A Photo-based Communication Intervention to Promote Diet-related Discussions among Older Adults with Multi-Morbidity

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Abstract

Background—Little is known about how to best communicate with older adults about dietary behaviors and related factors in complex chronic disease care. Photo-based communication could promote efficient information exchange and activate patients to effectively communicate their lived experiences. We conducted a pilot study to assess the feasibility and acceptability of a photo-based patient-clinician communication intervention to promote dietary discussions in geriatric primary care.

Methods—Older adult patients with 2+ concurrent chronic conditions received in-person training on photo-taking with a smartphone before taking photos in response to the prompt, "What aspects of your everyday life affect what you eat and how much you have to eat?" Patients then shared photos and their narratives with their primary care clinician during a clinic visit. Patients and clinicians completed separate audio-recorded post-visit interviews to assess perspectives on the intervention. Interview transcripts were analyzed using a thematic analysis approach.

Results—Fourteen patient-clinician dyads completed the study. All except one patient-clinician dyad (93%) completed the intervention as trained. 93% of patients and 86% of clinicians reported that they would "definitely" or "probably" be willing to engage in a future visit with photo-sharing. Patients and clinicians shared similar perspectives on how sharing of photos during the visit enhanced communication and information exchange about dietary practices and other health-related factors, influenced clinical recommendations made during the visits, and strengthened the patient-clinician relationship.

Conclusion—Incorporation of a photo-based patient-clinician communication intervention to promote discussions regarding diet and other health-related factors could be a patient-centered strategy to help deliver comprehensive geriatric primary care.

Introduction

Many older adults have multiple chronic conditions (MCC), defined as 2+ concurrent chronic conditions, many of which are diet-sensitive.[1] Optimal MCC management relies on clear patient-clinician communication around dietary practices. However, communication around dietary behaviors is complex and challenging given different preferences, factors and MCC complexity.[2] Clinicians often lack adequate tools or training to elicit dietary information[3–5] so there is a need for tools to support dietary-related discussions in geriatric primary care.

Patient-centered communication strategies could help elucidate how patients manage their diet. One promising patient-centered communication-focused approach is photo elicitation, also known as Photovoice, which has been used to empower individuals from marginalized groups to share their narratives with the goal of promoting social change.[6–8] To describe experiences that otherwise may be difficult to share, participants take photos and use them to reflect and communicate their stories.[6–10] Although research has shown that photo-sharing could be helpful with the diagnostic process and in patient-clinician relationships,[11,12] photos have not been used as a mode of patient-clinician communication.

In considering dietary practices and associated factors, photos could promote efficient information exchange between patients and clinicians and activate patients to effectively communicate their experiences. Based on this rationale, we conducted a pilot study to examine the feasibility and acceptability of a photo-facilitated communication intervention to promote dietary discussions between older adults with MCC and their clinicians.

Methods

This pilot interventional study was conducted at an academic primary care practice in San Francisco, California. The University of California San Francisco Institutional Review Board approved the study.

Recruitment.

We recruited patients from clinic waiting rooms, primary care clinician referrals, and a study on food insecurity and MCCs.[13] Inclusion criteria for patient participants were: a) age 60+ years, b) 2+ concurrent chronic conditions based on Elixhauser Comorbidity Index[14] diagnosis codes, c) spoke English, Cantonese, Mandarin or Spanish, and d) able to use a disposable camera or smartphone. Patient participants identified a primary care clinician with whom they were willing to share their photos with a visit scheduled within 4 months. Inclusion criterion for clinician participants was a primary care clinician (internist physician or nurse practitioner) at the study site. Clinicians were recruited via email.

Procedures.

At least ten days before the clinic visit, patients completed a survey including socio-demographics and food security status[15] and attended a 25-minute one-on-one photo-taking training. Patients were asked to take photos in response to the open-ended prompt, "What aspects of your everyday life affect what you eat and how much you have to eat?" Patients received telephone/text message reminders every 3–4 days to take 1–2 photos/day over 7–10 days. Clinicians completed a survey on socio-demographics and clinical work; they were informed that patients may share photos during the visit. The visit was audio-recorded. We conducted separate audio-recorded semi-structured interviews with patients and clinicians within 5 days of the visit.

Measures.

Feasibility was measured by completion of the intervention confirmed by visit audio-recordings, duration of intervention use during visit and proportion of the visit, and number of photos taken by patients. Acceptability was assessed through rating of willingness to use the photo-based intervention again and analysis of interviews on patient and clinician perspectives on incorporating photos in a visit and identified barriers and benefits.

Post-Visit Interviews.

Using separate interview guides for patients and clinicians, participants were asked to discuss their experiences with the intervention.

Analysis.

Interviews were transcribed and translated as needed. Transcripts were analyzed using Dedoose. We used an iterative, thematic analysis approach informed by grounded theory. Two coders reviewed patient transcripts; two separate coders reviewed clinician transcripts. Coders assigned a code that represented categories and subcategories of feasibility and acceptability constructs to identifiable segments of continuous speech or verbal utterances. Through sequential cycles of independent coding, discussion, and reconciliation, we developed codebooks and definitions separately for patient and clinician transcripts. Transcripts were re-reviewed using the final codebook. Survey data were analyzed in the Research Electronic Data Capture.

Results

Among 14 patient participants, the mean age was 69.1±4.0 with 50% women (Table 1). Over two thirds (71.4%) of patients were racial/ethnic minorities and 50% spoke a non-English language at home. Over half (57.1%) lived alone and 50% reported experiencing food insecurity in the last year. All patients had MCC with 28.6% having 5+ chronic conditions. Eleven primary care clinicians participated (Table 1). Clinicians had on average 13.2±11.4 years in practice and 36.4% reported caring for a panel of 500+ patients. Three clinicians had two patient participants.

Quantitative feasibility and acceptability measures.

All except one patient-clinician dyad (93%) completed the intervention. Communication sequences that involved discussing photos lasted between 3:34 and 28:37 minutes with an average length of 10:15±6:26 minutes. The discussion of photos took between 16–53% of the total length of the visit (average 31%±12.4). Patients took on average 16.4±7.1 photos. All but one (93%) of patients and (86%) of clinicians reported they would "definitely" or "probably" be willing to engage in photo-sharing at a future visit.

Patient themes (Table 2).

I. Photos enhanced patient-clinician communication.—The photos supported verbal information exchange by allowing patients to share dietary habits easily and quickly. A patient described the photos as an easy way for their clinician to visually "spot" areas for improvement and give feedback after seeing the photos. Patients felt the photos acted as a visual cue that captured the clinician's attention and contributed to active listening during discussions. A patient mentioned how the photos led to the clinician "really paying attention about what really was bugging me…and get me. Now I feel better…she did listen to every single thing."

II. Photos facilitated patients to share new health-related information.—Photos unveiled new information regarding dietary behaviors, health-related social needs, and personal culture through the context of food that was not previously shared with clinicians. Photos prompted discussion about patients' access to food through meal programs and food banks. One patient's photos led to their clinician inquiring about their access to food, which was the first-time food insecurity was discussed. Photos also were a tool to accurately detail their diets by focusing discussion on preparation styles, portion sizes, and food choices. In addition, the photos led to patients discussing people important in their lives and cultural upbringing, and how these aspects impact their dietary behaviors. One patient reflected "I told [my physician], because…my parents went through the Depression. I was taught to eat everything on my plate."

III. Clinicians provided new recommendations or counseling as a result of sharing photos.—Patients reported that presenting photos of their meals often led to specific, personalized clinician recommendations regarding preparation, portion size and food selection. Patients conveyed gaining a better understanding of how to improve dietary quality for their chronic conditions and/or reaffirmed their dietary choices. Some patients

reported being referred to a dietitian. One patient described an interaction with their clinician: "she said, 'You're eating a lot of processed food.' I said, 'Yeah… 'cause I can't cook anymore.' That's when she said, 'I'm going to send you to a nutritionist to find out if we can see how you can incorporate some easy to prepare meals into your diet.'" Many patients in this study experienced food insecurity that they were able to share using photos. In response, clinicians often provided information regarding community food resources.

IV. Sharing photos created a closer connection to clinicians.—Patients revealed that photo-sharing resulted in positive patient-clinician interactions by adding new dimensions to conversations about dietary habits, helping facilitate a closer connection and increased comfort with their clinician. One patient shared, "It's a stronger connection because now she knows what I eat and stuff, which I never thought about even bringing to her." In some instances, after the sharing photos around their diet, participants reported feeling that their clinician was "pleased" and "proud" of them.

Clinician themes (Table 2).

I. Photos facilitated learning new health-related information.—Clinicians gained new health-related information about their patients' dietary habits, social needs, and living environment (Figure 1A–1B). The contents of the photos often revealed new details about the patients' diet, such as portion size, food types, and whether meals tend to be home-cooked or pre-packaged. For one clinician, "the thing that really stuck out for me was a can of soda with every meal…I knew she liked soda, but I didn't know she drank that much every day. (Figure 1C)" The photos also prompted discussion on how patients obtain and prepare food, which led to new insights on the patients' social needs, living environment and potential barriers to healthier dietary habits. A clinician shared, "One of the things that I really learned from the photos was getting a window into what it was like for him to prepare food, because I hadn't realized that he has no access to a kitchen…He had told me that he lives in a one-bedroom apartment. I assumed that it had a kitchen in it."

II. Photos provided concrete visuals about the patients' dietary behavior.—In contrast to listening to patients verbally describe their meals, which can be abstract and subjective, photos allowed clinicians to objectively see what their patients were eating, including the exact ingredients and portions. One clinician expressed, "When looking at diets, there's often these very abstract conversations of I'm eating this or that, and just really seeing what someone is eating is incredibly helpful to me to see this [and] what their plate looks like or … what they buy at the grocery store." Another clinician shared: "It was like… 'this is the actual portion of watermelon that I ate' that made it easier…to talk about changes." However, a few clinicians expressed concerns about discrepancies between patients' photos and what was occurring day-to-day as patients may choose to only photograph and share their healthier meals which may provide a limited view of their dietary behavior. One clinician articulated, "I was definitely aware that she's showing me very nicely prepared meals and so I have no idea if this is like 90% of meals or 20% of meals" while another clinician viewed this potential limitation as a prompt to "…ask about what is not in the photos. There's going be things that doesn't make it into the photo."

III.   Photos changed clinician approach and recommendations.—Photos provided clinicians new health-related information that patients may not have realized was relevant and more objective visual data along with patient narratives. The photos helped clinicians frame and offer recommendations that better account for real-life resources and constraints. One clinician voiced, "the photos caused me to change the whole way that I approached diet with him. Because rather than talking about abstaining from ramen, this shifted me… to focus on, 'Let's add vegetables.' 'Let's add.' Which is much friendlier than, 'Let's take away.' I think that he seemed much more amenable to that idea. (Figure 1D)" Clinicians also reported making a referral to nutrition or social work or modifying medication plan based on information learned through photo-sharing.

IV.   Photos allowed clinicians to better understand their patients' personal values, culture, and preferences.—With photos, clinicians reported they had a glimpse into the social context of each meal and were able to learn more about patients' lives including food insecurity, the joy of cooking, and the people they eat with. The photos served more than a snapshot of patients' dietary intake; photos facilitated a deeper understanding of the factors that motivate each patient's daily dietary decisions. One clinician shared: "[With the photos], there is an immediate level of intimacy and a very distinct new window into her life. I mean amazingly, you're going through the photos of your food and they're mixed in with your life. I think you probably get closer to the picture of the truth."

Clinician insights on the technical aspects of the intervention (see Supplemental Text 1 and Supplementary Table 1).

Clinicians perceived that photo-sharing generally added time to the visit but found that photos made eliciting dietary information more efficient. Clinicians expressed a preference for photo-sharing at the beginning of the visit. Clinicians also perceived limited utility of the intervention when clinicians and patients did not have a clear agenda or established goals for the visit. Most clinicians agreed that sharing photos on a digital device was preferred given ease and superior quality of visual information. Clinicians also suggested photographing patients' living situations for safety assessment, medications for addressing polypharmacy, or comprehensive oral intake over a few days.

Discussion

To our knowledge, this is the first reported study of a novel photo-facilitated patient-clinician communication intervention to promote dietary-related discussions among older adults and their clinicians. Overall, this pilot study showed high feasibility and acceptability. For both patients and clinicians, photo-sharing enhanced patient-clinician communication, influenced clinical recommendations, and strengthened patient-clinician connections. In addition to providing visual examples of dietary behaviors, photo-sharing also led to uncovering social, behavioral and environmental factors relevant to clinical care.

Home visits are a cornerstone of clinical care of older adults.[16–18] However, currently, many primary care clinicians are not able to offer home visits for all of their vulnerable older adults.[16,17,19] Photos (or even short videos) taken by patients or their caregivers to illustrate

aging, social, behavioral and environmental factors could offer a low-cost, accessible way to assess how patients live and manage MCC.

The findings from this study also show the potential of discussing visual images, whether during an in-person or video visit, or perhaps even in patient portal messages, could lead to better patient-clinician communication and care. This approach could positively affect the clinical issue being discussed, in this case diet, but due to the increase in contextual information, can reveal previously hidden personal, social, and environmental factors that can impact the care of older adults. Adding key geriatric health factors such as medication use, fall risk, and social support would enable clinicians to work with patients to create better care plans that consider the context of their lives.

This patient-clinician communication intervention was inspired by Photovoice which is based on documentary photography, empowerment education and feminist theory.[6,7] In this study, patients shared how the photos enabled them to share concerns and information important to them and the photos supported mutual information exchange with their clinician. Patients taking and sharing photos on health-related topics may be activated to be engaged partners in their care, and photos could be a useful tool to bridge the power differential between patients and clinicians.

Limitations include a small sample size at one study site. We did not assess downstream effects on clinical and patient-centered outcomes. Strengths include patient participants with diversity by race/ethnicity, socioeconomic status, and language use, and post-visit interviews capturing both patient and clinician perspectives.

Our study demonstrated the strong feasibility and acceptability of a photo-based intervention to support discussions between older adults and their primary care clinicians focused on dietary behaviors and other health-related factors relevant to MCC care. Patients and clinicians conveyed the benefits of enhanced patient-clinician communication and relationship, and the impact of photos on clinical recommendations. Our findings also support the potential value of photos as a communication tool to learn more about health, social, and environmental factors important to geriatric primary care.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements

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Key Points.

- A photo-based communication intervention for older adults with multiple chronic conditions and their primary care clinicians to discuss dietary habits and related health factors showed strong feasibility and acceptability.

- Both patients and clinicians shared how patients sharing photos in a visit enhanced patient-clinician communication, influenced clinical recommendations, and strengthened patient-clinician connections.

- Sharing of photos also led to uncovering of additional social, behavioral and environmental factors that are relevant to the primary care of older adults.

Why does this paper matter?

Home visits have been an integral aspect of the care of older adults, particularly those with medical and social complexity. However, primary care clinicians are not able to offer home visits for all of their vulnerable older adults. Photos (or even short videos) taken by patients and/or their caregivers to illustrate social, behavioral, and environmental factors could offer a low-cost, more accessible way to assess how patients live and manage chronic conditions. In addition, with the increased use of video-based visits, our study shows the potential of discussing visual images, whether during an in-person visit, over video, or even in patient portal messages, could lead to better patient-clinician communication and care. This photo-based approach could reveal previously hidden personal, social, and environmental factors that could enable clinicians to work with patients to create better care plans that consider the context of their lives.
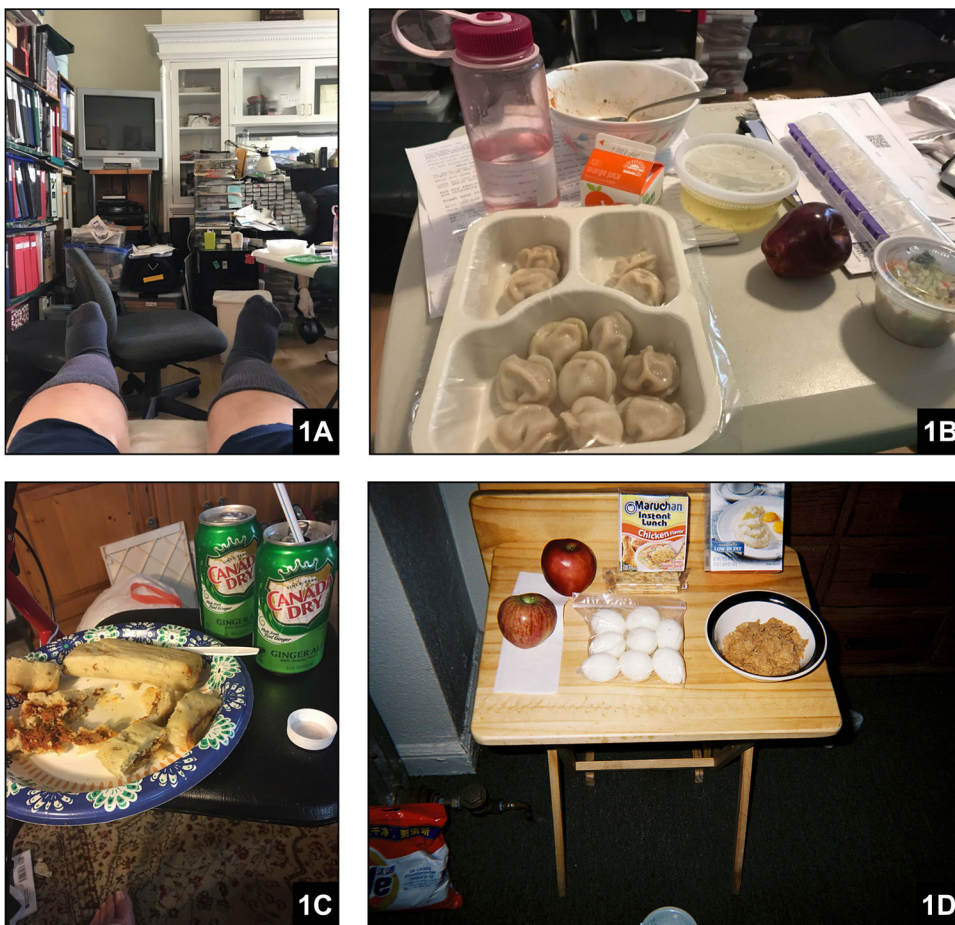
Figure 1.

Representative photos taken by patient participants in response to the photo-taking prompt "What aspects of your everyday life affect what you eat and how much you have to eat?" Panel 1A and 1B are photos taken by a patient participant illustrating her home environment (1A) and a meal and pill box (1B). Panel 1C depicts a meal and beverage from another patient participant in which a clinician learned new information about the patient's dietary practices. Panel 1D shows food supplies before preparation from another patient participant in which another clinician reflected on the photo's impact on making clinical recommendations.

Table 1.

Characteristics of patient participants (n=14) and clinician participants (n=11^)

Patient participants (n=14)	
Female, %	50.0%
Race/ethnicity, %	
African American	28.6%
Asian American	7.1%
Latinx	35.7%
White	28.6%
Age, mean (years) ± SD (Range)	69.1 ± 4.0 (61–76)
Country of birth, %	
United States	71.4%
Other (China, Mexico, Nicaragua, Peru)	28.6%
Non-English languages spoken at home,* %	
English	85.7%
Cantonese	7.1%
Spanish	35.7%
Other (French, Greek)	7.1%
Limited English proficiency,** %	14.3%
Highest level of completed education, %	
High school diploma/GED or less	21.4%
Some additional schooling beyond high school	42.9%
Completed college or more	35.7%
Employment,* %	
Retired	64.3%
Disabled	42.9%
Annual household income, %	
Less than $10,000	42.9%
$10,001-$20,000	14.3%
$20,001-$40,000	21.4%
More than $40,001	14.3%
Don't know/not sure	7.1%
Food security *(access to sufficient, safe and nutritious food at all times)*, %	
High food security	21.4%
Marginal food security *(1–2 indications of food access problems)*	28.6%
Low or very low food security *(multiple indications of access problems, change in diet quality and/or disrupted eating patterns including reduced food intake)*	50.0%
Live alone, %	57.1%
Self-reported health status, %	
Excellent or very good	21.4%
Good or fair	50.0%

Poor	28.6%
Number of chronic conditions based on diagnosis codes from the Elixhauser Comorbidity Index, %	
2–4 chronic conditions	71.4%
5+ chronic conditions	28.6%
Clinician participants (n=11[^])	
Female, %	54.5%
Race/ethnicity, %	
Asian American	27.4%
Latinx	9.1%
White	63.6%
Age, %	
Less than 35	36.4%
35–44	18.2%
45–54	27.3%
55–64	18.2%
Born in the U.S. %	81.8%
Languages other than English, %	
Spanish	27.3%
Mandarin	18.2%
Other (French and Russian)	27.3%
Current clinician position, %	
Faculty internist physician	81.8%
Nurse practitioner	9.1%
Internal medicine resident physician	9.1%
Years in practice after health professional school, mean (years) ± SD	13.2 ± 11.4
Number of patients seen in ambulatory practice weekly, mean (patients) ± SD	26.9 ± 15.1
Number of primary care patients in patient panel, %	
101–200	18.2%
201–300	18.2%
301–400	18.2%
401–500	9.1%
More than 500	36.4%

[*] Patients selected all that applied

[**] Limited English proficiency = speaking English "not well" or "not at all"

[^] Three clinicians participated in this study with two patient participants.

Table 2.

Representative quotes from patient and clinician participant post-visit interviews by identified themes

Patient Themes	
Identified Theme	**Patient Participant Quote**
I. Photos enhanced patient-clinician communication	"[The photos] help because I think [my physician] understands what I'm doing. That's an important communication component. For [my physician] knowing what it is I'm doing in terms of my diet I think is very important. I saw how interested [my physician] was in that. For me, it was great to share. This is what I'm doing. I was letting him know through the photos and by sharing the ingredients that I had put together in how I put the food together….It's that moment when you're sharing information at a level that has no political issue involved. It is pure 100%, 'Here are my findings. This is what I'm doing.' Then the person that is taking that information into consideration is now cognizant of what I do. I think that's great in humanity, when you're able to do that, to share."
II. Photos facilitated patients to share new health-related information	"It seems with the pictures we were able to talk a little bit. Stuff that I don't remember ever really discussing and plus when she's actually seeing the pictures she can see what I'm eating. And that makes a difference you know? She could actually see what I'm eating, and then she gave her little two cents like we've already talked about. And then she went ahead and got me the website [for food distribution]. So yeah that's all positive things without a doubt it is."
III. Clinicians provided new recommendations or counseling as a result of sharing photos	"I wanted to find out what steps I needed to lose weight to reach the goal that we had set and by showing the pictures, he was able to tell me by cutting back, I would be able to be closer to the goals that we had already talked about."
IV. Sharing photos created a closer connection to clinicians	"I felt that usually doctors in the past never wanted to ask you these questions so I didn't want to bother him with it. It's very good that he asks those questions. So I feel good about it."
Clinician Themes	
Identified Theme	**Clinician Participant Quote**
I. Photos facilitated learning new health-related information	"I learned at first that the portions of each of the dishes was larger than I would've anticipated." "It did confirm that she does cook… She's not relying entirely on prepackaged or prepared foods for her. It provides some of those other objective findings." "I always thought that she had access to food in terms of whatever she wanted to eat…I never sort of thought about, well how do you get food in terms of like shopping? I do know she's limited in her mobility. She's limited in the fact that she doesn't drive, so she's dependent on other people. We never really talked about, well, how do you get food? Where do you go shopping? I know she's limited in finances. So kind of all of those factors I guess contribute to food insecurity, but I never really sort of looked at it that way." "Well truthfully, I didn't know that he was getting food bank food as much as he was. I knew he was getting Meals on Wheels but I didn't realize that Meals on Wheels is such a small amount of what he's eating compared to the fresh produce that he's getting from food bank." "I learned that he has no working stove in his house which is another reason he eats out all the time."
II. Photos provided concrete visuals about the patients' dietary behavior	"We were talking about specific foods in a way that you're never going to get to with words. So, when you say you focused on protein, what is it that you are eating, how much of it are you eating? Showing me a plate and saying but I will only eat this much of that plate…So it's super tangible." "Definitely for like a physician, a scientist, it's always nice to see proof so it was like…it was helpful. I see the portion size on it, you. I see the kind of food she's eating because I think she told me whatever picture had the bed of rice on it, when she was verbally describing it, the bed of rice didn't come into the verbal description but like it was there when I saw it."
III. Photos changed clinician approach and recommendations.	"I don't know if I would have gotten there without the photos. Like, 'Tell me about the issues with your diet… The numbers are up. What's going on?'…the photos might have prompted that. It might have been harder to get to that discussion without the photos, or it might have taken longer." "I think it was definitely more informed care knowing what I know about him, about his food. I am able to target my interventions better if I know what he's eating and what his daily schedule is like. I held off on aggressively changing his medications for his diabetes before I had, one, had him decrease how much rice he was eating and, two, re-check his sugar test after that… If he keeps showing me what he's eating is all rice, carbs, bread and burgers, then I think I'm gonna have to increase the medications regardless. I think it just gives me a second to pause and say, what else could be influencing his diabetes?"
IV. Photos allowed physicians to better understand their patients' personal values, culture, and preferences	"I think it opened new windows on how he leads his life and perhaps new opportunities to work around/within his lifestyle and his personal culture." "Seeing her as increasingly high functioning and engaged was good. This definitely gave me like a lot more nuance into the fact that her life has really expanded a lot. She now has a different set of motivations, concerns and things than she did a few years ago…seeing her doing this elective thing because she has energy and that's where she wants to spend her time and how she wants to take care of her family and relate to people and stuff, I don't think I would've gotten there without the photos."