Social Determinants of Health Focused Home and Neighborhood Visits: a Mixed Methods Analysis of an Internal Medicine Curriculum

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Social determinants of health (SDH) contribute substantially to health outcomes and account for health disparities. Consequently, graduate medical education accreditation bodies have called for inclusion of social determinants of health (SDH) in medical training.[1] Internal medicine (IM) physicians manage many health outcomes for which SDH have a significant impact, yet few residencies offer curricula on SDH.[2]

Home visits are conducive to experiential teaching of SDH; they allow insight into patients' living conditions, social supports, and challenges living with illness and competing priorities.[3] Through a home visit and reflection, residents can partake in transformative learning, where first-hand experience leads to professional identity-formation that is more enduring. Coupling home visits with neighborhood asset-mapping contextualizes patient care within the neighborhood environment and extends learning beyond individual patients.[4,5] No IM program has evaluated the use of a combined home visit and neighborhood assessment of continuity clinic patients as a tool to teach SDH. We conducted a mixed-methods study to understand the impact of this curriculum on residents and identify barriers to implementation.

METHOD

All 48 second-year IM residents at the University of Pittsburgh participated in the curriculum during their ambulatory rotation, running consecutively from January to December 2018. The month-long curriculum consisted of a 1-h small-group introduction session including online resources for addressing SDH, guided virtual neighborhood assessment, half-day SDH focused neighborhood and home visit, and 1-h group debrief session.

We administered surveys prior to and immediately after the curriculum assessing residents' attitudes and self-reported behaviors regarding SDH using a 5-point Likert-type scale, and demographics. The survey was developed de novo and piloted prior to administration. Mean pre- and post-intervention responses were compared using paired *t*-tests or McNemar tests (Stata v.16.0).

We conducted five, 1-h-long group interviews of 3 to 5 residents who participated in the group debrief from January to June 2018, using a semi-structured interview guide. Interviews were conducted by an independent facilitator, audio-recorded, and transcribed. We performed content and thematic analysis of transcripts through iterative inductive and deductive coding (Atlas.ti v.8.0). Consistency of themes emerging by our fifth group interview indicated thematic saturation was achieved. This study was approved by the University of Pittsburgh Quality Improvement Review Committee.

RESULTS

Forty-six residents completed the pre-intervention survey (95.8%) and 39 residents (85%) completed the post-intervention survey. Twenty-four (52%) were female; 30 (65%) self-identified as White, 11 (24%) as Hispanic, 3 (7%) as Asian, and 1 (2%) as Black; and 16 (35%) experienced a negative childhood SDH including financial, housing, or food insecurity. The curriculum improved attitudes on knowing and asking about patients' neighborhood, and comfort asking about SDH (Table 1). Residents reported increases in incorporating SDH into plans, asking about and addressing SDH, and using online tools to identify neighborhood resources.

Of 22 eligible residents, 19 participated in a group interview. Residents identified five major themes on the curriculum's impact (Table 2). They suggested improvements in curriculum implementation, including adding more opportunities to conduct home and neighborhood visits, pairing residents, more explicit guidance asking patient permission for a home visit, and flexibility in scheduling visits.

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Table 1 Survey Results of Resident Attitudes and Self-reported Behavior

Mean (sd) or *n* (%)	Pre (*n*=46)	Post (*n*=39)	*P*-value
Overall attitude*	3.7 (0.6)	3.9±0.6	.069
It is important to be knowledgeable about the neighborhoods in which my patients live	4.2 (0.7)	4.4±0.6	**.014**
When precepting, faculty member prompts me to think about SDH	2.7 (1.1)	2.9±1.2	.057
Overall comfort asking about SDH†	3.7 (0.7)	4.1 (0.7)	**<.001**
Neighborhoods in which patients live	3.4 (1.0)	4.1 (0.8)	**<.001**
Medication affordability	3.8 (0.9)	4.1 (0.9)	**.002**
Access to healthy food	3.5 (0.9)	3.9 (1.0)	**.001**
Housing	3.4 (1.0)	3.8 (1.0)	**.001**
Transportation barriers	4.0 (0.8)	4.3 (0.8)	**.014**
Health insurance status	3.5 (1.0)	3.8 (1.1)	.077
Overall self-reported asking about SDH‡	3.2 (0.7)	3.5 (0.8)	**.009**
Neighborhoods in which patients live	2.6 (0.9)	3.1 (1.1)	**.001**
Medication affordability	3.5 (0.9)	3.5 (1.2)	.660
Access to healthy food	2.8 (1.1)	3.2±1.0	**.021**
Housing	2.7 (0.9)	3.2 (1.1)	**.015**
Transportation barriers	3.3 (0.8)	3.7 (1.0)	**.021**
Health insurance status	2.7 (1.1)	3.2 (1.2)	**.030**
Overall self-reported addressing SDH‡	3.1 (0.6)	3.4 (0.8)	**.003**
Medication affordability	3.5 (1.0)	3.6 (1.0)	.499
Access to healthy food	2.6 (1.0)	3.0 (1.0)	**.005**
Housing	2.5 (0.8)	2.9 (1.2)	**.009**
Transportation barriers	3.1 (0.8)	3.3 (0.9)	**.027**
Health insurance status	2.6 (1.0)	3.0 (1.1)	.068
How often do you consider how SDH might impact patients' health‡	3.6 (0.8)	3.9 (0.7)	**.002**
How often do you consider the neighborhood in which a patient lives in developing a plan of care‡	2.7 (0.9)	3.0 (0.8)	**.012**
How often do you provide patients with clinic or community resources to address SDH‡	2.9 (0.7)	3.0 (0.9)	.107
Use online resources to look up local neighborhood resources for a patient	3 (7%)	25 (64%)	**<.001**
Refer a patient to social worker to address SDH	42 (91%)	35 (90%)	.688

**Assessed using 5-point Likert-type scale from 1 "strongly disagree" to 5 "strongly agree"*
†Assessed using 5-point Likert-type scale from 1 "not at all comfortable" to 5 "very comfortable"
‡Assessed using 5-point Likert-type scale from 1 "never" to 5 "always"

Table 2 Qualitative Themes Related to Curriculum Impact

Impact theme	Supporting quote
Enhanced understanding of SDH	"doing a home visit, you get to see it and that makes it really come to the forefront of your mind, you don't have to imagine, you see it and then you realize 'oh I should be thinking about xy and z'. So, this is more helpful than someone saying think about social determinants of health"
	"You get so much, such a better idea of their day-to-day life and how they take care of themselves. There's really nothing we can do in the clinic that can replicate that experience."
	"The benefit [of the neighborhood assessment] was to get us thinking about the patient in the context of his surroundings, rather than just in the context of his or her home."
Reduced reported provider bias	"his home was just completely different than what I had pictured it. Just a very well-kept household, very loving. His uncle was very involved in his life…they just had a really beautiful home and a really beautiful relationship between the two of them. And it just made me worry about him a little less, because I sort of pictured this sort of transient, like 'I'm staying on my uncle's couch.'""
	"I thought of [neighborhood X] as not having green space, or community centers and then actually going there and seeing that, they were actually close by, and then when I looked up bus stops, there is one within like half a block [where] he lived. So, I was more reassured that at least the things that he needed were readily available."
Improved patient-provider relationship	"[The home visit] is such a valuable tool to really get to know your patient. Especially those that have chronic conditions that you can't really address in one visit, that are often multifactorial. It just gives you a really good insight. But also helps you build rapport with your patient. And I feel being able to tailor your recommendations based on their environment and their priorities is extremely valuable. So, if anything, I think this experience will make me want to do this more for my patients."
	"I have a different relationship, […] with the patients I visited at home, already than the ones I haven't (others agreeing). […] I feel like I know them so much better. They have this trust in m[e], they're like, 'You came to my house.'"
	"we were laughing, exchanging stories, she was, it was much, but I think a big part of that was because it was in her home and not at a doctor's office. I wasn't wearing a white coat. And like I said, she was much more receptive to taking this medication for her blood pressure."
Impacted treatment plans of home visit patients	"we agreed to start another trial of an SSRI while I was there. I think doing that in the context of where she lived, and what her anxiety factors were in her home, was really helpful in helping to devise a treatment plan for her."
	"seeing my patient in his physical home, and seeing what his fridge looked like, and what his room looked like, and what the surrounding neighborhood looked like, helped me to better...discuss with him how to manage his underlying coronary artery disease, how to get him exercising. We talked

(*continued on next page*)

Table 2. (continued)

Impact theme	Supporting quote
Motivated inquiry into SDH of other patients and use of SDH tools	about going to the local parks, and how to minimize salt intake for example. He has a lot of canned foods. So I was able to customize my management based on knowing his context." "I've started asking my patients how they get to the clinic and where they live, just initially, 'cause I've had a couple experiences this month where there have been red flags and we've asked, and they've either had no transportation, no insurance, things like that. So I've just started asking it when I meet patients initially... which is, I think, making a difference." "I feel that the home visits do give me such a different, a better sense of my patients in general, that now in my clinic after having done these, I do spend so much more time just being like, 'Okay what neighborhood do you live in? Do you live in a house, an apartment? Who do you live with? Do you have a dog? What do you do for fun?' I ask all sorts of weird questions that I didn't used to ask. Just because I do feel like it's helpful to have a better sense of who they are and where they are." "I think I wanna take more ownership of maybe helping the patient out with these social situations, and knowing that there's online resources, especially the one that [the PI] has sent to us. I think I am going to start using that more often and at least get the ball rolling while I am seeing the patient, while they're still in my room…and then maybe later, or after the visit, referring them to social work for additional resources." "just going beyond like saying, "Oh I think I kind of know where that is," and actually seeing how far away it is from the clinic would probably inform my care a little bit better without taking any extra time."

DISCUSSION

Our curriculum improved resident comfort and frequency asking patients about their neighborhood, asking about and addressing SDH, and using online tools to identify neighborhood resources. Qualitative findings support prior research that home visits improve the patient-physician relationship and impact clinical management.[6] Our findings also indicate that neighborhood and home visits can reduce bias by encouraging identification of SDH that positively impact health thereby challenging preconceived notions. They offer transferable skills when used for the teaching of SDH, such as identifying neighborhood resources and inquiring about neighborhood and SDH of other clinic patients. Understanding neighborhood context is key to community-centered clinician identity-formation.

Our study was conducted at a single institution with a small sample size, limiting generalizability. Behavioral outcomes were obtained via self-report, which are subject to recall or social desirability bias. Despite these limitations, this study represents the most robust curriculum evaluation of combined neighborhood and home visits in non-homebound patients for teaching SDH in IM residency. Future research includes identifying the patient perspective and exploring use of resources addressing SDH. Evaluation of this curriculum indicates that it has potential to positively impact residents' attitudes and behaviors regarding SDH, provide transferable skills, and promote practice of community-oriented care, without increasing bias against marginalized populations.

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