TELEMEDICINE USE AND SATISFACTION AMONG FILIPINOS DURING THE COVID-19 PANDEMIC

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Abstract

Introduction: There is limited knowledge on telemedicine use and patient satisfaction in the Philippines, especially during COVID-19. **Aim:** To examine visit-related characteristics of two years of video consultations conducted during the pandemic, patient satisfaction, and identified patient- and visit-related characteristics associated with video consultation satisfaction scores. **Methods:** A retrospective analysis was conducted of telemedicine use and satisfaction of patients aged ≥18y, who had a video consultation between 1 March 2020 to 31 March 2022, using the SeeYouDoc (SYD) platform. As part of SYD's routine oversight, after each video consultation, SYD a 6-item feedback survey was automatically prompted which assessed the patient's level of comfort during the encounter, their perception of the convenience of telemedicine, the acceptability of the lack of physical contact during the consult, presence of privacy-related concerns, overall satisfaction, and their intention to use teleconsultation again. Each item was evaluated on a 5-point Likert scale with 5 as the highest score. These scores were collected, and *t*-test and ANOVA were employed to measure the differences in mean telemedicine satisfaction scores. **Results:** 12,378 telemedicine visits were conducted from 1 March 2020 to 31 March 2022 and patient feedback was received from1,896 patients (15.3%). The mean age of the respondents was 34.7±12.3y. The majority were females (83.1%), new SYD telemedicine patients (69.1%), and in the 26-39y age group (57.0%). Satisfaction with telemedicine was expressed by 73.8%, 63.4% were highly satisfied while 26.2% reported dissatisfaction. Mean telemedicine satisfaction scores were significantly higher among patients who had their telemedicine visit in 2021 ($\bar{x}$=4.7±0.92) compared to 2020 ($\bar{x}$=3.4±1.75) and 2022 ($\bar{x}$=4.3±1.32), p<0.001. Patients aged 60-79 years old had a higher mean satisfaction score compared to other age groups, p=0.014. Higher mean telemedicine satisfaction scores were observed among male patients, those with completed video consultations, and patients who paid for their consultation, p<0.001. **Conclusion:** We observed high patient satisfaction with telemedicine during COVID-19. Filipino patients and families consider telemedicine a viable medium to receive healthcare services.

Keywords: telemedicine; COVID-19; videoconference; patient satisfaction; telehealth; Philippines

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Introduction

COVID-19 is an infectious disease caused by the novel coronavirus (SARS-Cov-2 virus).[1,2] On 11 March 2020, the World Health Organization (WHO) officially declared the COVID-19 outbreak a pandemic.[3] On 16 March 2020, the Philippine President Rodrigo Duterte put Metro Manila and the island group of Luzon under the "enhanced community quarantine" or total lockdown.[4] This was soon followed by lockdowns in other major cities all over the country. The Philippine response to COVID-19 was one of the longest and strictest lockdowns in the world. With these lockdown restrictions, a large portion of healthcare services, specifically non-emergency medical services such as medical consultation, prescription, monitoring, and health information dissemination, shifted from face-to-face visits to virtual care.

Telemedicine is the delivery of healthcare services through the exchange of valid medical information using information and communications technologies.[5-7] Telemedicine is not a novel concept.[4-6] However, telemedicine initiatives, especially in the Philippines, have mostly been implemented in geographically-isolated and disadvantaged areas,[8,9] often as a pilot or part of a study,[9] and have progressed forward through institutional initiatives.[9,10] With the advent of the COVID-19 pandemic, telemedicine has grown significantly as it allows patients to not only receive healthcare at geographical distances but also

minimises the risk of viral transmission.[11,12] receive healthcare at geographical distances but also minimises the risk of viral transmission.[11,12]

With the sudden surge in telemedicine consumption, assessing patient satisfaction becomes an essential aspect of service quality evaluation.[13] Patient perceptions and satisfaction are critical in successfully implementing any healthcare delivery, including telemedicine. Patients provide information on whether care is delivered properly and as expected.[14-16] Satisfaction with telemedicine greatly influences its use and adoption.[9,13]

Though telemedicine has been widely studied, there is limited knowledge of telemedicine use and patient satisfaction in the Philippines, especially during COVID-19. Most telemedicine research in the country was often of pilot studies with small sample sizes. Furthermore, little is known about factors influencing telemedicine use and satisfaction with it during a crisis, especially in developing countries where telemedicine has yet to gain a foothold. Our study aimed to address these gaps and provide relevant data that can inform policies to improve telemedicine in the country. We captured two years of patient- and visit-related characteristics of video consultations (from March 1, 2020, to March 31, 2022) conducted through the SeeYouDoc (SYD) telemedicine platform during the COVID-19 pandemic and described telemedicine use during this time frame. We also surveyed patients' satisfaction with video consultation and identified patient- and visit-related characteristics associated with video consultation satisfaction scores.

Methods

SeeYouDoc (SYD) is a telemedicine platform that allows patients to search, book, and consult with their medical provider online, integrated with an appointment, medical notes, e-prescription, and digital payment system.[17] The platform is a service provided by the SeeYouDoc Corp., a private start-up company, and is used by several public and private medical facilities in the country. It has mobile and web application solutions for patients and medical providers to conduct video consultations. As of March 31, 2022, the SeeYouDoc platform accommodated a total of 334 healthcare providers, 21,601 patients, and 282 medical organisations.

Study Design and Population.

We conducted a retrospective analysis of video consultation use (i.e., the number of video consultations conducted during the study period, and patient- and visit-related characteristics) and video consultation satisfaction survey data, administered through the SYD platform.

Two years of video consultation use and visit-related characteristics of patients aged 18y and above, who received the service using the SYD app between 1 March 2020 and 31 March 2022, were collected and analysed (see Figure 1 for the data inclusion/exclusion process). We categorised the

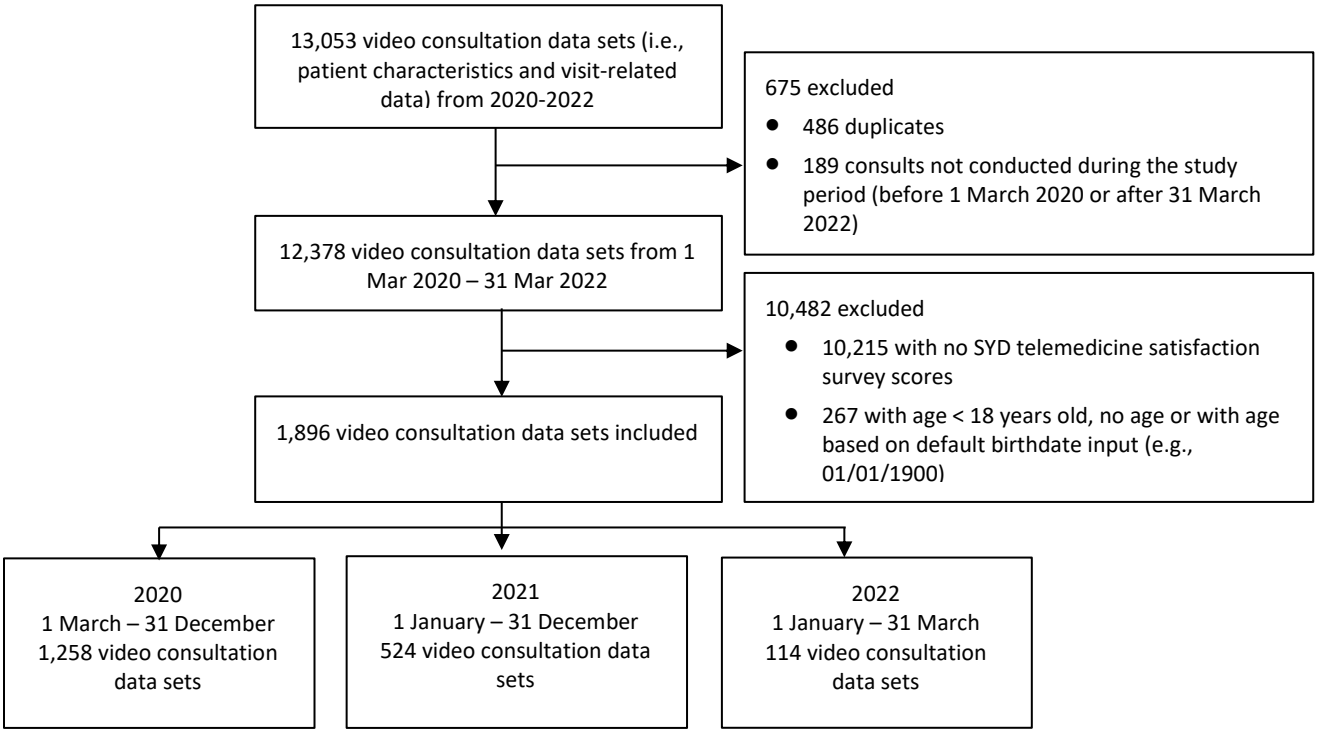

Figure 1. Schematic diagram of data inclusion and exclusion process.

data based on the year of telemedicine visit - 2020, 2021, and 2022 - to observe changes in telemedicine use over time. This also reflects the changes in COVID-related social restrictions in the Philippines from the first year of the pandemic (2020) to the current year (2022).

Data Collection. As part of SYD's routine oversight, a 6-item telemedicine satisfaction survey was electronically collected from patients and families post-video consultation. After each video consultation, SYD automatically prompts a feedback survey composed of six items, tailored to assess: (1) patient's level of comfort during the telemedicine encounter, (2) perceived convenience of telemedicine, (3) acceptability of the lack of physical contact during the consult, (4) presence of privacy-related concerns, (5) overall satisfaction, and (6) intent to do video consultation again. Each item was evaluated on a scale of 1 to 5, with 5 as the highest score (or the highest level of agreement). This 6-item satisfaction survey was developed in 2018 by the SYD team, partner physicians, and health facility administrators to assess client feedback with their video consultation services. Survey items were identified based on the stakeholders' data needs and recommendations from industry experts. The questionnaire was pretested by experts and SYD clients (e.g., patients and their families), and presented for feedback during conventions. This survey instrument has been adapted by SYD as part of their routine digital patient feedback system. Instrument reliability (i.e., Cronbach's alpha) of this 6-item SYD telemedicine satisfaction survey was 0.97 (excellent).

Statistical Analysis. Data were analysed using IBM SPSS Statistics Version 25.0. Descriptive statistics were used to describe telemedicine use and satisfaction and to summarise patient characteristics. We conducted *t* tests and one-way analysis of variance (ANOVA) to measure the differences in mean telemedicine satisfaction scores between groups of respondents categorised based on their patient- or visit-related characteristics.

Ethical approval for this study was obtained from the Single Joint Research Ethics Board (SJREB) of the Department of Health (DOH) (SJREB 2022-35).

Results

A total of 12,378 video consultations with 5,394 unique patients were conducted from 1 March 2020 to 31 March 2022. Of these only 2,163 (17.5%) received an evaluation from patients using the SYD's 6-item telemedicine satisfaction survey. Excluding paediatric telemedicine visits, we analysed a total of 1,896 video consultations (15.3% of the total video consultations) with corresponding satisfaction survey scores.

Figures 2 and 3 reflect the distribution of video consultations over the two-year COVID-19 pandemic period.

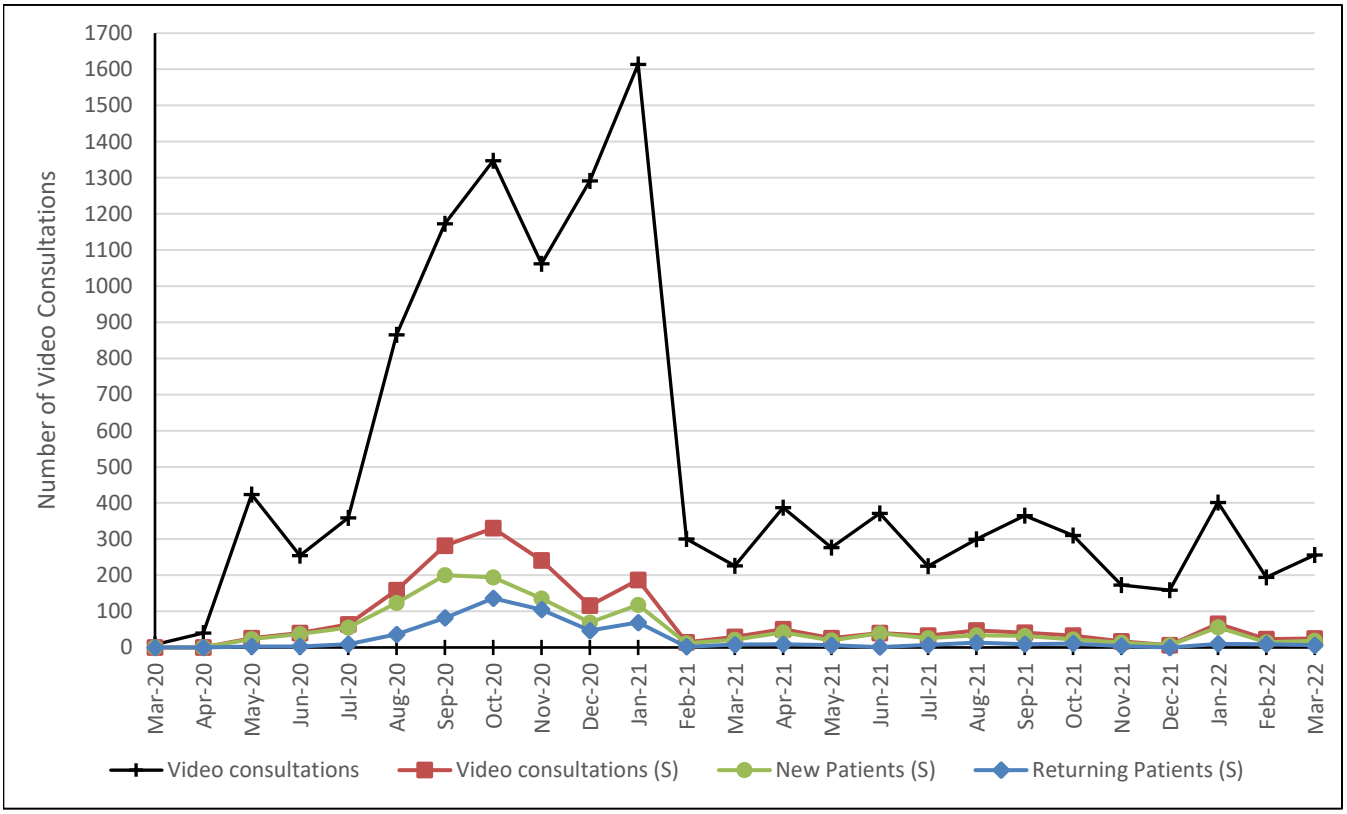

Figure 2. Video consultations from 1 March 2020 to 31 March 2022. (Video consultations: number of video consultations per month. Video consultations (S): number of video consultations per month with patient feedback. New Patients (S): number of video consultations by new SYD telemedicine patients that have a patient feedback. Returning Patients (S): number of video consultations by returning SYD telemedicine patients that have a patient feedback).

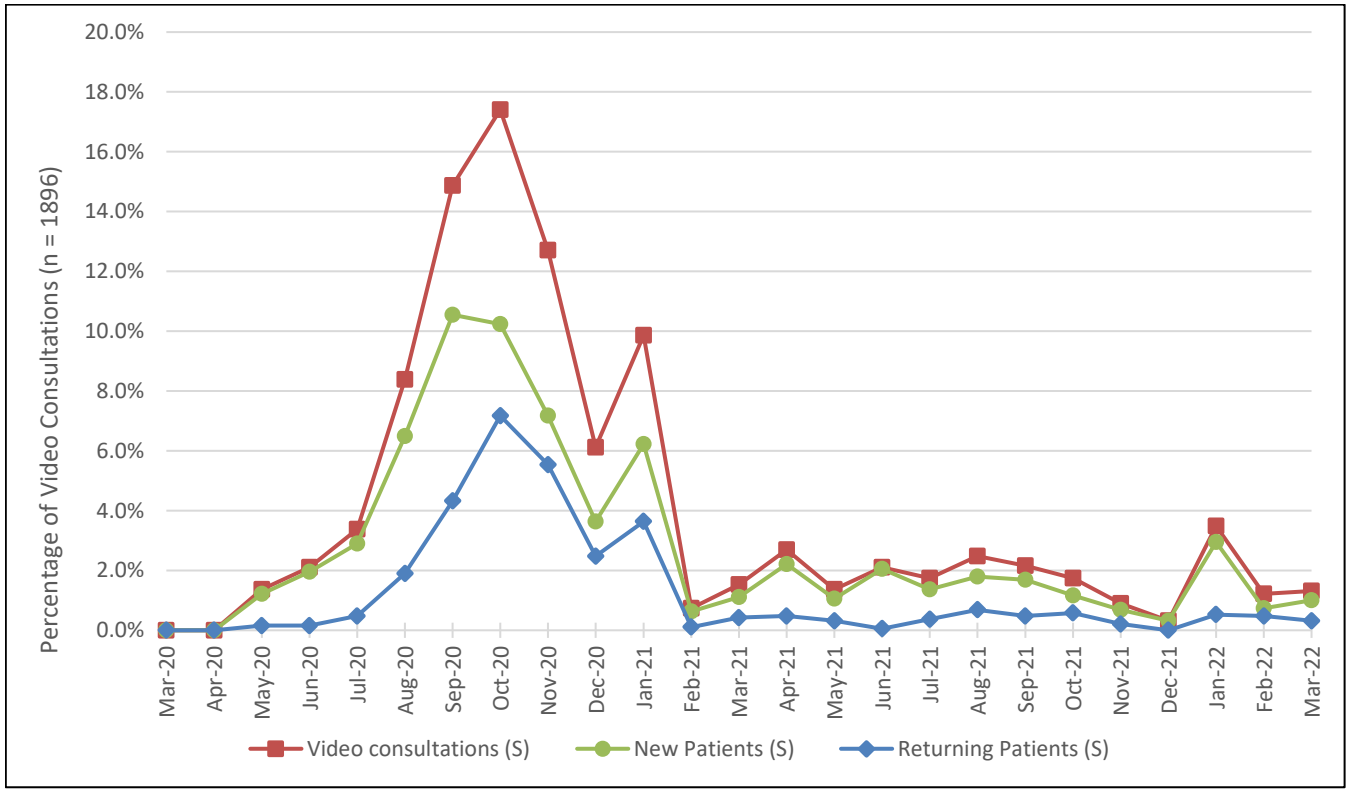

Figure 3. Percentage of video consultations from 1 March 2020 to 31 March 2022. Video consultations (S): percentage of video consultations per month with patient feedback. New Patients (S): percentage of video consultations by new SYD telemedicine patients that have a patient feedback. Returning Patients (S): percentage of video consultations by returning SYD telemedicine patients that have a patient feedback).

Of the 12,378 video consultations, 6,822 (55.1%) were video consultations per month (IQR = 197) were conducted from 2020 to 2022, 644 (IQR = 865) in 2020, 300 (IQR = 140.8) in 2021, and 256 (IQR = 103.5) in 2022. The peak number of video consultations was noted in October 2020, when 10.9% of the total video consultations over a two-year period were conducted. We also observed peaks in video consultations occurring in the month of January 2021, where the number of video consultations increased by around 54.5%, compared to the average monthly number of video consultations in the previous year. A significant dip in the number of video consultations was noted after January 2021; from an average of 767 visits per month ($\bar{x}$ = 766.9; SD = 569.4), to 282 visits per month ($\bar{x}$ = 281.6; SD = 80.0).

Table 1 summarises the characteristics of patients and telemedicine visits conducted and evaluated using the SeeYouDoc app. We categorised the data based on the year of visit. A total of 1,896 video consultations of 1,305 unique patients, conducted by 171 physicians from 152 virtual clinics, received patient evaluations using the 6-item SYD telemedicine satisfaction survey questionnaire. Of these video consultations, 66.4% were conducted in 2020, 27.6% in 2021, and 6.0% in 2022. The median patient age was 31 years old (IQR = 13), while the mean patient age was 34.7 (SD = 12.3). The majority of the patients were female (83.1%), new SYD telemedicine patients (69.1%), and were in the 26-39 age group (57.0%). Most of the patients (95.9%) did not state their reason for the visit, and 92.1% were completed video consultations, while 7.9% were either cancelled and/or rescheduled. Of the video consultations, 68.4% were free of charge, while 31.6% were paid by patients via cash or online credits. The average video consultations duration was 34.9 minutes (SD = 30.7).

Table 2 shows the responses of patients per SYD telemedicine satisfaction survey item. Overall, 73.3% of patients felt comfortable during their telemedicine visit, with 71.5% agreeing that video consultation was convenient, 67.5% of patients perceiving the lack of physical contact was acceptable, and 30.3% of patients reporting having concerns about privacy during video consultation. Overall, 71.7% provided a high satisfaction rating (i.e., an overall satisfaction score of 4 or 5). Only 66.2% of patients reported intent to do video consultation again. The mean video consultation satisfaction score was computed at 3.8 (SD = 1.65).

Of the 1,896 participants, 1,202 (63.4%) had very high telemedicine satisfaction (i.e., mean score of 4.2 - 5.0), 141 (7.4%) had high satisfaction (i.e., mean score of 3.4 - 4.2), 57 (3.0%) had average satisfaction (i.e., mean score of 2.6 - 3.4), 28 (1.5%) had low satisfaction (i.e., mean score of 1.8 - 2.59),

and 468 (24.7%) had very low satisfaction (i.e., mean score of 1.0 - 1.8).

The relationship between video consultation/patient characteristics and mean satisfaction score is presented in Table 3. Mean satisfaction scores were significantly higher among patients who had their video consultation visit in 2021 ($\bar{x}$ = 4.7; SD = 0.92) compared to those who consulted in 2020 ($\bar{x}$ = 3.4; SD = 1.75) and 2022 ($\bar{x}$ = 4.3; SD = 1.32), $F(2,1893) = 137.42$, $p<0.001$. There were also significant differences in mean satisfaction scores between different age groups, with patients aged 60-79 years old ($\bar{x}$ = 4.3; SD = 1.34) having a higher mean satisfaction score compared to others, $F(4,1891) = 3.1$, $p=0.014$. Higher mean satisfaction scores were observed among male patients ($\bar{x}$ = 4.2; SD= 1.43; $t(1894) = 4.9$, $p<0.001$), those with completed video consultations ($\bar{x}$ = 4.0; SD = 1.52; $t(1894) = 20.64$, $p<0.001$), and patients who paid for their video consultation ($\bar{x}$ = 4.4; SD = 1.75; $t(1894) = 11.46$, $p<0.001$).

Previous SYD video consultation experience had no significant effect on the mean satisfaction score, $t(1894) = 1.22$, $p=0.223$, despite new SYD video consultation patients ($\bar{x}$ = 3.8; SD = 1.63) having a higher satisfaction rating than returning video consultation patients ($\bar{x}$ = 3.7; SD = 1.69).

Discussion

Our study aimed to explore video consultation use and patient satisfaction with videoconsultation provided through the SYD platform from 1 March 2020 to 31 March 2022. Our results showed a hundredfold increase in the number of video consultations during the pandemic from an average of 5 visits per month in 2019 to 495 visits per month in 2020 to 2022. During the two-year study period, 12,378 video consults were conducted; only 1,896 (15.6%) of these visits received patient feedback through the SYD telemedicine satisfaction survey. Based on this survey, we found that the majority

Table 1. Baseline characteristics of video consultations conducted using the SeeYouDoc app during the COVID-19 pandemic (1 March 2020 to 31 March 2022; n = 1,896).

Characteristic	2020 - 2022	2020 (Mar - Dec 2020)	2021 (Jan - Dec 2021)	2022 (Jan - Mar 2022)
General Data				
Video consultations, n (%)	1,896 (100)	1,258 (66.4)	524 (27.6)	114 (6.0)
Unique Patients, n (%) [A]	1,305 (68.8)	835 (66.4)	429 (81.9)	102 (89.5)
Physicians	171	98	114	47
Virtual Clinics	152	75	90	53
Patient Age (years)				
Median (IQR)	31 (13)	31 (11)	33 (16)	34 (19.8)
Mean (SD)	34.7 (12.3)	33.2 (10.8)	37.2 (14.3)	39.4 (15.0)
Category, n (%)				
18-25y	381 (20.1)	255 (20.3)	106 (20.2)	20 (17.5)
26-39y	1,081 (57.0)	768 (61.0)	260 (49.6)	53 (46.5)
40-59y	317 (16.7)	192 (15.3)	101 (19.3)	24 (21.1)
60-79y	102 (5.4)	33 (2.6)	52 (9.9)	17 (14.9)
≥80y	15 (0.8)	10 (0.8)	5 (1.0)	0 (0)
Patient Gender, n (%)				
Male	321 (16.9)	160 (12.7)	121 (23.1)	40 (35.1)
Female	1,575 (83.1)	1,098 (87.3)	403 (76.9)	74 (64.9)
Experience with SeeYouDoc (SYD) Telemedicine, n (%)				
New	1311 (69.1)	837 (66.5)	385 (73.5)	89 (78.1)
Returning	585 (30.9)	421 (33.5)	139 (26.5)	25 (21.9)
Consultation Reason, n (%)				
Regular Check Up / Follow Up	19 (1.0)	19 (1.5)	0 (0)	0 (0)
Presenting with symptoms	54 (2.8)	54 (4.3)	0 (0)	0 (0)
Laboratory / Prescription Request	3 (0.2)	3 (0.2)	0 (0)	0 (0)
Medical Certificate Request	2 (0.1)	2 (0.2)	0 (0)	0 (0)
Unknown (No Answer)	1818 (95.9)	1180 (93.8)	524 (100)	114 (100)
Appointment Status, n (%)				
Completed	1747 (92.1)	1109 (88.2)	524 (100)	114 (100)
Cancelled / Rescheduled	149 (7.9)	149 (11.8)	0 (0)	0 (0)
Payment Method, n (%)				
Free	1297 (68.4)	1007 (80.0)	265 (50.6)	25 (21.9)
Out-of-Pocket [B]	599 (31.6)	251 (20.0)	259 (49.4)	89 (78.1)
Videoconsultation Duration (min)				
Mean (SD)	34.9 (30.7)	35.9 (33.7)	33.3 (22.2)	31.9 (30.2)

[A] Computed based on (Number of unique patients in a given period/Total number of video consultations in a given period) x 100. [B] Videoconsultation paid via online credits or cash.

Table 2. Six-item SYD telemedicine satisfaction survey results.[A]

Statement	2020 (n = 1,258)			2021 (n = 524)			2022 (n = 114)			Overall (n = 1,896)		
	% Agree[B]	% Disagree[C]	Mean (SD)	% Agree[B]	% Disagree[C]	Mean (SD)	% Agree[B]	% Disagree[C]	Mean (SD)	% Agree[B]	% Disagree[C]	Mean (SD)
1. I felt comfortable	63.8	33.9	3.55 (1.85)	93.3	6.1	4.72 (0.96)	85.1	12.3	4.42 (1.34)	73.3	24.9	3.93 (1.71)
2. The encounter was convenient	61.8	35.5	3.46 (1.86)	92.4	6.3	4.69 (0.96)	82.5	13.2	4.33 (1.38)	71.5	26.1	3.85 (1.72)
3. The lack of physical contact was acceptable	57.1	38.4	3.29 (1.85)	89.7	6.5	4.61 (1.01)	79.8	14.0	4.23 (1.40)	67.5	28.1	3.71 (1.75)
4. I have no concerns about privacy	56.2	39.5	3.28 (1.89)	86.5	9.5	4.50 (1.21)	67.5	24.6	3.87 (1.63)	65.2	30.3	3.65 (1.79)
5. Overall satisfaction score	61.4	35.9	3.45 (1.87)	93.5	5.7	4.73 (0.94)	86.0	13.2	4.42 (1.36)	71.7	26.2	3.86 (1.74)
6. I would do a tele-consultation again	53.5	44.6	3.13 (1.94)	92.7	6.3	4.69 (0.98)	85.1	13.2	4.38 (1.37)	66.2	32.1	3.64 (1.84)
Mean Telemedicine Satisfaction Score	**3.4 ± 1.75** (Average Satisfaction)			**4.7 ± 0.92** (Very High Satisfaction)			**4.3 ± 1.32** (Very High Satisfaction)			**3.8 ± 1.65** (High Satisfaction)		

[A] Scoring: 5 = Strongly Agree (Highest Score); 4 = Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly Disagree (Lowest Score). [B] Proportion of video consultations which received a rating of 4 or 5. [C] Proportion of video consultations which received a rating of 1 or 2. [D] Interpretation based on weighted average: 4.2 - 5.0 = Strongly Agree (Very High); 3.4 - 4.19 = Agree (High); 2.6 - 3.39 = Neutral (Average); 1.8 - 2.59 = Disagree (Low); 1.0 - 1.79 = Strongly Disagree (Very Low).

Table 3. Comparison of mean video consultation satisfaction scores based on video consultation and patient characteristics.

Variables	Mean	Interpretation [A]	*t* [B]	*F* [C]	*p* (Two-Tailed)
Year					
2020	3.4 ± 1.75	Average		137.42	< 0.001
2021	4.7 ± 0.92	Very High			
2022	4.3 ± 1.32	Very High			
Respondent's Age (years)					
18-25	3.6 ± 1.74	High		3.14	0.014
26-39	3.8 ± 1.64	High			
40-59	3.7 ± 1.63	High			
60-79	4.3 ± 1.34	Very High			
≥80	3.6 ± 1.79	High			
Respondent's gender					
Male	4.2 ± 1.43	High	4.85		< 0.001
Female	3.7 ± 1.68	High			
Experience with video consultation					
New	3.8 ± 1.63	High	1.22		0.223
Returning	3.7 ± 1.69	High			
Appointment Status					
Completed	4.0 ± 1.52	High	20.54		< 0.001
Cancelled Rescheduled	1.4 ± 1.02	Very Low			
Payment Method					
Free	3.5 ± 1.75	High	11.46		< 0.001
Out-of-Pocket	4.4 ± 1.18	Very High			

[A] Interpretation of mean telemedicine satisfaction score based on weighted average: 4.20 - 5.00 = Very High; 3.40 - 4.19 = High; 2.60 - 3.39 = Average; 1.80 - 2.59 = Low. 1.00 - 1.79 = Very Low. [B] Independent t-test. [C] One-Way ANOVA.

(73.8%) expressed satisfaction with video consultation, 63.4% were highly satisfied with the service, while 26.2% reported dissatisfaction. Most of the respondents considered video consultation comfortable (73.3%), convenient (71.5%), and the lack of physical contact during the consult acceptable (67.5%). However, privacy was found to be a factor of concern by survey respondents. More than half (66.2%) of patients intended to use video consultation again. Our study also revealed statistically significant differences in mean telemedicine satisfaction scores between respondents based on their video consultation date, age, gender, appointment status, and payment method. Mean telemedicine satisfaction scores were significantly higher among patients who had their video consultation in 2021, aged 60-79 years old, male, with completed appointment status, and had paid out-of-pocket for their consultation.

Healthcare delivery has gone through a paradigm shift from face-to-face encounters to virtual care during the COVID-19 pandemic, resulting in high demand for video consultation services.[11,12] This increase in video consultation demand was apparent in our present study, where we observed a sharp increase in the number of video consultations from less than five visits per month to an average of 682 per month in 2020, 392 per month in 2021, and 284 per month in 2022. Overall, SYD noted an average of 495 video consultation visits per month; around 100 times the usual number of video consultations per month prior to COVID-19. Over the two-year pandemic period, 12,378 telemedicine visits were conducted; 6,822 (55.1%) were done in 2020, 4,705 (38.0%) in 2021, and 851 (6.9%) in 2022.

In this study, we analysed a total of 1,896 video consultations with 1,305 unique patients, conducted by 171 physicians from 152 virtual clinics, all of whom provided patient feedback using the 6-item SYD telemedicine satisfaction survey questionnaire. Of these video consultations, 66.4% were conducted in 2020, 27.6% in 2021, and 6.0% in 2022. The mean patient age was 34.7 years old. The majority of respondents were female (83.1%), aged 26-39 years (57.0%), and at their first video consultation visit through SYD (69.1%). The average video consultation duration was 34.9 minutes (SD = 30.7). These results are comparable with findings from a US national survey on telehealth use (audio and video telehealth) in 2021, which showed that telehealth use rates among different age groups were similar (17.6-24.6%). Patients aged 18-24 had the highest share of visits that used video services, followed by those aged 25-39 years old. The majority of telehealth users were female.[18] According to a 2016 survey, the average telemedicine visit is 13-15 minutes,[19] which is half as long as consultations in our study.

Though telemedicine as a concept is not new, telemedicine is still considered potentially disruptive, especially in the Philippines where it has just started gaining a foothold due to the sudden shift to virtual care because of COVID-19. Patient satisfaction, as a measure of the quality of care, has been cited as the most important factor in the success of telemedicine initiatives.[20,21] In this study, we evaluated patients' video consultation satisfaction by assessing the patient's level of comfort during the video consultation encounter, perceived convenience of video consultation, acceptability of the lack of physical contact during the video consultation, presence of privacy-related concerns, overall satisfaction, and usage intention.

The majority of patients felt comfortable with video consultation (73.3%) and considered it convenient (71.5%). In 2020, 63.8% and 61.8% of patients reported comfort and convenience with video consultation, respectively. These numbers improved in 2021 and 2022, where 73-93% of patients responded that they felt comfortable during their video consultation visit. More patients (71-83%) also reported the convenience of the service. Around 67.5% of patients considered the lack of physical contact during video consultation acceptable. We observed that in 2021, more patients (89.7%) were accepting of video consultation's lack of physical contact, compared to 2020 (57.1%) and 2022 (67.5).

Of the six items in the satisfaction questionnaire, privacy remains one of the lowest rated aspects of telemedicine. One-third of patients expressed concerns regarding privacy. However, patients' perception of privacy during videoconsult got better, from 40% reporting privacy concerns in 2020 down to 25% in 2022. Privacy concerns influence patients' trust towards the system. Studies show that patients' information privacy concerns have a significant effect on their intention to use healthcare technologies, such as telemedicine.[22-24] This is consistent with what we observed in this study. The proportion of patients who reported their intention to use video consultation again increased as the percentage of patients with privacy concerns decreased. Addressing these privacy concerns will encourage trust towards the system and in effect, increase patient utilisation of telemedicine in the country.[24]

Satisfaction with video consultation improved from 61.4% in 2020 to 86% in 2021 and 71.7% in 2022. This is consistent with changes in mean video consultation satisfaction scores over time; patients were noted to have an average satisfaction score in 2020, and very high satisfaction scores in 2021 and 2022. Overall, 73.8% of patients expressed satisfaction with video consultation while 26.2% reported dissatisfaction with the service. More than half (63.4%) were highly satisfied with video consultation. More Filipino patients reported intent to do another videoconsultation from 53.5% in 2020 to 92.7% in 2021 and 85.1% in 2022. On average, 66.2% of patients intended to use video consultation again. Acceptance of video consultation over time and having no access to physical clinics during the pandemic may explain improvements in video consultation satisfaction and usage intention. Rogers' Diffusion of Innovation theory states that over time, a new idea or product becomes acceptable and/or is adopted.[25] In the first year of the pandemic, video consultation as an alternative for physical clinic visits had just been introduced to the public, and patient satisfaction with video consultation was average. However, in succeeding years, patients reported very high satisfaction. This change may be due to higher patient awareness or acceptance of video consultation and better implementation by physicians and/or clinics. Our data are consistent with previous studies in developed countries, which reported high patient satisfaction with telemedicine during the pandemic.[26-29]

Some telemedicine studies in developing and underdeveloped countries showed a different scenario, where patient satisfaction with telemedicine is low, potentially due to low literacy rates, poor network coverage, low socio-economic status, and limited resources to implement new technologies.[30-32] Due to study limitations, we were unable to gather information on patients' education, socio-economic status, and other demographic information. However, we observed that patients who received free video consultations tended to have lower telemedicine satisfaction compared to paying patients (3..5±1.75 vs 4.4±1.18). The choice of payment method may reflect the socio-economic status of patients. Patients who paid out-of-pocket to receive telemedicine services are likely to have better economic conditions than those who received the service for free.

We found significant differences in mean video consultation satisfaction scores between different age groups. Patients aged 60-79 years old tended to have higher satisfaction compared to the younger age groups and those aged 80 and above. This finding differs from previous research results, where they found that younger age is associated with higher telemedicine satisfaction.[33-37]

Younger patients tend to be more open to the use of new technologies and are more likely experienced with Internet and technology use. Based on a survey conducted in 2019, around 86% of respondents aged 18-24 and 71% of respondents aged 25-34 years old were Internet users.[38] The proportion of Internet users decreases as age increases. Among respondents aged 55 and above, they found that only 14% use the Internet.[38] Those within the age group of 60-79 years old were less likely to be Internet users before their telemedicine consultation. However, in the Filipino family caregiving culture, family members are often entrusted with the care of the elderly. A study on informal healthcare (i.e., care received from kin and other people when one is ill) in the Philippines show that 44.4% of elderly aged 60 and above are usually taken care of by the younger generation. Only 17.3% reported self-care.[39] Among those requiring long-term care, 60.8% of Filipinos aged 60 and above were mainly taken care of by their children, grandchildren and/or daughter-in-law.[39] Thus, younger family members are more likely to assist elderly patients during video consultation, lowering technology-related execution issues and giving seniors better experience.

Unlike other studies where female respondents had higher satisfaction ratings than male counterparts,[28,40] we observed that male respondents in our study reported higher satisfaction than females. We also found that patients, who experienced cancellation and/or rescheduling of their video consultation appointment, tend to have lower satisfaction ratings. Ensuring completion of the scheduled video consultation and avoidance of cancelled appointments can improve patient satisfaction with telemedicine services. Previous SYD telemedicine experience had no significant effect on the mean video consultation satisfaction score. There was no significant difference in the satisfaction scores between new patients, who had their first video consultation using the SYD platform, and returning patients.

To our knowledge, this is the largest study on patients' satisfaction with video consultation in the Philippines. This study contributes to the limited body of knowledge on telemedicine implementation in the country, especially as a service provided beyond a pilot research or grant initiative. Our study captures the changes in video consultation use and patient satisfaction during 24 months of the COVID-19 pandemic. The results of our study can serve as a basis for policies and guidelines to improve telemedicine implementation and adoption in the Philippines. It is also important to note the limitations of our study. First, this is a retrospective study hence causality cannot be established. Second, the deidentified data did not capture patient- and physician-level variables known to influence video consultation satisfaction scores. Third, we were unable to assess for non-responder bias. Only 15.3% of all video consultation visits received feedback. Lastly, there was no comparison group for analysis. We recommend a future study on video consultation efficiency and patient-physician satisfaction in comparison to traditional face-to-face consultation.

Conclusions

This study showed that Filipino patients and families considered video consultation a viable medium to receive healthcare services. We noted a significant increase in video consultation visits and high patient satisfaction with video consultation during the pandemic. Furthermore, we identified patient- and visit-related variables, such as age, gender, payment method and appointment status, that influence patient satisfaction. Prior to the pandemic, public and private facilities have taken steps towards adoption of digital health solutions, but telemedicine adoption remained sluggish. The emergence of COVID-19 pandemic served as a stimulus that triggered the accelerated establishment and diffusion of telemedicine programs in the Philippines. The adoption of video consultation services, as demonstrated in our study, and its continuing use even after the country eased lockdown measures suggest that virtual consult was addressing a healthcare need among Filipino patients. Private entities, such private hospitals, health insurance companies and digital health companies can capitalise on this existing demand for virtual care services. However, there is still a need to investigate how to make telemedicine more cost-effective and sustainable, especially once telemedicine utilisation stabilises post-pandemic. Improving sustainability will involve having reliable technology, trained personnel, expanded payment and reimbursement models, performance tracking and stakeholders' feedback, and ensuring health equity. Policies and guidelines to address telemedicine issues, including data confidentiality, will be critical to ensure proper implementation of telemedicine. Post-pandemic policies must also consider health equity concerns, such as those relating to broadband access and payment parity. With the rollout of the Philippines Universal Health Care (UHC) Law, which stipulates telehealth and technology-enabled healthcare provider networks as vital towards ensuring healthcare for all Filipinos, telemedicine will further gain leverage. Our study contributes to the understanding of patient experience with telemedicine in the Philippines and we hope our findings can serve as basis for policies to improve telemedicine implementation.

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Authors' contributions: NGDC devised the study concept, designed the study, led the grant application, supervised research implementation, reviewed and critically revised the manuscript. AJA devised the study design, performed the analyses, and drafted the manuscript. PJG participated in study coordination, data collection, drafting and revision of the manuscript. AJR and VDC contributed to the study concept, reviewed and critically revised the manuscript.
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