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“I didn’t know you were such a good cook”: Photos as a tool for primary care clinician-patient communication

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Abstract

Objectives: To examine audio-recorded primary care interactions with patient-initiated photo sharing around food and diet choices.

Methods: Data were 13 audio recordings of primary care visits with English-, Chinese-, or Spanish-speaking patients 60+ with two or more chronic conditions. Patients and clinicians completed pre-intervention surveys and some training on photo-taking / photo-sharing discussion. Data were analyzed using discourse analysis.

Results: Photo-based communication interactions lasted 3:34–28:37 minutes and averaged one-third of the visit. Clinicians and patients both initiated the photo-based talk and transition to other topics occurred smoothly. In eight of 13 interactions, the photo-based communication task was raised, but conversation did not occur at that moment. When discussed, the photos raised opportunities to talk about patient’s decision-making which led to dietary suggestions including clinical nutrition suggestions and referrals to other specialty clinics.

Conclusion: Photo-based communication in primary care can be used to promote patient activation and facilitate collaborative decision making that accounts for the patients’ lived experiences and lifeworld.

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Practice Implications: By setting the agenda early, clinicians or patients can designate the photo-sharing as a relevant part of the visit. Photos may be most relevant as part of the problem presentation, diagnosis, or treatment recommendation sections of the visit.

Keywords

primary care; health communication; patient activation; photos

1. Introduction

It has been nearly 20 years since the Institute of Medicine released their 2001 report with a call to close health quality gaps through patient-centered care, focusing on tailoring care to the patient's illness experience, needs, values and expressed preferences [1]. Since that time, patient-centered care has been variously defined, however, all **definitions** point to the importance of sharing power and responsibility, the importance of therapeutic alliance, patient-as-person, and patient lifeworld[2]. Clinician-patient collaboration enables the clinician to better assess the patient's holistic needs to deliver appropriate treatment plans [2, 3].

Essential to patient-centered care is patient activation and engagement. Patients who actively engage with their health care tend to have improved health outcomes at reduced costs [4]. In a research study measuring patient activation, the relationship between the patient and clinician was key in changing a patient's behavior and attitude towards their care [5]. While patient activation and engagement have been shown to improve a patient's health behaviors, it is still unclear exactly what type of activation encourages patient engagement [6], especially in situations of multimorbidity.

Patients with multimorbidities make up a significant portion of primary care [7]. These patients tend to have lower quality of life, **and are** impacted by heavy treatment burdens, management of medications, and self-management of medical appointments. Yet much of the current research focused on patient-centered care interventions are aimed at patients with single diseases, and the complex lifeworlds of patients with multi-morbidities are underexplored. A scoping review of current patient-center practices revealed that patient-oriented practices like regular in-person clinical evaluations and individualizing care could lead to positive outcomes for patients with multimorbidities[8].

It is recognized that regular clinic visits may be difficult for uncovering lifeworld or patient context type talk [9, 10]. To increase this kind of communication that may allow for more patient activation and provide clinicians a fuller picture of the complexities of the patient's lifeworld, this study proposes a practice of clinical photo sharing. Clinical photography is one type of photo sharing that allows better communication between the patient and medical team. Equally if not more important to any medical component of photos, may be the contextual or lifeworld benefit from sharing photos between clinician and patient. Research has found that sharing patient photos establishes trust and rapport because clinicians can take seriously a patient's narrative [11]. Often because clinicians are not familiar with patients' lives, photos can communicate more than plain talk. Patients' photos can be a window into a patient's values that they might not otherwise be able to or want to articulate

[12]. By viewing photos, clinicians can gain a more well-rounded picture of who the patient is outside of their clinical self.

Photo sharing can be implemented during the clinic visit as a quick routine procedure that gives patients an opportunity to share what clinical symptoms they are currently experiencing within the larger context of their lives. This study contributes to the existing body of research examining the clinical and social benefits of patient-initiated photo sharing. However, previous studies largely rely on self-report data and are often told from the clinician's perspective. Research has not yet examined the interactional nature of photo-sharing using observational methods during real clinical interactions. This paper reports on an examination of audio-recorded primary care interactions with patient-initiated photo sharing around food and diet choices.

2. Methods

2.1. Data Collection

Data were collected as part of two larger feasibility and acceptability studies of photo-based primary-care communication with adults 60 and older with at least two chronic conditions from the Elixhauser Comorbidity Index [13]. Participants could speak English, Chinese (Cantonese or Mandarin), or Spanish, needed to be able to use a smartphone camera or disposable camera, and have a visit scheduled with their primary care providers (PCPs) in the next four months. Participants were recruited in waiting rooms, through clinician referrals, and from a study focused on food insecurity and multiple chronic conditions among older adults [14]. Physician and nurse practitioner PCPs were recruited via email through the study site after their patient(s) had consented to the study.

At least 10 days before their PCP visit, patients completed pre-intervention surveys that included socio-demographics, ratings of clinician-patient communication, and use of technology. They were given a 25-minute face-to-face training on how to take photos using their smartphone or disposable camera. Patients were told to take pictures that answered the question "What aspects of your everyday life affect what you eat and how much you have to eat?" and were reminded by phone/text to take 1-2 pictures each day. Clinicians also completed a pre-intervention survey measuring socio-demographics/clinical training and clinician-patient communication. Clinicians received brief guidance over email stating, "Your patient enrolled in the study will bring several photos to the clinic visit and share these photos with you. These photos were taken by the patient to depict his/her diet and nutrition including how aspects of everyday life affect what he/she eats. It is up to you on how you wish to respond to the photos shared by your patient during the clinic visit." Each visit was audio recorded. While video-recording would have provided more robust data, the IRB only allowed audio-recording.

2.2. Data Analysis

English recordings were first transcribed verbatim by [Rev.com](https://www.rev.com) and non-English files (i.e., Spanish, Mandarin) were translated by a professional language interpretation service. All transcripts were reviewed and verified by a language-concordant research assistant. The first

two authors read through transcripts noting any talk referencing photo-based communication. In some visits, clinician or patient mentioned photos in an agenda-setting way or ear-marking it as a task to complete. These instances were noted and excerpted; however, we considered photos-based interactions those in which the clinician and patient began sharing and discussing photos and ended when discussion moved away from the photos. Transcripts of these initiations and subsequent interactions were excerpted for further analysis using an empirical discourse analysis [15, 16]. We began with a conversation analytic stance of “unmotivated looking” [17, 18] in which analysts come to the interaction without preconceived ideas of how talk should occur or what one might be trying to examine. We read and listened using an iterative process, which meant listening and re-listening to the audio files, marking the transcripts, and discussing. By attending to how clinicians and patients interactively deal with the initiation of the photos, we generated a list of interactionally rich moments to bring to the larger research team for discussion and final analysis.

3. Results

There were 13 patient participants (6 male, 7 female), mostly older (mean age 68.2 + 4.0) and retired (61.5%), with 46.2% completing some additional schooling beyond high school, over half with low or very low food security, and almost a third had 5+ chronic conditions (see Table 1). Ten clinicians, mostly attending physicians with on average 14.5 + 11.1 years of experience participated in the study; three clinicians participated in the study with two patient participants (see Table 2).

3.1. Timing and Initiations

3.1.1. Timing—The 13 photo-based communication interactions lasted between 3:34 and 28:37 minutes, with an average length of 10:15 (see Table 3). As a percentage of the total length of the visit, the discussion of photos took between 16-53% of the visit (average 30%). Photo-based communication was discussed at various places in the visit and many times as a natural transition from other conversation about food or diet.

3.1.2. Initiations Without Uptake—In eight out of the 13 interactions (61.5%), early on in the clinic visit, either the clinician or the patient sign-posted the photo-based communication task, and while acknowledged by the other party, the photo-based communication interaction did not occur at that moment in the clinic visit (Table 3). In some visits, the clinician or the patient mentioned the photo-based communication as an agenda-setting practice near the beginning of the visit. For example, with a male patient, 69 y.o., the clinician (male, 35-44 y.o.) stated “...so we’ll go with the photographs, the blood sugar diabetes piece and then this laboratory result around the calcium issue,” listing off the different topics to be covered.

In other visits, the agenda-setting specifically prioritized the most important health issue from the clinician’s perspective, which was not typically photo-based communication. For example, at the very beginning of a female, 68 y.o. patient’s visit, the clinician (female, <35 y.o) asked about the pictures but when the patient mentioned chest pain, the doctor re-prioritized chest pains as a place to start (see Figure 1, Excerpt 1).

As this quote demonstrates, both clinician and patient were aware of and acknowledged the photo-based communication task and were able to bookmark it as something worth discussing, but not to begin the visit with that discussion.

One way that clinicians delayed the discussion of photos with the patient was by marking the photo-based communication as separate from the current “medical”-related talk. In a female, 69 y.o.’s visit, the clinician (male, <35 y.o) and patient finished discussing some tests that the patient had done for her arthritis and appeared to be moving to a next task. As the quote in Figure 1, Excerpt 2 demonstrated, the patient used this transitional moment to ask about the photos.

Although the patient may have treated the clinician’s mention of the timing of the results to indicate that they were switching topics, the clinician’s response shows that the clinician was not yet ready to move on. The clinician named these additional items as “medical things,” and in doing so, claimed the conversational floor to raise a new issue of questioning the patient’s previous and perhaps on-going smoking. By putting aside the photo-based communication tasks, the doctor may have inadvertently framed “those pictures” as not part of the “medical things” that the doctor was trying to address.

Finally, there were also moments in the talk that occurred in the two language discordant visits when it seemed one party did not quite understand the photo-based communication-related conversation. In Figure 1, Excerpt 3, a female, 70 y.o. patient, the Mandarin-speaking clinician (female, 35-44 y.o) found a natural segue in the conversation about food and diet changes to ask her Chinese patient about the photo-based communication assignment more broadly. However, as the patient responded, she answered particularly to the rice/porridge conversation and not about the photo-based communication picture-taking.

The possible miscommunication may have occurred for a number of reasons. First, there was ambiguity because the word “飯” could be either “meal” or “rice” in Chinese. Second, there were slight linguistic differences in accent/word choice being used between the Cantonese-heritage speaker (who is speaking in Mandarin) and the Mandarin-speaking doctor. Relatedly, in the other language discordant visit with a Spanish-speaking patient (male, 73 y.o.) using a translator, neither the patient nor the translator understood the clinician’s (female, <35 y.o.) first question about photos.

3.1.3. Initiation

3.1.3.1. Patient initiation: As Excerpt 2 demonstrated previously, there were times when patients attempted to initiate the photo-based communication talk, but that initiation was not successful. However, when patients initiated successfully, it occurred either in a moment of transition or in natural conversation related to food. In Figure 1, Excerpt 4, the clinician (male, 45-54 y.o.) began by questioning the patient (male, 68 y.o.) about his recent eating habits, allowing the patient to naturally segue into talking about a big burrito the patient ate and happened to also take a photo of.

Right after talking about the burrito and then mentioning that there is a photo, the clinician responded with, “Show it to me,” and the rest of the photo-based communication discussion followed.

Similarly, in setting the agenda with a female, 65 y.o. patient, the clinician (male, 55-64 y.o.) asked the patient what it is that needed to be covered in the visit (see Figure 1, Excerpt 5). The patient reminded the clinician about the study, and the conversation naturally moved to the clinician asking the patient to show photos.

3.1.3.2. Clinician Initiation: Similar to the patient initiation examples, at times the natural flow of the conversation led to the clinician initiating photo-based communication to further develop the conversation. In the example of a female, 63 y.o. patient, she was discussing problems she was having eating and digesting and on-going diarrhea. The patient explained what she was feeling, how she was afraid of eating when the clinician (male, 45-54 y.o.) commented, “Okay, good, that’s super helpful. Let’s do this photograph. Because I’m thinking it might be related a little bit. Like, it’ll be related enough…” In this example, the physician used some of the patient’s “lifeworld” talk, or discussion of everyday life outside the medical realm, to elicit the pictures as clues as to whether the patient’s food and diet were leading to the digestion problems.

While the previous example smoothly transitioned into photo-based communication as something the clinician wanted to use to understand the situation more fully, in Figure 1, Excerpt 6, the clinician (male, <35 y.o.) actually used photo-based communication to shift the patient (female, 69 y.o.) away from a possible tangent (her puppy and indecision about a follow-up). In this exchange, while the patient was discussing her dog and what she was going to do about the dog, the doctor used the opportunity of the pictures to bring the patient back on track and back to a tangible task: reviewing the photos.

3.2. What Happens Clinically Because of Photo-Based Communication?

3.2.1. Clinical Suggestions in the Context of Lifeworld—Throughout the photo-based communication discussions, clinicians and patients discussed a variety of dietary suggestions that emerged from the photos opening up a window into the patient’s lifeworld. After seeing photos, clinicians then suggested, for example, reducing intake of sugary beverages, avoiding fast food, or adding more fruits or vegetables by modeling the diabetes “My Plate.” Clinicians also incorporated the people/food items they noticed in the photos as they made clinical suggestions. In Figure 2, Excerpt 7, the clinician was able to both compliment the patient’s granddaughter and suggest reducing pizza intake.

By opening up the possibility to see the patient’s lifeworld, the photos allowed the clinician to play the role of a positive cheerleader as well as embed goal-setting talk with patient-focused knowledge. In Figure 2, Excerpt 8 (female patient, 63 y.o.), which lasted a total of 16 minutes (one of the longest discussion of photos), clinician (male, 45-54 y.o.) and patient discussed many issues centering around the patient’s own long-term weight loss and diet goals including numerous moments of praise (e.g., “I didn’t know you were such a good cook,” “I’m looking for things where you could change something without having to change all those beautiful things you’re cooking, right?”) which may not have been available

without the photos. The clinician then ended the photo-based exchange by raising a concern about long term weight loss goals and tying it directly to the photos of sugary teas. By using both the numerous photos of tea against a backdrop of otherwise healthy foods, the clinician was able to mix lifeworld and patient's stated long-term goals into one clinical and practical dietary suggestion. After many rounds, the patient finally agreed to wean off the teas.

While the previous example showed the clinician operating as a cheerleader and motivator, the clinician (female, <35 y.o) in Figure 2, Excerpt 9 operated in a more skeptical manner. The female patient (68 y.o.) had persistent stomach issues along with diabetes, and in showing pictures of some foods, the clinician referred to the energy shakes, coffee, and rice/sushi that the patient consumes as "problems." Before the quoted lines, the clinician asked many questions such as "Do you put sugar in [coffee]?" or made assertions like "you should make the chicken soup with no noodles." After the first of these questions the patient responded with a quick "no" to every other inquiry demonstrating defensiveness and perhaps receiving the questions as accusational in tone. The clinician concluded that the patient needed to take pictures of (or record) *everything* eaten, with the implication that the foods ingested by the patient must be the reason for their weight gain and digestive distress. The patient countered that it might possibly be her anxiety that is causing the weight gain because as she explained, she was also incontinent, and possibly shouldn't be gaining weight.

3.2.2. Referral Suggestions—After the discussions around photos, in certain interactions where the clinician felt the patient required more assistance with establishing diet and nutritional routines, the clinician offered a referral to a nutritionist, such as in Figure 2, Excerpt 10 (female patient, 71 y.o.; female clinician, 55-64 y.o). Prior to this excerpt, the clinician stated that while the patient's diet wasn't "terrible," the fact that she was eating a lot of frozen, possibly previously-fried, foods made the decision to refer to a nutritionist "a good idea."

In other cases, clinicians asked a variety of lifeworld questions in order to solicit additional needs such as access to a kitchen and adequate housing. Throughout the visit, the physician repeatedly asked the patient about his access to food and other structural barriers to which he responded that he had enough healthy food to eat and can access public services. In Figure 2, Excerpt 11, once the physician was satisfied with the patient's access to everyday food needs, she offered some tips that could help him self-advocate with his social worker.

In reviewing photos, patients also were able to raise related issues such as psychological or other mental health concerns that may need referrals. For example after a clinician asked about cooking, one patient explained that their stove and sink weren't working because "I'm a chatterer," but then quickly added that they were already being seen for this issue.

3.3. Photo-Based Communication Closings

In all but one interaction, the photo-based communication segments ended with the clinician. Clinicians could either move on to another topic (e.g Excerpt 8 moved from diet changes to communication with other providers) or begin conducting a physical examination. For example, when a male patient (73 y.o.) showed photos of the Burger King breakfast

croissants he had eaten and said he ate them regularly, the clinician (female, <35 y.o) suggested diet changes then moved to feeling the patient's stomach (see Figure 3, Excerpt 12). Notably, in only one instance did the patient (male, 69 y.o.) end the photo-based communication. This was part of the longest conversation (over 28 minutes) and the patient changed topic by first stating the clinician's (male, 45-54 y.o) name and then asking a new question about his throat (see Figure 3, Excerpt 13).

The end of the photo-based interaction also served as a way to end the visit as a whole. Immediately after discussion of the photos, in Figure 3, Excerpt 14, the clinician (Female, 35-44 y.o.) wrapped up by reviewing all of the patient's next steps: check hemoglobin A1c and vitamin D levels and continue taking photos for future visits. By describing the hemoglobin A1c as a check of "how your diabetes control is" and then immediately following with the request for more photos, the clinician also framed the photos as an "easy" way to monitor the patient's food intake to relate to the measured blood sugar levels.

4. Discussion and Conclusion

4.1. Discussion

The use of photos in regular primary care visits demonstrated a number of moments of patient activation and collaborative decision making between clinician and patient. Whether that was helping a patient decide to reduce sugar-sweetened beverages or reduce the number of Burger King visits, clinicians and patients found common ground in discussions about food and diet. Prior research in primary care has found that patients who have clinicians that engage in more collaborative behaviors with patients around self-management such as ensuring patients are involved in agenda-setting, checking on progress patients are making toward behavioral goals, and actively involving patients in problem-solving and planning are more likely to demonstrate increased patient activation [19]. The excerpts demonstrated that patients who may not accept a clinician's treatment recommendation may be demonstrating a form of patient agency in their healthcare treatment decision-making [20].

Though clinicians may not always have nutrition expertise, as our data demonstrated, the nutrition information shared was often very basic (e.g. these are carbohydrates; that has a lot of salt), or led to more expert referrals. These suggestions may seem commonplace but take on added relevance in the context of lifeworld. Patients shared their dietary habits within a fuller picture of other responsibilities such as feeding grandkids or eating without having a stove to cook, thus explaining the factors weighed in their potentially "bad" dietary choices. Future research should examine whether and how photo-based initiatives can assist patients with their activation and help guide clinicians in more collaborative self-management practices that take into account a patient's whole lifeworld.

The fact that both patients and clinicians announced that they needed to talk about the photos and then successfully integrated the talk into the clinic visit demonstrated that photo-based sharing could be implemented without too much interference and can be either clinician or patient initiated. As a potentially new communicative event within the typical trajectory of the clinician-patient interaction [21], these photo-based interactions demonstrate that clinicians and patients are working out how and when to incorporate photo-

based communication. Our research is limited by its small sample size and data that were audio-only. Future research should include video-recordings to capture the non-verbal components of these interactions and those interested in implementation should examine where in the interaction photo-based talk might be most beneficial. Typically there is little room in a clinical encounter to ask about this decision-making. However, these photo-based interactions provided a sanctioned and perhaps expected time in the visit for clinicians and patients to discuss these concerns. Future research can examine whether these conversations can also lead to identifiable and measurable improved health outcomes.

4.2. Conclusion

We have detailed the various interactional ways clinicians and patients utilize photo-based communication in their discussions to open up the lifeworld to discuss the patient's health and well-being and increase patient activation. These discussions around photos provided spaces for clinicians and patients to discuss contextually-grounded goals and effective diet/eating practices. We demonstrate how these interactions can be implemented in relatively short periods of the overall clinic visit (e.g., less than a third of the overall visit time). We also detail how specifically the clinician or patient initiated talk about the photos in ways that seem interactionally "natural" and seamless to the visit.

4.3 Practice Implications

As nutrition conversations are not always an expected part of a primary care visit, clinicians (who may not be trained) and patients (who may feel judged and not want to share) may not be familiar with how to effectively discuss food and diet. Primary care clinicians can suggest the use of photo-based food and diet sharing to their patients, especially in situations where patients are dealing with dietary-sensitive conditions and other chronic diseases. Photos invite patients to provide a contextually situated/holistic view of their lifeworld and give clinicians opportunities to embed clinically-relevant health information in a short visit. By setting the agenda early, the photo-sharing can become an expected part of the visit. The incorporation of photo-based communication in primary care could enhance efforts to promote patient activation and facilitate collaborative decision making between clinicians and patients, resulting in the delivery of patient-centered care that realistically accounts for the patients' lived experiences and lifeworld.

We confirm all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story

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Highlights

- Photo-based communication in primary care can promote patient activation
- Patients and clinicians both initiate photo-based communication
- Photos encourage a holistic discussion of dietary decision-making
- Photo-based communication leads to suggestions, goal-setting, and referrals

<p>Excerpt 1</p> <p><i>Agenda Setting</i></p>	<p>Clinician B, female, <35 y.o.: Yeah, okay. We'll talk about that. I understand you've brought some pictures today?</p> <p>Female Patient #2, 68 y.o: Yes. And then another one important is I've been having chest pains. Mild.</p> <p>Clinician B: Okay, well chest pains always worry me, so let's start there. How often are you having chest pains?</p>
<p>Excerpt 2</p>	<p>Clinician F, male, <35 y.o.: I should have the results back today if not tomorrow. During the earlier</p>

<i>Prioritizing Medical Topics</i>	<p>Female Patient #6, 69 y.o.: Okay. What about those pictures?</p> <p>Clinician F: Just to finish up the rest of the medical things, a quick question. Do you still smoke?</p>
<p>Excerpt 3 (English Translation) <i>Misunderstanding</i></p>	<p>Clinician E, female, 35-44 y.o.: Okay, they asked you to take photos of your meal (“妳吃的飯,” literally: ‘the rice/porridge that you ate’). Did you take [those photos]?</p> <p>Female Patient #5, 70 y.o.: Uh, the rice, I think I did not a photo of it ((awkward laughter))</p>
<p>Excerpt 4 <i>Natural Segue</i></p>	<p>Clinician A, male, 45-54 y.o.: How's your eating? What's kind of ...</p> <p>Male Patient #1, 68 y.o.: Well you know, I come off these things, and I was hungry last night. So, I ate a big burrito with, uh, it's one of the pictures.</p> <p>Clinician A: Show it to me.</p>
<p>Excerpt 5 <i>Transition to Photo-Based Communication</i></p>	<p>Clinician H, female, 55-64 y.o.: That's not in question. So, what were the other things you wanted to make sure we talked about today?</p> <p>Female Patient #8, 65 y.o.: Yeah, yeah, need to talk about the pictures that the, during the study.</p> <p>Clinician H: Yeah! Show me the pictures!</p> <p>((Patient #8 laughs))</p>
<p>Excerpt 6 <i>Moving Away from Possible Tangent</i></p>	<p>Female Patient #6, 69 y.o.: I left my little puppy at home and I don't want her to get too hot today because=</p> <p>Clinician F, male <35 y.o.: =so</p> <p>Patient #6: Maybe I'll just come over in the morning?</p> <p>Clinician F: Sure, that's fine. So let's talk about your pictures here.</p> <p>Patient #6: Yeah, that's what you want me to discuss with you. Where is it? Okay. There you go. In the box I guess.</p>

Figure 1.
Qualitative Quotes for Timing and Initiations of Photo-Based Communication

<p>Excerpt 7</p> <p><i>Clinician Compliment + Diet Suggestion</i></p>	<p>Female patient #2, 68 y.o.: Yeah. And then the pizza that my granddaughter, at her birthday.</p> <p>Clinician B, female <35 y.o.: Let your granddaughter eat the pizza. She is cute.</p> <p>Patient: Thank you</p> <p>Doctor: She is very cute</p>
<p>Excerpt 8</p> <p><i>Patient Agreed to Wean off Sugary Tea</i></p>	<p>Clinician I, male 45-54 y.o.: No, so, now, you're a person who has lost, what, a hundred pounds?</p> <p>Female patient #10, 63 y.o.: Yeah.</p> <p>Clinician I: And has a complicated relationship with food, because you can only eat so much. And so, I feel like our conversation about diet is not very typical. It's not the typical conversation, like ...</p> <p>Patient #10: Right.</p> <p>Clinician I: So, if you had to decide, like, what is your, looking out another year or two, what is your goal for your weight, what would you say?</p> <p>Patient #10: I would like to lose another 50 pounds, at least. At least.</p> <p>Clinician I: Okay.</p> <p>[117 lines deleted]</p> <p>Clinician I: Right, so tell me, what's your ... I know you're reluctant to make this commitment, because it's like ...</p> <p>Patient #10: I will, though.</p> <p>Clinician I: It's your treat.</p> <p>Patient #10: I will. You know I'll do it, though.</p> <p>Clinician I: What do you want to do? What's your plan?</p> <p>Patient #10: My plan is to wean myself off of this.</p> <p>[20 lines deleted]</p> <p>Clinician I: Like, if I think a person can succeed at it, and if I think it's gonna do what it to do, cause the weight loss, this is a good plan.</p>

	<p>Patient #10: I can do it.</p> <p>Clinician I: Okay.</p> <p>Patient #10: I can do it.</p> <p>Clinician I: All right, so listen, let me ... I'm gonna write to [Doctor's name]</p>
<p>Excerpt 9</p> <p><i>Suggestion for Food Diary</i></p>	<p>Clinician B, female, <35 y.o.: Okay well, I think we need to keep a food diary of absolutely everything you eat. <u>Every</u> single thing you eat for a couple weeks and bring that back in the next time you come in. Okay? You can do it with pictures if you want. You can do it writing down. But every single thing you eat.</p> <p>Female patient #2, 68 y.o.: I will eat sushi every day ((laughs))</p> <p>Clinician B: Okay. So you need to know how much.</p> <p>Patient #2: I know, yeah.</p> <p>Clinician B: Cause we gotta figure out if you're gaining weight</p> <p>Patient #2: The "nigari," "nigeri" you say that tastes good, no? That "nigeri" is fish?</p> <p>Clinician B: Well, it doesn't have rice in it. So that's better for someone with diabetes.</p> <p>Patient #2: Okay.</p> <p>Clinician B: Yeah. Why don't you hop up here. We need to do an exam.</p> <p>(7 second pause)</p> <p>Patient #2: Yeah my anxiety is my weight.</p> <p>(3 second pause)</p> <p>Clinician B: Well somewhere we're not getting something right, because, you know, you <u>can</u> eat so little that you gain weight cause your body just thinks it needs to store absolutely everything? But I don't <u>think</u> that's what's going on with you. So I think what would help is if we get a diary of everything that you're eating.</p> <p>Patient #2: Yeah, because that affects my stomach and of course you know that I'm uh incontinent ((lower voice)).</p>

<p>Excerpt 10 <i>Referral</i></p>	<p>Clinician J, female, 55-64 y.o.: So yeah I think actually seeing the nutritionist affiliated with Dr. X’s office actually would be really helpful.</p> <p>Female patient #12, 71 y.o.: Can you make that?</p> <p>Clinician J: Well, you could see one that’s affiliated with our practice here. Yeah, okay. I can put a referral in for a nutritionist. I think that’s actually a good idea.</p>
<p>Excerpt 11 <i>Social Work Referral Advice</i></p>	<p>Clinician C, female, 45-50 y.o.: Terrific. If there are things I can do to help from my side-</p> <p>Male patient #11, 76 y.o.: There's nothing you can.</p> <p>Clinician: Probably not, but sometimes if they say that if you have a disability as well, or medical conditions, that you might get ... Certainly, with needing the oxygen every day, things like that. Just mention it to her.</p> <p>Patient: I will.</p>

Figure 2.
Qualitative Quotes of Clinical Suggestions from Photo-Based Communication

<p>Excerpt 12 <i>Moving to Physical Exam</i></p>	<p>English/Spanish Translator: Yeah, once a week and that's it. Clinician G, female, <35 y.o.: Good. Can I feel your belly?</p>
<p>Excerpt 13 <i>Patient Progressing the Visit</i></p>	<p>Clinician I, male 45-54 y.o.: For people who go have fast food? They have to learn how to plan. Right? (1/2 second pause) That's not an issue for you I don't see it. Um. (2 second pause) Male Patient #13, 69 y.o.: Doctor [Last Name] besides the food, can you tell if my throat is looking better when you look at it? Clinician I: Absolutely.</p>
<p>Excerpt 14 <i>Closing the Visit</i></p>	<p>Clinician E (in Mandarin to Female Patient #5, 70 y.o.): Okay, so when you leave here today, tell them to make a three month appointment for you to come back. And then before you come, do your blood test like you did this time. I will examine your vitamin D level and see if it worked after you took that medicine. I will also check your A1c to see how your diabetes control is. Next time you bring me photos for me to take a look. Anyway, it's easy to take photos when you have a cell phone at home, isn't it?</p>

Figure 3.
Qualitative Quotes for Closing Photo-Based Communication Segment

Table 1.

Sociodemographic and health characteristics of patient participants (n=13) in San Francisco, CA.

Female, %	53.8%
Race/ethnicity, %	
African American	30.8%
Asian American	7.7%
Latinx	30.8%
White	30.8%
Age, mean (years) \pm SD (Range)	68.2 \pm 4.0 (61-76)
Country of birth, %	
United States	69.2%
Other [^]	30.8%
Non-English languages spoken at home, * %	
English	84.6%
Spanish	30.8%
Cantonese	7.7%
Other ^{^^}	7.7%
Limited English proficiency, ** %	15.4%
Highest level of completed education, %	
High school diploma/GED or less	15.4%
Some additional schooling beyond high school	46.2%
Completed college or more	38.5%
Employment, * %	
Retired	61.5%
Disabled	46.2%
Annual household income, %	
Less than \$10,000	46.2%
\$10,001-\$20,000	15.4%
\$20,001-\$40,000	15.4%
More than \$40,001	15.4%
Don't know/not sure	7.7%
Food security,%	
High food security	23.1%
Marginal food security	23.1%
Low or very low food security	53.8%
Live alone, %	61.5%

Self-reported health status, %	
Excellent or very good	15.4%
Good or fair	53.8%
Poor	30.8%
Number of chronic conditions based on diagnosis codes from the Elixhauser Comorbidity Index, %	
2-4 chronic conditions	69.2%
5+ chronic conditions	30.8%

* Patients selected all that applied

** Limited English proficiency defined as speaking English “not well” or “not at all.”

^ Other countries of birth were China, Mexico, Nicaragua and Peru.

^^ Other languages spoken at home were French and Greek.

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Table 2.Sociodemographic and characteristics of clinician participants (n=10^{*}) in San Francisco, CA.

Female, %	50%
Race/Ethnicity, %	
Asian American	30%
White	70%
Age, %	
Less than 35	30%
35-44	20%
45-54	30%
55-64	20%
Born in the U.S. %	80%
Languages other than English, %	
Spanish	20%
Mandarin	20%
Other **	30%
Current clinician position, %	
Attending physician	80%
Nurse practitioner	10%
Resident physician	10%
Years in practice after health professional school, mean (years) \pm SD	14.5 \pm 11.1
Number of patients seen in ambulatory practice weekly, mean (patients) \pm SD	26.1 \pm 15.7
Number of primary care patients in patient panel, %	
101-200	20%
201-300	10%
301-400	20%
401-500	10%
More than 500	40%

* Three clinicians participated in this study with two patient participants.

** Other languages spoken were French and Russian

Table 3.

Photo-Based Communication Initiations, Duration, Sequencing (n = 13)

Patient	Clinician	Initiation(s) w/o Photo Uptake	Initiation w/uptake	Start Time	Total Photo Time	Total Visit Time	% of Total Visit	What Happens after Photo-Based Communication
1 Male 68 y.o.	A Male 45-54 y.o.	Patient 1st	Patient	4:46	10:25	39:44	26.2%	Talk: pain with exercise, A1c, retina, sleep, flu shot; Physical examination
2 Female 68 y.o.	B Female <35 y.o.	Clinician 1st	Clinician	8:58	8:33	35:22	24.2%	Physical examination
3 Male 61 y.o.	C Female 45-54 y.o.	None	Patient	6:50	11:16	27:11	41.5%	Talk: blood pressure
4 Male 69 y.o.	D Male 35-44 y.o.	Clinician 1st, 2nd, 3rd	Patient	6:32	6:30	26:16	24.8%	Clinician gives handouts about nutrition, goes over recent tests and next steps
5 [^] Female 70 y.o.	E Female 35-44 y.o.	Clinician 1st, 2nd	Clinician	14:12	7:08	21:37	33%	Clinician summarizes and visit ends
6 Female 69 y.o.	F Male <35 y.o.	Patient 1 st Clinician 2nd	Clinician	25:54	5:06	31:34	16.2%	Visit ends
7 ^{^^} Male 73 y.o.	G Female <35 y.o.	Clinician 1st, 2nd	Clinician	14:55	7:41	42:42	18%	Physical examination
8 Female 65 y.o.	H Male 55-64 y.o.	None	Patient	12:00	6:15	28:25	22%	Talk: blood pressure, sleep, edema, prescription medications
9 Female 65 y.o.	G Female <35 y.o.	Unknown *	None	0:00	3:34	NA	NA	Visit ends
10 Female 63 y.o.	I Male 45-54 y.o.	Clinician 1st Patient 2nd	Clinician	17:04	16:21	33:25	48.9%	Visit ends
11 Male 76 y.o.	C Female 45-54 y.o.	None	Clinician	5:03	11:52	22:21	53.1%	Talk: prescription drugs, next visit, how is family
12 Female 71 y.o.	J Female 55-64 y.o.	None	Patient	20:32	10:07	41:33	24.4%	Talk: adjusting meds, other clinician visits, urination, infection, referrals to nutritionist, labs, sleep, mental health
13 Male 69 y.o.	I Male 45-54 y.o.	Clinician 1st	Clinician	5:11 **	28:37	NA	NA	Talk about throat, recording is turned off **

* Patient 9 audio was not properly recorded, and thus, we are missing some segments.

** Patient 13 requested to not record other aspects of their clinic visit.

[^] Visit occurred in Mandarin Chinese

^{^^} Visit occurred through a professional Spanish translator