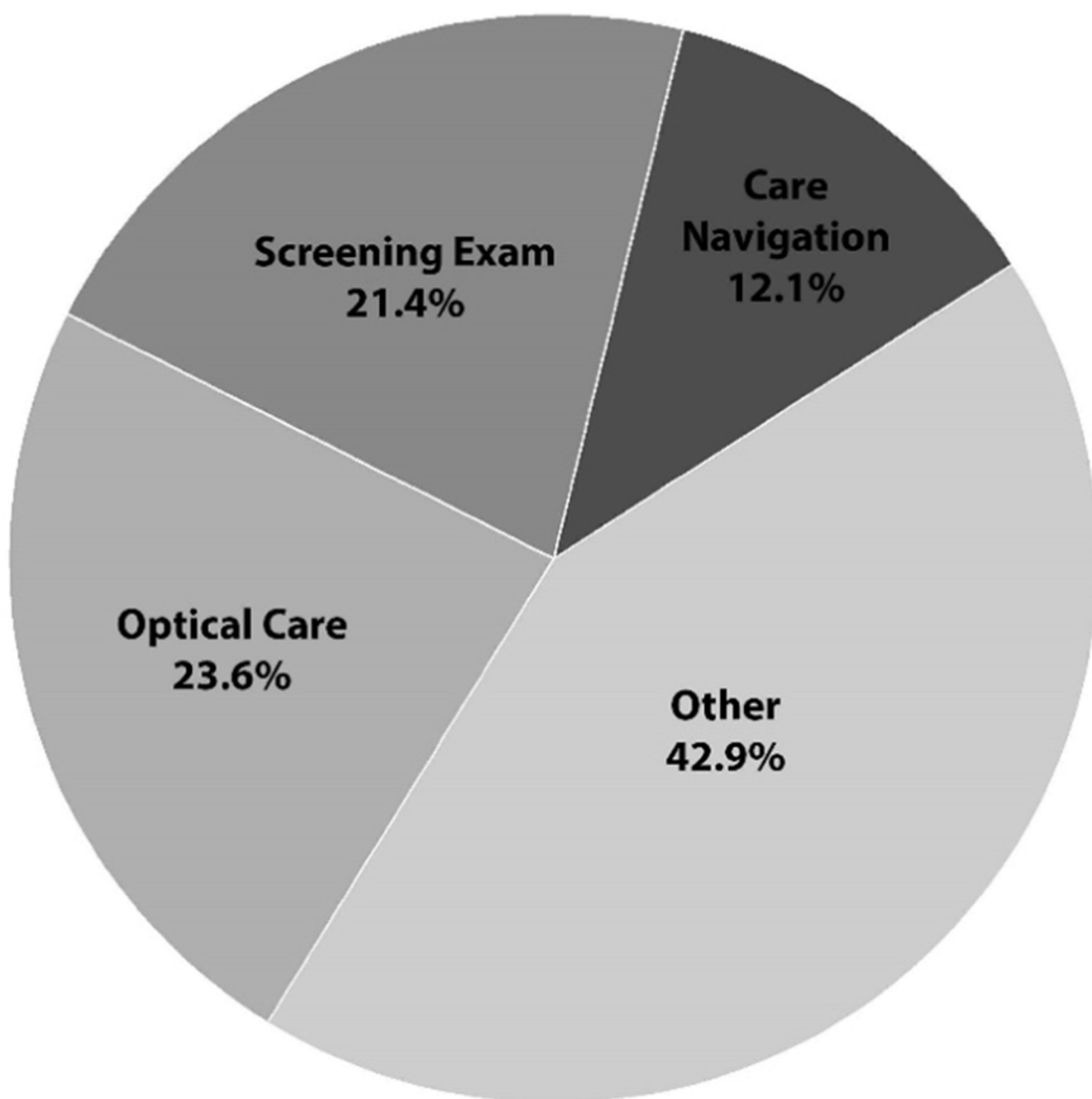


Fig. 2.
Pie chart showing the percentage of time an ophthalmic technician spends on tasks for a full-time equivalent (FTE) 22-day working month.

Table 1

Descriptive statistics for time (minutes) spent on eye disease screening, optical care, and care navigation tasks.

	N	Mean (SD), Median	Min, Max
Eye Disease Screening Task (visual acuity, pachymetry, IOP, contrast sensitivity, fundus photography and OCT)	79	38.2 (11.6), 36.0	19, 78
Optical Care Task	118 [*]		
Refraction	79	13.5 (4.4), 12.0	7, 30
Picking and Ordering Glasses	64	12.6 (5.7), 12.0	1, 26
Dispensing and Fitting Glasses	54	5.1 (2.5), 5.0	1, 17
Returning Glasses	2	43.5 (41.7), 43.5	14, 73
Phone Calls	73	1.2 (0.7), 1.0	0, 5
Miscellaneous ^a	12	14.0 (9.6), 11.5	5, 38
Care Navigation Task	59 [*]		
Appointment Scheduling	35	12.8 (13.2), 7.0	2, 56
Education	17	26.2 (29.2), 13.0	4, 95
Insurance Help	13	13.4 (10.7), 9.0	2, 40
Interpretation	5	32.6 (22.1), 37.0	8, 59
Miscellaneous ^b	5	9.4 (8.5), 5.0	1, 20

IOP, intraocular pressure. OCT, optical coherence tomography. SD, Standard Deviation. Min, Minimum. Max, Maximum.

^a Miscellaneous optical care tasks included re-ordering glasses, ordering additional pairs of glasses, showing the optical website to the participant, and answering questions about glasses prescriptions.^b Miscellaneous care navigation tasks included discussions about follow-up care with physicians, connecting participants with food pantry and social work resources, making reminder calls for follow-up visits with physicians, and scheduling dental appointments within the FQHC.^{*} Individual task sample sizes do not sum to total due to some participants receiving more than one task.

Table 2

Comparison of participant demographics between the time study cohort and the first-year MI-SIGHT cohort.

	<u>Time Study Cohort (n = 154)</u>		<u>First-year MI-SIGHT Cohort (n = 1159)[‡]</u>		
Continuous Variable	Mean (SD), Median	Min, Max	Mean (SD), Median	Min, Max	P-value
Age (years)	52.6 (15.9), 53.6	18.1, 86.8	55.1 (14.5), 57.0	18.1, 94.2	0.2
Categorical Variable	Frequency (%)		Frequency (%)		P-value
Sex					
Male	57/153 (37.3)		432/1146 (37.7)		1.0
Female	96/153 (62.7)		714/1146 (62.3)		
Ethnicity					
Hispanic	58/146 (39.7)		101/958 (10.5)		<0.0001
Non-Hispanic	88/146 (60.3)		857/958 (89.5)		
Race					
Black	70/141 (49.6)		583/1081 (53.9)		<0.0001 [*]
White	39/141 (27.7)		367/1081 (34.0)		
Asian	0/141 (0.0)		48/1081 (4.4)		
Other	32/141 (22.7)		83/1081 (7.7)		
Education					
Less than high school	17/152 (11.2)		117/1139 (10.3)		0.2
High school or equivalent	60/152 (39.5)		369/1139 (32.4)		
Some college or associate degree	37/152 (24.3)		387/1139 (34.0)		
College degree	26/152 (17.1)		138/1139 (12.1)		
Graduate degree or higher	12/152 (7.9)		128/1139 (11.2)		
Income					
Less than \$10,000	14/100 (14.0)		246/983 (25.0)		0.0220 [‡]
\$10,000 - \$19,999	22/100 (22.0)		242/983 (24.6)		
\$20,000 - \$29,999	15/100 (15.0)		202/983 (20.5)		
\$30,000 - \$49,999	28/100 (28.0)		170/983 (17.3)		
\$50,000 - \$69,999	9/100 (9.0)		58/983 (5.9)		
\$70,000 and above	12/100 (12.0)		65/983 (6.6)		
Medical Insurance					
No	26/154 (16.9)		228/1130 (20.2)		0.8
Yes	128/154 (83.1)		902/1130 (79.8)		

SD, Standard Deviation. Min, Minimum. Max, Maximum.

[‡]There were 12 participants that were in the first year MI-SIGHT cohort but were not include in the comparisons due to the independent assumption of two-sample *t*-test and chi-square or Fisher's exact tests.

* Post-hoc Holm-adjusted pairwise comparison showed significant differences in race between our study cohort and the first-year MI-SIGHT cohort for: Black ($p = 0.4$), White ($p = 0.3$), Asian ($p = 0.0133$), and Other race ($p < 0.0001$).

[‡] Post-hoc Holm-adjusted pairwise comparison did not show significant differences in income level between our study cohort and the first-year MI-SIGHT cohort after adjusting for multiple comparison: less than \$10,000 ($p = 0.1$), \$10,000 - \$19,999 ($p = 0.7$), \$20,000 - \$29,999 ($p = 0.7$), \$30,000 - \$49,999 ($p = 0.07$), \$50,000 - \$69,999 ($p = 0.7$), and \$70,000 and above ($p = 0.3$).

Table 3

Comparison of glasses and program satisfaction between the time study cohort and the first-year MI-SIGHT cohort.

	Time Study Cohort (<i>n</i> = 154)	First-year MI-SIGHT Cohort (<i>n</i> = 1159)	
	Frequency (%)	Frequency (%)	P-value
Glasses Order Satisfaction			
Satisfied	76/78 (97.4)	779/793 (98.2)	0.9
Dissatisfied	2/78 (2.6)	6/793 (0.8)	
Dissatisfied, <i>Re-make</i> required	0/78 (0.0)	8/793 (1.0)	
How satisfied are you with your SIGHT eye screening visit?			
Very Satisfied	141/148 (95.3)	1010/1107 (91.2)	0.9
Satisfied	6/148 (4.1)	86/1107 (7.8)	
Neutral	1/148 (0.7)	7/1107 (0.6)	
Dissatisfied	0/148 (0.0)	4/1107 (0.4)	
Very Dissatisfied	0/148 (0.0)	0/1107 (0.0)	
How likely are you to recommend this SIGHT eye screening program to a family member or friend?			
Very Likely	141/148 (95.3)	1019/1108 (92.0)	0.9
Likely	6/148 (4.1)	70/1108 (6.3)	
Neutral	1/148 (0.7)	12/1108 (1.1)	
Unlikely	0/148 (0.0)	2/1108 (0.2)	
Very Unlikely	0/148 (0.0)	3/1108 (0.3)	
Prefer not to answer	0/148 (0.0)	2/1108 (0.2)	
How convenient was this SIGHT eye screening program?			
Very Convenient	142/148 (95.9)	963/1108 (86.9)	0.05
Convenient	5/148 (3.4)	126/1108 (11.4)	
Neutral	1/148 (0.7)	11/1108 (1.0)	
Inconvenient	0/148 (0.0)	7/1108 (0.6)	
Very Inconvenient	0/148 (0.0)	1/1108 (0.1)	