

Original Research

Willingness-to-Pay Stated Preferences for Telemedicine Versus In-Person Visits in Patients with a History of Psoriasis or Melanoma

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ABSTRACT

The objective of this study was to evaluate willingness-to-pay stated preferences for telemedicine versus in-person clinic visits in patients with a history of psoriasis or melanoma. Face-to-face interviews were conducted with 92 ($n = 92$) adult participants with a history of psoriasis or melanoma recruited primarily from hospital-based dermatology practices. Data were collected on patient demographics and willingness-to-pay responses. In a combined analysis for patients with melanoma and psoriasis, 73% of participants preferred telemedicine over in-person visits if access to the physician was quicker. The majority of those choosing telemedicine (95%) were also willing to pay a median of \$25 (\$5–\$500) out-of-pocket. When time to see a physician was held constant for telemedicine and in-person visits, 19% of participants preferred telemedicine and about 58% of these participants were willing to pay a median of \$25 (\$10–\$125) out-of-pocket. This preliminary work suggests that dermatology patients prefer telemedicine if this modality provides quicker access to their physician.

INTRODUCTION

PATIENT ATTITUDES TOWARD TELEMEDICINE have traditionally been studied retrospectively using satisfaction surveys.^{1–3} A few studies have addressed patients' willingness to use telemedicine services using standard survey

questions.^{4,5} Qureshi and Kvedar previously reported that more than 50% of dermatology patients coming to tertiary care hospital practices are amenable to interacting with their dermatologist online and agreeable to having digital skin images sent online.^{6,7} In this study, we used a willingness-to-pay (WTP) approach to

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evaluate patient preferences for telemedicine versus in-person visits. The WTP approach was initially utilized in the environmental economics literature as a means to measure stated preferences for goods not sold in a marketplace, but it has been increasingly adopted as a measure to value healthcare options.⁸ WTP has been used in a few other studies to assess the preferences of dermatology patients.^{9–12}

When creating the survey instrument used in this study, we hypothesized that two main factors would impact the WTP for a telemedicine encounter: (1) the potential of telemedicine to decrease time until care is received, and (2) the “convenience” of telemedicine (i.e., not needing to come in to the hospital or clinic and the associated burdens including time off from work, travel time, and associated costs). Hence, the goal of this study was to explore patient preferences regarding two aspects of store-and-forward teleconsultation in dermatology care, convenience, and wait time to see a physician. We used an open-ended WTP technique as a way to indicate the preference strength of participants for online telemedicine versus in-person clinic visits. The results of this study are meant to reveal patients’ relative preferences for two processes of care rather than to estimate the financial value of teledermatology.

MATERIALS AND METHODS

We used WTP to measure patient preferences for telemedicine versus in-person care in patients who have potential for frequent follow-up visits, namely, patients with a history of melanoma or psoriasis. The questions involved hypothetical scenarios where participants were given the option of seeing their dermatologist using an online service instead of the traditional office visit. Before the final

study, the survey was piloted on five participants with a history of psoriasis. After the pilot phase, minor wording changes were made based on feedback from the pilot subjects, and IRB approval at Partners Healthcare, Inc., was obtained on these changes.

Participants were asked to consider their preference for telemedicine versus in-person clinic visits in two hypothetical scenarios (Table 1). For each scenario, the patient was asked to imagine the context of worsening disease (for patients with a history of psoriasis) or discovery of a new or changing mole (for patients with a history of melanoma). In the first scenario, time until receiving care was longer for in-person care (2 weeks) than for telemedicine care (2 days). In the second scenario, time was constant for both, and convenience was therefore assumed to be the major determining factor in the choice given. In both scenarios, participants were first asked whether they would prefer telemedicine or in-person care. If telemedicine was chosen, the subjects were asked whether they were willing to pay any amount of money out-of-pocket for telemedicine, and if the response was affirmative, the subject was asked how much they were willing to pay. All WTP questions were open-ended; the WTP value was unprompted and unbounded. In addition to the two scenarios, we asked multiple-choice and open-ended questions about characteristics that we hypothesized might affect choices or preferences (Table 2).

Subjects were recruited by letters mailed to patients with a diagnosis of psoriasis or melanoma, seen at the dermatology clinics at Massachusetts General Hospital (MGH) between January 2002 and December 2002. The letter was signed by the patient’s clinician and the principal investigator of this study. Advertisements were also posted in dermatology clinics at MGH and Brigham and Women’s Hospital,

TABLE 1. SUMMARY OF THE TWO HYPOTHETICAL SCENARIOS PRESENTED TO PARTICIPANTS TO ELICIT WILLINGNESS-TO-PAY RESPONSES

<i>Scenario</i>	<i>Time until in-person visit</i>	<i>Time until telemedicine response</i>
1	2 weeks	2 days
2	2 days	2 days

TABLE 2. CHARACTERISTICS OF STUDY PARTICIPANTS

<i>Demographics</i>	<i>Proportion</i>
Gender	52% female
Age	53.19 years (SD \pm 15.97)
Ethnicity	95% white
Education	82% > high school
Income	45% \leq \$50,000/year
Employment status	54% employed
Health insurance	95% insured
Home computer	80%
Home Internet access	67%
Own digital camera	26%

as well as three private clinics in the Boston area. Participants were required to be 18 years of age or older, English-speaking, and to have a history of psoriasis or melanoma. The study population consisted of the first 50 patients with a history of psoriasis and the first 42 patients with a history of melanoma who contacted us, met eligibility criteria, and were willing to participate after being given a brief verbal description of the study. Informed consent was obtained from all participants prior to survey administration.

Participants were required to make one 30-minute visit to the hospital to complete the survey. The survey was administered by two trained interviewers who read the instrument aloud word-for-word in a face-to-face interview. Repetition of questions was allowed for clarification. For the first two questions, participants were asked to mark their answers on the visual analog scale placed in front of them. All other responses were given verbally and recorded by the interviewer. Data were entered into a Microsoft Excel™ (Microsoft, Redmond, WA) spreadsheet and then read into SAS (SAS Institute, Inc., Cary, NC) for analysis.

RESULTS

A total of 92 ($n = 92$) patients were recruited to participate in the study. The characteristics of the participants are shown in Table 2. In the first hypothetical scenario, participants were asked to state their preference for telemedicine versus in-person care when telemedicine offered faster access to care. As shown in Table 3, 73% of participants chose telemedicine and were willing to pay out-of-pocket for this service. Of the 73% who were willing to pay for faster access via telemedicine, 55% participants had an income \leq \$50,000/year.

Time was held constant in the second scenario, and participants were asked whether they would prefer to use a telemedicine service versus an in-person clinic visit. As shown in Table 3, 19% of participants stated a preference for telemedicine when access time was equal.

The median dollar values for amounts that participants were willing to pay are presented in Table 3. The data are presented as median value with the range because the majority of participants were willing to pay smaller amounts and thus the data were right-skewed rather than normally distributed.

DISCUSSION

This is the first study employing a WTP approach to evaluate patient preferences for telemedicine. In a previous study, Qureshi and Kvedar had established that more than half of the patients they surveyed at a tertiary care center were willing to consider using telemedicine.⁶ Werner and Karnieli conducted a telephone survey study and found that patients

TABLE 3. WILLINGNESS TO PAY RESPONSES FOR IN-PERSON AND TELEMEDICINE SCENARIOS

<i>Scenario</i>	<i>Time until in-person visit</i>	<i>Time until telemedicine response</i>	<i>% prefer telemedicine</i>	<i>% willing to pay</i>	<i>Median WTP (range)</i>
1	2 weeks	2 days	73	95*	\$25 (\$5–\$500)
2	2 days	2 days	19	58*	\$25 (\$10–\$125)

WTP, willingness-to-pay.

were willing to use telemedicine, but more so for routine than specialized care.⁴ Although dermatology is considered specialized care, our scenarios involved follow-up visits in an established patient–physician relationship. Werner and Karnieli also found that attitudes toward telemedicine and technology anxiety affected a patient’s willingness to use telemedicine.⁴

This study represents a unique utilization of the WTP approach to assess patient preferences for telemedicine versus traditional office visits. The theory behind the WTP method is that an individual will be willing to pay more money out-of-pocket if a service or intervention is perceived to be of higher value. The interpretation of our WTP data therefore assumes that the relative amount a patient is willing to pay for access to their physician via telemedicine is an indication of how much the patient values that option. We surveyed participants with a history of melanoma or psoriasis in face-to-face interviews using hypothetical scenarios. The trade-offs presented in the scenarios occurred in the context of moving from a stable health state to an altered health state (e.g., flaring psoriasis or discovery of a lesion of concern for melanoma).

We found that the majority of participants preferred the option of using telemedicine when it offered them access to their physician 2 weeks earlier than being seen in person. Almost all of the participants who chose faster access to care via telemedicine were willing to pay for the service. When given the option of faster access to a clinic visit versus waiting 2 weeks for a clinic visit, again about 70% of the participants were willing to pay to be seen sooner. Similar results were obtained when the participants were asked about paying to receive a telemedicine response in 2 days instead of 2 weeks. When the time for a telemedicine response and being seen in the clinic was the same, only one-fifth of subjects opted for telemedicine. These results suggest that the majority of participants who chose telemedicine over in-person visits did so because it offered faster access to their physician. Note that participants were presented with hypothetical scenarios of disease worsening to elicit WTP re-

sponses. Responses to the time trade-off and convenience questions were in the context of disease worsening. Hence, patients were probably more likely to be willing to pay for faster access to their physician rather than convenience.

When comparing the WTP median values, it is interesting to note that participants were willing to pay a median of \$25 if they chose telemedicine. During interviews, some participants explained that their choice of WTP in dollar amounts was based on their copayments. The upper limit of WTP amounts was \$500 for quicker access versus \$125 for convenience. Interestingly, 95% of participants were willing to pay if they chose telemedicine over the clinic for faster access versus 58% of the participants who chose telemedicine for convenience.

This study has several limitations, most important of which is selection bias. We required the participants to come into the hospital for a face-to-face interview. We chose to do in-person interviews given the complexity of the hypothetical scenarios and the desire to use visual aids to clarify the choices. This meant, however, that all subjects were able to come in to the hospital to participate in the study for a moderate compensation, and those for whom it was inconvenient probably self-selected out of the study.

The results from this study suggest that participants prefer faster access to their physician in the context of worsening disease, and many participants are willing to use telemedicine if it offers them quicker access to their physician. A small proportion of our population was also willing to pay to use telemedicine when time was not a factor, suggesting that there may be patients who would value the convenience of telemedicine. This was an exploratory study, and further investigation is needed to evaluate the preferences of a larger and more diverse population.

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