Thorac Res Pract. 2024; 25(3): 121-129 DOI: 10.5152/ThoracResPract.2024.23056

Original Article

Smoking Cessation Support via Video Counseling (e-Cessation): A Promising Field for Telemedicine Implementation

Melis Metin[1], Şerife Kaya[2], Kaan Sözmen[3], Göksel Altınışık[4]

[1]Department of Chest Diseases, Buldan Chest Diseases Hospital, Denizli, Türkiye
[2]Department of Chest Diseases, Tatvan Government Hospital, Bitlis, Türkiye
[3]Department of Public Health, Katip Çelebi University, İzmir, Türkiye
[4]Department of Chest Diseases, Pamukkale University Faculty of Medicine, Denizli, Türkiye

Cite this article as: Metin M, Kaya S, Sözmen K, Altınışık G. Smoking cessation support via video counseling (e-cessation): A promising field for telemedicine implementation. *Thorac Res Pract.* 2024;25(3):121-129.

Abstract

OBJECTIVE: The study aimed to investigate the utility of telemedicine conducted via video counseling in comparison to the previous structured approach and to compare prepandemic smoking cessation success rates with traditional counseling.

MATERIAL AND METHODS: The applicants of the outpatient clinic for smoking cessation support pre- and post-pandemic periods were included in the study. The time intervals were retrospectively between 1 March and 30 August 2021 and the last 3 months of the year 2019. The data were revealed retrospectively. Age, sex, occupation, smoking history as package year, and the score of the Fagerström test for nicotine dependence, accompanying chronic diseases, treatment method, and quitting status between 6 and 9 months of follow-up.

RESULTS: The number of applicants was 200 (87% male) and 89 (95% male) in groups 1 and 2, respectively. The age difference was not significant. The difference was statistically significant according to having at least 1 accompanying chronic disease, specifically a lung disease. None of the parameters have affected the success of quitting smoking. The smoking cessation rate was 3.9 fold higher in the telemedicine group than in the traditional group.

CONCLUSION: The main principle appears to be allocating enough time, as required on an individual basis, to clearly assess the situation, including identifying barriers and options. Since immediate systematic physical examination and laboratory testing may not be mandatory for individuals seeking smoking cessation support, telemedicine emerges as a reasonable option and a promising field for comprehensive video counseling.

KEYWORDS: Smoking cessation, telemedicine, video counseling, video conference, remote health service

Received: *June 7, 2023* ***Revision Requested:*** *August 14, 2023* ***Last Revision Received:*** *October 4, 2023*
Accepted: *January 23, 2024* ***Publication Date:*** *February 15, 2024*

INTRODUCTION

Since it was first announced as a pandemic by the World Health Organization (WHO) on 11 March, 2020,[1] a novel disease called coronavirus disease 2019 (COVID-19), caused by a new type of coronavirus type named SARS-CoV-2, has brought about numerous changes in daily life, both through compulsory measures and voluntary actions. These transformations have been particularly noticeable in the field of medicine due to the highly contagious nature of the disease, necessitating strict preventive measures such as the use of face masks, physical distancing, hygiene practices, limited social interaction, and travel restrictions. An example of this transition in healthcare services is the implementation of telemedicine. It has been introduced as an approach to "forward triage," which enables effective patient screening while simultaneously safeguarding patients, doctors, and the community from exposure to COVID-19.[2] Telemedicine has emerged as a solution to address the current challenges faced by healthcare systems worldwide during the pandemic, aiming to sustain the capacity to provide services not only for those affected by COVID-19 but also for individuals dealing with other acute and chronic diseases, while protecting physicians, nurses, and other allied health personnel.[3] While the implementation of this technological approach remains controversial in many countries, including Türkiye, it is still a global necessity to identify the areas suitable for telemedicine. Recently, a retrospective assessment of telemedicine via video conferences for COVID-19 patients has demonstrated its potential in forward triage, follow-up visits, and providing continuous remote healthcare support for these patients.[4] However, the medical interventions of telemedicine, whether they are suitable or not, await investigation through clinical studies. Smoking cessation support might be one such area due to its non-urgent nature, as it does not require immediate physical or radiological examinations.

In addition to numerous established risks that cigarette smoking poses to various organs of the human body, preliminary data suggest that it may also exacerbate the disease process in active smokers with COVID-19. A systematic literature review has hypothesized an association between smoking behavior and adverse COVID-19 progression, emphasizing the importance of quitting smoking.[5] Subsequently, a meta-analysis study revealed that smokers were

Corresponding author: Göksel Altınışık, e-mail: gaergur@gmail.com

nearly twice as likely to experience severe progression compared to non-smokers.[6] In fact, WHO published the Global Tobacco Control Report, which emphasized the promotion of comprehensive cessation interventions to aid in quitting tobacco use just prior to the COVID-19 Pandemic.[7] At the conclusion of that report, a global objective was articulated, stating "it is important that we all recommit to ensuring all the people of the world are protected fully from the great harms of the tobacco epidemic" (p. 6). On the other hand, smoking cigarettes or using other tobacco products is associated with the potential to increase the likelihood of virus transmission, primarily through the exhalation of respiratory droplets while exhaling tobacco smoke. The COVID-19 Pandemic has been addressed as an opportunity for tobacco use cessation.[8] While tobacco sales and smoking were banned in some countries, such as New Zealand, Portugal, and Mexico, those prohibitions may not achieve the desired results without increasing awareness of the associated risks and providing appropriate assistance for quitting smoking. While aiding smokers willing to quit and proactively igniting their motivation, it is crucial to ensure that COVID-19 prevention measures (such as the use of personal protective equipment (PPE) and practicing physical distancing) are properly adhered to. Incomplete measures would fundamentally result in inadequate protection. As mentioned by Kotsen and co-authors, the rapid transformation to maintain clinical care became an urgent necessity during the COVID-19 Pandemic, which saw a sudden disruption of routine healthcare services.[9] Smoking cessation support was among these services albeit not considered urgent.

It has been emphasized that limiting the utility of telemedicine limited to crisis periods would be a shortsighted view. It is necessary to draw the right conclusions from the lessons learned during the pandemic by a wide spectrum, including all parties from the telemedicine community to society at large.[3] Some of these lessons require evidence-based information derived from studies, as suggested by the WHO: "Digital options should ideally be compared with conventional approaches in large-scale well-designed studies. Researchers should analyze and interpret the results without prejudice of implied benefits of digitalization."[10]

Main Points

- This study highlights the feasibility of remote counseling, increasing awareness of telemedicine among physicians and patients.
- Clinical investigations are needed to assess the suitability of telemedicine for medical interventions, particularly in non-urgent cases such as smoking cessation support.
- We evaluated the effectiveness of smoking cessation support delivered via telemedicine and traditional methods in an outpatient clinic, with remote techniques showing significant advantages, especially during the pandemic.
- Incorporating technological methods into smoking cessation programs holds promise as an alternative approach.
- Additional research is required to gather more data on the effectiveness and broad applicability of telemedicine in smoking cessation support, as well as to address any potential drawbacks and technological solutions.

The aim of the recent study was to assess the effectiveness of telemedicine conducted via video counseling as an adaptation of the previous structured form. It aimed to compare the prepandemic results of the same team with face-to-face counseling conducted in physical presence in the same room. The study examined the feasibility of telemedicine for smoking cessation support by analyzing the success rate of quitting smoking in comparison to the traditional face-to-face method previously provided at the same healthcare facility.

MATERIAL AND METHODS

Background of Implementation of Telemedicine

Similar to other clinics in the country, all our outpatient clinics, including the smoking cessation outpatient clinic (SCOPC), were temporarily closed at the onset of the pandemic. The decision was made to prevent doctors and patients from potential COVID-19 contagion and to conserve healthcare resources during the crisis. However, one of the researchers initiated remote patient evaluation after the first three months of the pandemic. The technical system for this purpose was developed individually. When a patient scheduled an appointment through the university hospital's website, a video counseling session was arranged with the pulmonologist using a software program (Skype™, version 6.4, Microsoft, Redmond, WA, USA). Only patients who absolutely needed an in-person visit for either physical examination, testing, or prescription were invited to the hospital.[4] After gaining significant experience employing telemedicine for remote management of pulmonary diseases, the pulmonologist noticed the absence of the routine smoking cessation support provided in the prepandemic period. Considering the lower need for urgent physical examinations and laboratory tests, as well as the availability of relevant drugs free of charge from units designated by the Ministry of Health (MoH), the suitability of using telemedicine techniques for smoking cessation support was deemed reasonable. Consequently, the team began offering this support through telemedicine via video counseling at the SCOPC on March 1, 2021, making it the first center in the country to do so.

This study was carried out in accordance with the Helsinki Declaration and was approved by the Ethical Council of Pamukkale University (08.06.2021; E-60116787-020-61735). The data was retrieved retrospectively from the patient files, which included informed consent obtained routinely during the initial interviews. Written consent was obtained for the traditional group, while verbal consent was obtained for the telemedicine group.

Features of the Telemedicine and Traditional Groups

The study included applicants of the SCOPC during both the pre- and post-pandemic periods. Group 1 consisted of applicants who received real-time video counseling via telemedicine between March 1 and August 30, 2021. Group 2 was designed as a historical control group with the applicants of the traditional SCOPC. Inclusion for this group was limited to the last three months due to interrupted service caused by a lack of drug supply from the MoH before and after this duration in the prepandemic period. Data for these applicants

were retrospectively revealed from their health records, and the latest information on their smoking status was obtained through telephone calls. The same parameters in group 1 were also retrospectively retrieved from the health records of applicants in group 2 to facilitate comparison.

The independent variables included age, sex, occupation, smoking history quantified as package-years, and the Fagerström Test for Nicotine Dependence score. The accompanying chronic diseases for each group were listed in decreasing order. Information regarding psychosocial and pharmacological treatment, including the use of varenicline or nicotine replacement therapy (NRT), was obtained from the patient's health records.

All study applicants were followed for a minimum of 6 months, ranging from 6 to 9 months, following their initial consultation with the doctor. In group 1, follow-up appointments were conducted via telemedicine. Information regarding smoking cessation status and any challenges encountered during the quitting process within the 6-to-9-month period was also collected. The duration of video counseling was recorded for the initial and each subsequent meeting. However, the duration of visits in group 2 could not be retrieved retrospectively as this data was not documented during in-person appointments.

The management for the applicants in group 1 and group 2 involved providing the relevant treatment for a minimum of 3 months. In the event of premature discontinuation of the treatment due to the applicant's preference, a close follow-up was scheduled, and immediate support for the potential cravings to smoke was offered. Treatment success was defined as abstaining from smoking for a minimum of 6 months, given the variation in follow-up duration ranging from 6 to 9 months in group 1.

Sample size was calculated using Riskcalc sample size calculator based on previous research findings. It was assumed that the smoking cessation success would be 80% at both treatment arms, and the threshold amount for the non-inferiority test should be 15%. At the 5% level of significance, with 2:1 allocation and a 10% drop rate, the minimum sample size calculated for the control arm was 66, and for the telemedicine group, n=198 achieved an 80% power for the analysis.

Out of the total 89 applicants in group 2 contacted by telephone for this study, smokers who expressed a strong desire to quit smoking were informed about the telemedicine option for smoking cessation support and were invited to consider it. Appointments were scheduled for those who requested assistance beyond the scope of the study.

For both groups, individuals lost to follow-up were contacted via telephone calls to obtain the relevant information. If deemed necessary for further follow-up visits, the next meeting was scheduled during these phone calls to maintain continuity. Applicants who did not request a follow-up visit, did

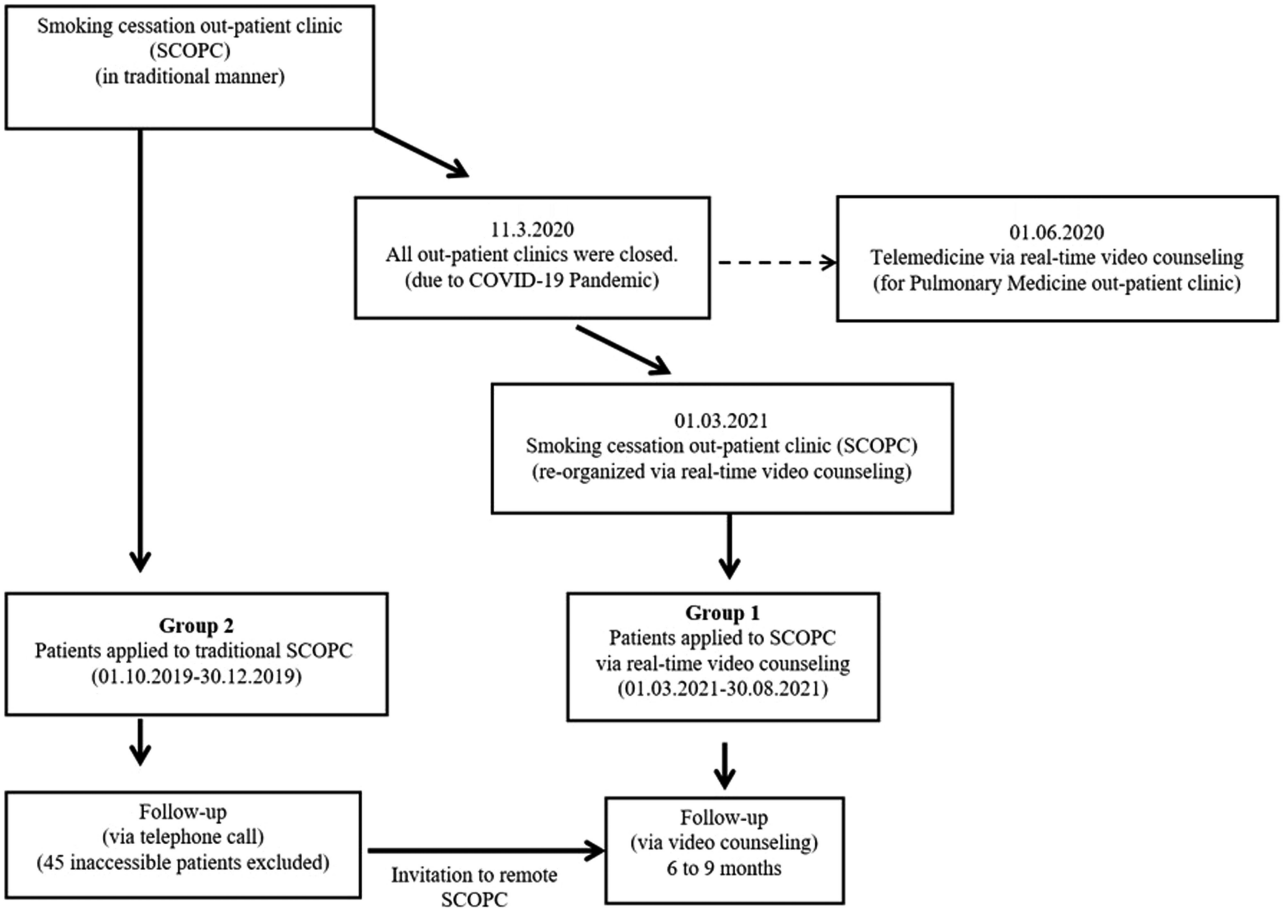

Figure 1. Time frame of the study design based on smoking cessation out-patient clinics with traditional in-person and telemedicine methods.

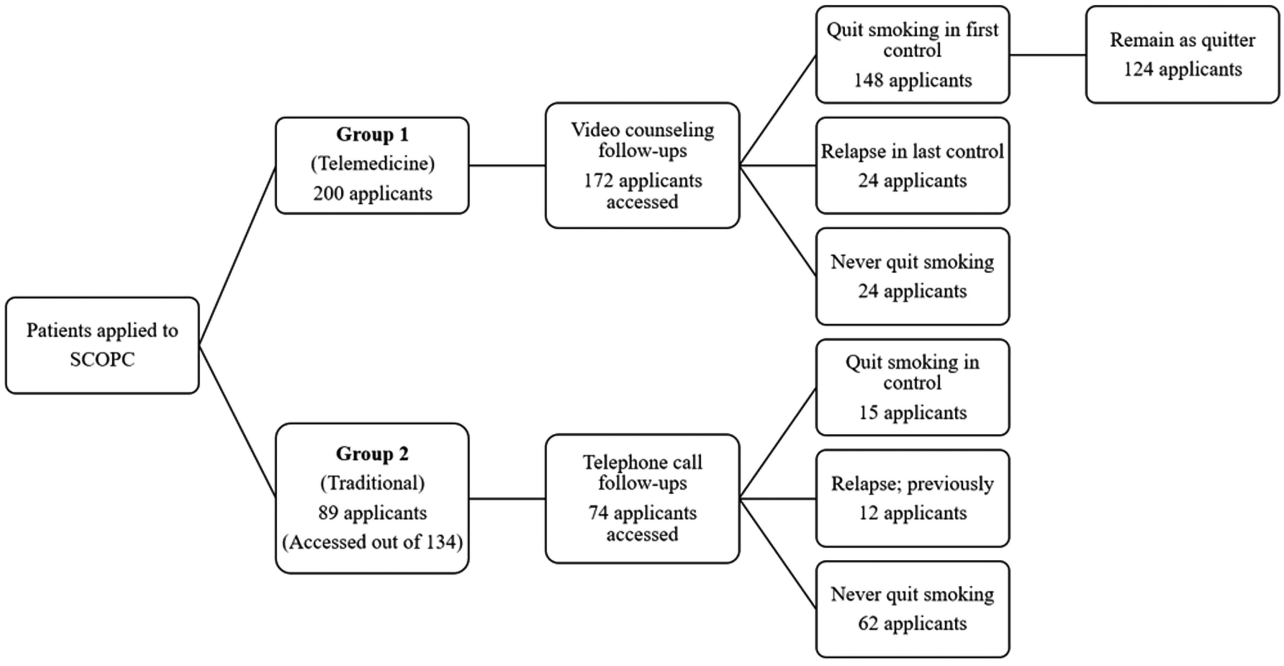

Figure 2. Flowchart of study groups in relation to type of counseling and the outcomes of smoking cessation support. SCOPC, Smoking Cessation Out-Patient Clinic.

not respond to telephone calls, or had inaccurate telephone numbers were also included in the study, and their apply for a follow-up visit, who didn't answer the telephone call or whose telephone number was declared inaccurate was also included to the study, and their status was noted.

The study design timeline and the formation flowchart of the groups have been summarized in Figure 1 and Figure 2, respectively.

Statistical Analysis

In descriptive statistics, continuous variables are presented as mean ± SD. Categorical variables are presented with their percentages. Between group comparisons for continuous data were made by *t*-test or non-parametric equivalent Mann–Whitney *U*-test. Categorical data were compared with chi-square test. Normality of the distribution was assessed with Kolmogorov–Smirnov test. A multivariate logistic regression model was applied to investigate the relationship between independent variables and smoking cessation success. Odds ratios obtained from logistic regression are presented with their 95% CI. The statistical analyses were performed by the Statistical Package for Social Sciences (SPSS®) software, version 20 (IBM Corp.; Armonk, NY, USA). A two-sided $P < .05$ is considered statistically significant.

RESULTS

Demographic Features

In group 1, data from 200 applicants were analyzed. The group was predominantly composed of male smokers, accounting for 87% (174 smokers), while the remaining 13% (26 smokers) were female. In group 2, a total of 89 applicants were included in the analysis. However, out of 134 registered in 2019, due to a falsely declared telephone number, 15 of them could not be reached, and at least three consecutive telephone calls were inconclusive for the remaining 30 applicants. In group 2, 95% of the total 89 smokers were male (85 smokers). There was a statistically significant difference in the female/male ratio between the two groups ($P = .029$). The groups were compared according to age, smoking history, and nicotine dependency level. The mean age was higher in group 1 while the differences were not statistically significant for other parameters (Table 1).

There was no accompanying chronic disease in 157 applicants of group 1 (78.5%). The distribution of the diseases in the remaining applicants was presented in decreasing order: chronic obstructive pulmonary disease (COPD) in 19, coronary arterial diseases in 16, diabetes mellitus in 14, arterial hypertension in 12, lung cancer in 12, asthma in 7, mitral

Table 1. Mean Values of Age, Smoking History, and Nicotine Dependency Scores According to the Groups

Parameter	Group 1 (n = 200)	Group 2 (n = 89)	*P*
Age (mean ± SD) (range)	40.15 ± 13.41 (18-69)	35.62 ± 10.21 (18-64)	.002*
Smoking history as pack-years (mean ± SD) (range)	29.9 ± 24.27 (1-150)	27.21 ± 23.81 (5-130)	.381**
Nicotine dependency score (mean ± SD) (range)	6.34 ± 2.54 (0-10)	6.58 ± 2.30 (2-10)	.439**

Values with $P < .05$ are significant.
*t-test.
**Mann–Whitney *U* test.

Table 2. Mean Durations of the First Counseling and Follow-up Meeting According to the Groups

Parameter	Group 1 (n = 200)	Group 2 (n = 134)	*P*
Duration of first counseling as minutes (mean ± SD); (range)	20 ± 3.83 (15-35)	NA	-
Duration of follow-up meeting as minute (mean ± SD); (range)	10 ± 3.5 (5-20)*	5.3 ± 1.3 (5-10)**	<.001***

Values with $P < .05$ are significant.
NA, not applicable.
*Via video counseling.
**Via telephone call.
***Mann–Whitney *U*-test.

valve disease in 3, obstructive sleep apnea in 3, larynx cancer in 3, breast cancer in 1 of them. In group 2, there were no accompanying chronic diseases in 81 of the applicants (91%). The distribution of the diseases in the remaining applicants was presented in decreasing order: diabetes mellitus in 4, arterial hypertension in 4, coronary arterial diseases in 3, COPD in 1, diffuse interstitial lung disease in 1 of them. The difference was statistically significant between group 1 and group 2 according to having at least one accompanying chronic disease (21.5% vs. 9%, $P = .01$). Additionally, in comparison for having a lung disease, the difference was significant between group 1 and group 2 (17% vs. 4.5%, $P = .004$).

Characteristics of Treatment Interventions

Time Spent on Counseling in Telemedicine vs. Traditional Smoking Cessation Outpatient Clinic

The duration of each video counseling (for first and follow-up meetings) was recorded using the Skype program in the telemedicine group. However, this parameter was not applicable for traditional in-person first meetings in the doctor's office before the pandemic period (group 2). The data are summarized in Table 2.

Treatment Choices

In group 1, the treatment choices consisted of varenicline in 190 applicants and NRT for 10 applicants out of a total 200 applicants. None of the applicants in group 1 were followed without pharmacological treatment. In group 2, the uptake rates for varenicline and NRT were 52 (58.4%) and 33 (37.1%), respectively, among the 89 applicants who could be reached for follow-up visit via telephone call. The remaining 4 (4.5%) applicants in group 2 received no pharmacological treatment in 2019.

Outcomes Related to Smoking Cessation Support Success

In group 1, follow-up visits were conducted with 172 out of the total 200 applicants who had agreed to a smoking cessation plan. The remaining 18 applicants were contacted at least three times using the telephone numbers they provided at the registration to the SCOPC but could not be reached (5 of them were found to have provided false numbers). At the first follow-up visit, 124 of the applicants (62%) had successfully quit smoking. Considering the 6-9-month follow-up period, 24 applicants (13.9%) resumed smoking after 1-3 months. After excluding these 24 applicants who had failed to quit smoking for at least 6 months, the treatment success rate has reached 88 (44%) out of the total 200 applicants. Theoretically, there would be two extreme scenarios for treatment success if inaccessible 18 applicants could be included in the cohort: 106 (%53) when all 18 were quitters, 44% when all 18 had failed to quit smoking, and the other possibilities were between these two percentages.

The reasons for the failure to quit smoking were also recorded in the routine questioning of relevant applicants. The main issues, except the high desire of smoking due to a high level of nicotine dependency, were listed as periodical traumatic stress factors that interrupted the process, such as experiencing COVID-19, having a family member diagnosed with or died from COVID-19, and encountering unexpected work-related problems.

Table 3. Multivariate Logistic Regression Analysis of Smoking Cessation Success and Independent Variables

Independent Variables	Model 1	Model 2
	Odds ratio (95% CI)*	Odds ratio (95% CI)*
Age	1.001 (0.974-1.029)	1.002 (0.975-1.030)
Gender (female) Reference: male	0.881 (0.388-1.998)	0.899 (0.395-2.046)
Chronic diseases: yes Reference: no	0.865 (0.420-1.782)	0.859 (0.416-1.772)
Nicotine dependency (Fagerström)	0.932 (0.840-1.035)	0.930 (0.838-1.033)
Smoking history (pack-years)	1.000 (0.986-1.015)	1.000 (0.986-1.015)
Telemedicine group Reference: routine care	3.925 (2.073-7.435)	3.753 (1.938-7.266)
Duration of follow-up meeting	–	1.022 (0.940-1.112)

*Multivariate logistic regression analysis.

In group 2, the success rate of smoking cessation support was found to be 16.9% (15 patients) as they successfully quit cigarette smoking and remain quitters. However, 12 applicants (13.4%) who initially quit smoking later relapsed, and 62 applicants (69.7%) were unable to quit smoking.

Comparing the rate of applicants who successfully quit smoking in group 1 and group 2 (88 or 44% vs. 15 or 16.9%, respectively), the efficacy of telemedicine intervention for smoking cessation support was significantly higher than that of in-person intervention ($P < .001$). Furthermore, in the follow-up assessments, the rate of quitters who relapsed and started smoking again after at least 1-3 months of being smoke-free was similar between the two groups with 24 applicants (12%) in group 1 and 12 applicants (13.5%) in group 2.

Although there was a statistically significant difference in age, gender, and the presence of accompanying disease between the two groups, these parameters did not show a significant effect on the treatment success rate in the logistic regression analyses. Additionally, neither the presence of accompanying chronic diseases nor the presence of the lung disease, nor the number of accompanying chronic diseases had a significant effect on the treatment success rate for smoking cessation. Taking all the confounding parameters into consideration in the statistical analyses, the smoking cessation rate in the telemedicine group (group 1) was 3.9 times higher than that in the traditional in-person group (group 2) (95% CI, 2.073-7.435) (Table 3). When we take into account the duration of the follow-up meeting as a possible confounder in model 2, it had no significant impact on the results.

DISCUSSION

The effectiveness of smoking cessation support provided in the same outpatient clinic, both before and during the pandemic periods, using the traditional method or via telemedicine was evaluated. The data revealed a notable advantage for the remote technique, particularly in the context of the pandemic. Discussing this result in relation to the procedure beyond the pandemic conditions could provide valuable insights for future implementations in ordinary circumstances.

A study aimed to evaluate Internet-based video counseling for smoking cessation support, conducted just before the pandemic with the goal of eliminating one of the key obstacles—face-to-face clinic visits—revealed noninferiority based on the similar efficacy results.[11] However, due to the lack of data obtained in comparison with no intervention control or any behavioral smoking cessation intervention other than telephone counseling (e.g., face-to-face), Tzelepis et al[12] concluded in their Cochrane analysis that well-structured studies were needed to determine whether real-time video counseling increases smoking cessation rates. While telemedicine has been suggested for post-pandemic use due to its advantages, such as supporting the healthcare system, improving patient-physician communication even under protective measures, and reaching more patients,[13] its utility in different fields, including giving smoking cessation support, should be investigated. Therefore, the results of the recent study may offer valuable insight into this matter.

Just before the pandemic, WHO released multidimensional guidance for digital health with the aim of inspiring and influencing future research efforts in digital applications.[10] These interventions can encompass various fields, including utilizing new technology to provide evidence-based information and resources to tobacco users (e.g., applications, mobile phones, Quitlines, social media), delivering brief cessation advice in healthcare settings, offering telehealth services or applications for users seeking cessation advice, enhancing access to free or low-cost pharmacotherapy (e.g., cessation medications and nicotine replacement therapies), and providing behavioral counseling.[8] A study on the Youth Quitline service and the quitting behaviors of its users in Hong Kong reported increases in the number of incoming calls and quit rate among the participants during the COVID-19 pandemic. Among participants, 43% mentioned the pandemic's effect on their motivation to quit, and 83% changed their smoking habit during the pandemic.[14] Cumulative data support the value of video counseling as a telemedicine approach, and other devices are also under recent evaluation. Based on their findings, Haluza and colleagues have suggested adding the use of mobile applications (Apps) as the sixth "A" to the standard 5A strategy (Ask, Advice, Assess, Assist, and Arrange).[15] There appears to be potential in incorporating technological methods as an option to smoking cessation programs.

The prevalence of smoking tends to increase from adolescence into young adulthood. Fortunately, young adult smokers often express interest in smoking cessation and are more likely to make quit attempts compared to older adults.[16] However, successful cessation in middle-aged and older adult groups has been associated with factors like willpower and comorbidities.[17] In a recent study, it was observed that applicants who received smoking cessation support before the pandemic through traditional in-person face-to-face methods were generally younger than those in the telemedicine group. It's important to note that technology may not pose a barrier to accessing healthcare services, as both groups included participants ranging in age from 18 to their 60s. Furthermore, there was no significant difference in success rates for quitting smoking based on age.

A meta-analysis of studies published in Latin America on quitting cigarette smoking through mobile health interventions has underscored the need for further randomized controlled studies, despite the promising results.[18] In the recent study, data for the control group were retrospectively obtained from the records of individuals who applied in-person for smoking cessation support to the same outpatient clinic during the prepandemic period. Synchronized randomization into the control and telemedicine groups was not feasible due to the necessity of implementing telemedicine as video counseling during the pandemic, when the traditional method had to be interrupted, as was the case in similar facilities. If telemedicine had not been voluntarily implemented in the pulmonary outpatient clinic,[4] it would not have been possible to continue smoking cessation support. Under these circumstances, the comparison can be considered acceptable, given that the traditional control group provided data from the smoking cessation support given during the prepandemic period by the same team and structured process. Furthermore,

the similarities in gender, smoking history, and nicotine dependency scores between the telemedicine and control groups allow for a reasonable comparison. Although the presence of accompanying chronic disease (either general or pulmonary) in the control group was much lower than in the telemedicine group, it had no impact on the treatment success rate.

In our hospital, there is only one outpatient clinic within the pulmonary medicine department, and smoking cessation support is provided by pulmonologists. Since the implementation of telemedicine via video conferencing for general pulmonary diseases began in this department at the onset of the COVID-19 pandemic, the experience gained from routine use was subsequently applied to smoking cessation support. By considering the results of the patient perspective study conducted on the general patient population regarding telemedicine, pulmonologists employed the same method to provide smoking cessation support to applicants. The advantages of this model for telemedicine, by the patients, include avoiding travel and long waits at the hospital, saving time and energy, receiving comfortable counseling with a physician about their health issues, and being invited by the physician only when necessary. Time has two aspects, one involving using time efficiently by avoiding unnecessary hospital visits and waiting in line for examination or evaluation of tests ordered by the physician, while the other aspect involves allocating sufficient time as needed for each applicant.[19] Anastasi et al[20] reported that no parameter influenced the quit rate except for the proportion of time spent delivering smoking cessation support. While there may be many confounding factors influencing the success of smoking cessation support, the primary principle appears to be allocating enough time, tailored to the individual's needs, to clearly identify the barriers and available options. During a pandemic, physical presence together can be challenging due to preventive measures and the discomfort caused by communication while wearing PPE. In the recent study, the mean duration of the first real-time video counseling session was 20 minutes. This duration is significantly longer than what would have been feasible for in-person sessions during pandemic circumstances.

The follow-up visits to assess the success of the traditional face-to-face method were conducted by telephone calls in the recent study. The sole objective of these calls was to retrospectively evaluate the quit rate in the traditional group. The mean duration of these calls was approximately half of the duration of the follow-up visits in the telemedicine group. In terms of using telephone calls, the recent study highlights a significant finding, revealing challenges in reaching participants due to incorrect telephone numbers provided by the participants themselves and a lack of response to repeated calls. However, using telephone calls might serve as a viable method throughout the whole process. Nevertheless, the data was inconclusive regarding whether telemedicine was superior to counseling for cessation support via telephone. Richter and colleagues reported a higher rate of prescription drug usage for cessation support in the telemedicine group and suggested this method for relatives and friends.[21] Another study that evaluated the impact of adding telephone-based smoking cessation counseling, incorporating lung cancer screening, did not show an increase in 12-month cessation rates compared to providing written information.[22] While acknowledging methodological limitations, Tzelepis et al[12] found no difference between real-time video counseling and telephone counseling for smoking cessation.

Recent findings from a meta-analysis of studies in Latin America have shown promising results for technology-based smoking cessation interventions, including telemedicine and mobile health services. The need for additional support through long-term studies has been emphasized.[18] In a randomized controlled study that assessed the impact of incorporating telemedicine into mobile interventions supporting psychopharmacological treatments, telemedicine demonstrated a greater contribution to achieving a 1-year cessation rate compared to psychopharmacological treatment alone.[23] Tobacco addiction treatment was administered using either Varenicline or NRT, depending on the available treatments, both the traditional in-person and telemedicine methods. Pharmacological treatment was typically prescribed following structured counseling, whether through telemedicine or in-person. It is not possible to conclude that telemedicine favored one method over the other, as the choice of medication was primarily based on the available drug options provided by MoH during the respective periods.

At the onset of the COVID-19 pandemic, smoking cessation support was immediately suspended due to the urgent need to combat a novel, highly contagious, and potentially fatal infection. On the other hand, subsequently, the importance of quitting smoking has been shown in relation to the higher severity of COVID-19 in smokers and the increased risk of contagion from smoking, and the necessity of continuing smoking cessation support has been highlighted.[24] Since the high risk of contagion was the main concern about giving this support face-to-face at traditional in-person circumstances, telemedicine emerged as one of the alternatives that allows both remote and interactive counseling without time constraints. The acceptance of this technological novel approach requires favorable data from relevant studies. The results of a study on using telemedicine for smoking cessation support in cancer patients at the onset of the COVID-19 pandemic revealed a higher ratio of attendance to the appointment and acceptable effectiveness of telemedicine.[9] The protocols for appointments and video counseling in the recent study were similar to those in this study. In a recent study, using video counseling for smoking cessation support was found to be effective and non-inferior to the traditional in-person method. Furthermore, the success rate in quitting smoking was 3.9 times higher in the telemedicine group compared to the traditional in-person method.

In a randomized controlled multicenter study conducted before the COVID-19 pandemic, Nomura and colleagues compared the effectiveness of two methods: telemedicine via video counseling and standard face-to-face counseling for cigarette cessation support. They found that the two groups were similar in terms of initial nicotine dependency scores and withdrawal symptoms at the 9th and 12th weeks. Telemedicine was shown to be non-inferior to the traditional face-to-face counseling in terms of success in cessation rates.[11]

In the recent study, the ratio of applicants who quit cigarette smoking was higher in the telemedicine group, and the telemedicine technique was not inferior to the traditional standard face-to-face group as long-term relapse rates were similar.

An important result of the recent study was the reasons for the failure to quit of smoking. Although the most frequent reason was a high desire to smoke related to a high level of nicotine dependency, as expected, other reasons included stress factors such as receiving a COVID-19 diagnosis, either for oneself or a family member, and the loss of a relative due to COVID-19. These findings underscore the importance of further studying pandemic-specific psychological support that can be provided through telemedicine. This data might also prove useful in dealing with extraordinary conditions that affect many people in the future.

There are some limitations to be mentioned in the recent study. Firstly, the study was conducted in one smoking cessation clinic, which might limit the generalizability of the findings. Second, there might be some unobserved variability due to unmeasured variables, such as income. Thirdly, the baseline characteristics of the intervention and control groups differed in terms of age and gender; however, we took into account the possible confounding effect of these variables by using multivariable logistic regression in the statistical analysis.

Although there may be many confounding factors related to the success of smoking cessation support, the main principle appears to involve sparing enough time, which may be defined as necessary on an individual basis, to clearly identify the situation consisting of barriers and options. During a pandemic, it is almost unfeasible to be physically present together for extended durations due to preventive measures. Nevertheless, discomfort can arise from communication under PPE. Additionally, using remote methods after the pandemic period can be an effective option for the smokers eager to quit living far from the healthcare units or being incapable of traveling there for initial evaluation and control visits. Since immediate systematic physical examination and laboratory testing might not be obligatory for individuals seeking smoking cessation support, telemedicine appears to be a reasonable option for comprehensive video counseling in this healthcare service. However, further studies are needed to collect more data on the effectiveness and widespread applicability of telemedicine, as well as to address any disadvantages and their solutions in instructing technological approaches to smoking cessation support.

Since telemedicine is a novel healthcare method, it is important to discuss relevant terminology, and the acceptance or rejection of these terms should be based on *profit and loss* evaluations, considering social aspects as well. From this perspective, suggested terms for smoking cessation support provided through telemedicine could be “tele-cessation” or “e-cessation.” While the latter may evoke associations with a harmful tobacco product (e-cigarette), it can also represent both a technological approach and the need for cessation from other tobacco products as well.

Ethics Committee Approval: This study was approved by the Ethics Committee of Pamukkale University (approval number: E-60116787-020-61735; date: 08.06.2021).

Informed Consent: The data was retrieved retrospectively from the patient files, which included informed consent obtained routinely during the initial interviews. Written consent was obtained for the traditional group, while verbal consent was obtained for the telemedicine group.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – G.A.; Design – G.A., M.M.; Supervision – G.A.; Resources – M.M., S.K.; Materials – M.M., S.K.; Data Collection and/or Processing – G.A., M.M., S.K., K.O.; Analysis and/or Interpretation – K.O., G.A.; Literature Search – G.A., M.M.; Writing – G.A., M.M., S.K.; Critical Review – K.O.

Declaration of Interests: The authors have no conflicts of interest to declare.

Funding: This study received no funding.

REFERENCES

1. World Health Organization (WHO). WHO Director-General’s opening remarks at the media briefing on COVID-19 - 11 March 2020. Available at: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020. (Accessed 13 May, 2023).
2. Hollander JE, Carr BG. Virtually perfect? Telemedicine for Covid-19. *N Engl J Med*. 2020;382(18):1679-1681. [CrossRef]
3. Bashshur R, Doarn CR, Frenk JM, Kvedar JC, Woolliscroft JO. Telemedicine and the COVID-19 Pandemic, lessons for the future. *Telemed J E Health*. 2020;26(5):571-573. [CrossRef]
4. Bostan P, Çetin N, Altınışık G. A retrospective assessment of the continuous health care provided to COVID-19 patients consulted via videoconference. *Thorac Res Pract*. 2023;24(1):14-21. [CrossRef]
5. Vardavas CI, Nikitara K. COVID-19 and smoking: a systematic review of the evidence. *Tob Induc Dis*. 2020;18:20. [CrossRef]
6. Patanavanich R, Glantz SA. Smoking is associated with COVID19 progression: a meta-analysis. *Nicotine Tob Res*. 2020;22(9):1653-1656. [CrossRef]
7. World Health Organization (WHO). *Report on the Global Tobacco Epidemic: Offer Help to Quit Tobacco Use*. Available at: https://www.who.int/publications/i/item/WHO-NMH-PND-2019.5#. (Accessed 13 May, 2023).
8. Ahluwalia IB, Myers M, Cohen JE. COVID-19 pandemic: an opportunity for tobacco use cessation. *Lancet Public Health*. 2020;5(11):e577. [CrossRef]
9. Kotsen C, Dilip D, Carter-Harris L, et al. Rapid scaling up of telehealth treatment for tobacco-dependent cancer patients during the COVID-19 outbreak in New York City. *Telemed J E Health*. 2021;27(1):20-29. [CrossRef]
10. Jandoo T. WHO guidance for digital health: what it means for researchers. *Digit Health*. 2020;6:2055207619898984. [CrossRef]
11. Nomura A, Tanigawa T, Muto T, et al. Clinical efficacy of telemedicine compared to face-to-face clinic visits for smoking cessation: multicenter open-label randomized controlled non-inferiority trial. *J Med Internet Res*. 2019;21(4):e13520. [CrossRef]
12. Tzelepis F, Paul CL, Williams CM, et al. Real-time video counseling for smoking cessation. *Cochrane Database Syst Rev*. 2019;2019(10):CD012659. [CrossRef]
13. Vidal-Alaball J, Acosta-Roja R, Pastor Hernández N, et al. Telemedicine in the face of the COVID-19 pandemic. *Aten Primaria*. 2020;52(6):418-422. [CrossRef]
14. Ho LLK, Li WHC, Cheung AT, et al. Impact of COVID-19 on the Hong Kong Youth Quitline Service and Quitting Behaviors

of its Users. *Int J Environ Res Public Health*. 2020;17(22):8397. [CrossRef]
15. Haluza D, Saustingl M, Halavina K. Perceptions of practitioners on telehealth and app use for smoking cessation and COPD care-an exploratory study. *Medicina (Kaunas)*. 2020;56(12):698. [CrossRef]
16. Centers of Diseases Control and Prevention (Centers for Disease Control and Prevention (U.S.)). Vital Signs: current cigarette smoking among adults aged > 18 years-U.S. *MMWR Morb Mortal Wkly Rep*. 2009;2010:1135-1140. Available at: https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5935a3.htm. (Accessed 13 May, 2023).
17. Kim Y, Lee JS, Cho WK. Factors associated with successful smoking cessation according to age group: findings of an 11-year Korea National Survey. *Int J Environ Res Public Health*. 2021;18(4):1576. [CrossRef]
18. Cartujano-Barrera F, Rodríguez-Bolaños R, Arana-Chicas E, et al. Smoking cessation mobile ınterventions in Latin America: a yystematic review. *Hisp Health Care Int*. 2022;20(2):122-132. [CrossRef]
19. Altinisik Ergur G, Nuhoglu S, Cobanoglu C, Sengul M, Eryildiz N, Ergur A. The patient perspective of telemedicine in the context of COVID-19 pandemic. *Bull Sci Technol Soc*. 2022;42(1-2):39-53. [CrossRef]
20. Anastasi N, Lusher J, Chandler C. Proportion of time spent delivering support predicts stop smoking advisor quit rate ındependently of training, experience, and education. *J Smok Cessat*. 2018;13(1):18-25. [CrossRef]
21. Richter KP, Shireman TI, Ellerbeck EF, et al. Comparative and cost effectiveness of telemedicine versus telephone counseling for smoking cessation. *J Med Internet Res*. 2015;17(5):e113. [CrossRef]. Erratum in: *J Med Internet Res*. 2015;17(6):e124. (https://doi.org/10.2196/jmir.4642)
22. Tremblay A, Taghizadeh N, Huang J, et al. A randomized controlled study of ıntegrated smoking cessation in a lung cancer screening program. *J Thorac Oncol*. 2019;14(9):1528-1537. [CrossRef]
23. Mussulman L, Ellerbeck EF, Cupertino AP, et al. Design and participant characteristics of a randomized-controlled trial of telemedicine for smoking cessation among rural smokers. *Contemp Clin Trials*. 2014;38(2):173-181. [CrossRef]
24. Alqahtani JS, Aldhahir AM, Oyelade T, Alghamdi SM, Almamary AS. Smoking cessation during COVID-19: the top to-do list. *NPJ Prim Care Respir Med*. 2021;31(1):22. [CrossRef]