

Patient-Assessed Quality of Virtual Consultations as Follow-Up on Long-Term Oxygen Therapy for Patients With COPD

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BACKGROUND: Long-term oxygen therapy (LTOT) can increase survival time and relieve symptom burden in patients with COPD and chronic hypoxemia. The Department of Respiratory Medicine at Odense University Hospital invites patients with LTOT and COPD to the out-patient clinic for treatment evaluation every 6 months to regulate or terminate treatment and support patients' treatment adherence. The out-patient clinic, however, experiences many absences or cancellations from patients. For that reason, patients were offered virtual consultation as an alternative to physical attendance. This study was initiated to uncover reasons for absences and the patients' experiences of virtual consultation to promote a more patient-centered clinical practice for patients with COPD and LTOT. **METHODS:** A qualitative study encompassing semi-structured interviews with 20 subjects was conducted in the winter of 2021. The subjects had tried or been given the opportunity of virtual consultation. Data were analyzed inspired by Kvale and Brinkmann focusing on the subject's perspectives on virtual consultation. **RESULTS:** The analysis resulted in 3 main themes: limitations and vulnerabilities, independence and quality of life, and personal strategies. Subjects expressed that everyday life with LTOT and COPD was characterized by limited resources in terms of energy, oxygen, and time. LTOT was perceived as a necessary means to maintain a sense of independence and quality of life. However, LTOT also meant additional limitations due to cumbersome equipment and feelings of isolation. Most subjects considered the virtual consultation to be oxygen-, energy-, and time-preserving, as it meant avoiding stressful transportation and handling of oxygen cylinders, COVID-19 exposure, waiting time, and not having to involve others for help. **CONCLUSIONS:** The subjects' perspective showed that follow-up on LTOT as a virtual consultation was considered a valuable offer. The chosen method was found to be relevant in uncovering subjects' attitudes toward clinical practice procedures. *Key words:* pulmonary disease; chronic obstructive; COPD; long-term oxygen therapy; home oxygen; patient attitudes; patient perspective; telemedicine; virtual consultation; qualitative research; critical psychology. [Respir Care 2023;68(8):1097–1105. © 2023 Daedalus Enterprises]

Introduction

COPD is characterized by slowly progressing symptoms such as air flow limitation, breathlessness, cough, and sputum production. According to the Global Initiative for Chronic Obstructive Lung Disease (GOLD), COPD is a significant cause of mortality and morbidity worldwide.¹ Experts predict an increase in COPD incidence rates due to aging in the world's population and continuing exposure to COPD risk factors such as smoking and different kinds of air pollution. Admission to hospital due to COPD exacerbation and respiratory failure is a predictor of progress of the disease COPD.² Prediction of life expectancy is difficult because of the difficulty of foreseeing exacerbations.³ Long-term oxygen therapy (LTOT) is prescribed to patients with COPD and severe

hypoxemia. Randomized studies have shown that LTOT 15–24 h/d increases the survival time and seems to have a positive effect on dyspnea, fatigue, sleep, physical activity, and the risk of hospitalization.^{4,5} LTOT is offered to patients with COPD, who have been hospitalized due to exacerbation, if they meet the criteria (see Table 1). At the same time, they are referred to a reassessment in the out-patient clinic 1–3 months later, when COPD treatment is optimized and in a stable condition.⁶ Approximately 50% of those referred are found to have ongoing oxygen requirements.⁷ Treatment evaluation in the clinic including measurement of peripheral oxygen saturation is subsequently offered every 6 months. However, the clinicians in the Department of Respiratory Medicine at Odense University Hospital described that many of these patients cancelled or did not show up for their semi-annual

follow-up. As a result, the department wanted to explore whether an offer of virtual consultations as follow-up on LTOT would have a stronger appeal to these users. Requirements for LTOT due to other causes than COPD such as cancer or interstitial disease are being assessed in different programs in the clinic and were not the subject of interest in the current study.

The technical solution consisted of a spirometer, a finger pulse oximeter, and a tablet for data transfer and video communication. It was delivered to the subject's home by a technician for the consultation. The nurses already involved with the LTOT follow-up program were trained to perform video consultations. They assessed which patients were not eligible for video consultation due to, for example, the need for blood gas analysis, known cognitive impairment, or severe hearing or seeing disabilities. If subjects had previous experience with video consultation from other programs in the department,⁸ they were offered video consultation before their planned follow-up visit. Otherwise, they were introduced to the concept when showing up in the clinic. A caregiver or relative was invited to participate by subject's request.

Patients' and relatives' perspectives on the health care system are increasingly viewed as significant to improve quality of life, patient safety, and treatment efficacy,⁹ knowledge that can only be obtained through research involving patient perspectives. Research into patient perspectives avoids or minimizes observer bias. Furthermore, involving users can contribute to the prioritization in daily clinical practice and the optimization of quality of care delivered to individual patients.¹⁰

Methods

Literature Search

A literature search was conducted using the databases CINAHL, PsycINFO, and PubMed in January 2021 prior to

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QUICK LOOK

Current knowledge

Long-term oxygen therapy (LTOT) increases survival time and is reported to have a positive effect on dyspnea, fatigue, sleep, physical activity, and the risk of hospitalization. Out-patient clinics experience many absences or cancellations from patients with COPD. The concept of virtual consultations has not previously been accessible as a clinical follow-up to patients with LTOT.

What this paper contributes to our knowledge

Subjects' perspectives showed that everyday life with LTOT and COPD was characterized by limited resources in terms of energy, oxygen, and time. LTOT was perceived as a necessity to maintain a sense of independence and quality of life. But at the same time, LTOT resulted in additional limitations due to cumbersome equipment and feelings of isolation. The subjects' perspectives revealed that virtual consultation was considered an appropriate mechanism as follow-up on LTOT for COPD.

the interviews and August 2021 after the analysis. The aim of the search was to uncover similar studies focusing on subjects' perspective on telemedicine interventions directed at subjects with COPD using LTOT. Studies focusing on either COPD and subject attitudes and telemedicine were well represented. Studies of COPD and LTOT and subject attitudes were also represented, though to a lesser degree. However, no studies were found to include all 4 criteria.

In the present study, subjects with COPD and LTOT were offered virtual consultations. The subject-experienced quality was analyzed and evaluated, and it was further assessed whether telemedicine could have its permanent place in the daily practice at the out-patient clinic.

Objectives

Study objectives were to offer virtual consultation as follow-up on LTOT for subjects with COPD and contribute to the development of future clinical practice within telemedicine based on the obtained knowledge about subjects' experience of the quality of this offer and to uncover reasons for absences and support subjects with LTOT in following the recommended program for LTOT users referred to the Department of Respiratory Medicine.

Study Design and Settings

The study was conducted at the Department of Respiratory Medicine in Odense University Hospital in Denmark in

Table 1. Criteria for Prescribing Long-Term Oxygen Therapy

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|--|
| P_{aO_2} (without oxygen) \leq 55 mm Hg for clinically stable and optimized treatment. |
| P_{aO_2} 55–60 mm Hg if pulmonary hypertension or polycythemia (hematocrit $>$ 55%). |
| Increase in P_{aO_2} after oxygen supplementation, optimally 60–67.5 mm Hg without decrease in arterial pH ($>$ 0.03). |
| The oxygen is used for at least 15 h/d (optimally 24 h/d). |
| The treatment is carried out by hospitals with respiratory medical expertise. In special cases, other physicians can prescribe the treatment if a department with respiratory medical expertise subsequently ensures the criteria for the treatment. |

2020–2021. To capture the subjects’ perspectives and experiences with a virtual consultation, a qualitative research approach was chosen in the form of semi-structured telephone interviews.

To enhance transferability and ensure information-rich cases for in-depth study, a purposive and pragmatic sample¹¹ of 20 subjects with very severe COPD⁶ and LTOT was selected in collaboration with the nurses from the LTOT follow-up program. The selection reflected different ages, sex, and civil status and followed inclusion and exclusion criteria. Inclusion criteria included: subjects receiving LTOT being treated in the Department of Respiratory Medicine, verified diagnosis of COPD in medical record, 10 individuals who chose telemedicine, and 10 individuals who chose physical attendance. Exclusion criteria were need for an interpreter and inability to understand information about the research project. The aim of the sample size was to be able to produce as much information-rich data as needed to ensure data saturation. If new themes would continue to emerge with every new interview, the inclusion process would have to continue. This, however, did not turn out to be the case. Ten subjects tried virtual consultation (S1–S10) and 10 subjects (S11–S20) had not. The 10 subjects who tried virtual consultation were selected first. Then the pattern of variation in this group was purposefully sought out in relation to subjects in the attendance group.

All subjects living with a spouse had their partner with them, whether it was attendance consultation or virtual consultation. Of those living alone, 2 had a caregiver or relative with them during virtual consultation. In the attendance group, the one living in a nursing home had a relative with her.

The subjects had to be able to approve and sign a consent form before starting the interview. Subjects who accepted telephone interviews were contacted for this purpose at an agreed upon time within one week after the virtual or physical attendance meeting. In 2 cases, subjects were interviewed together with their spouse, who also participated in the virtual or attendance consultation, respectively.

The goal of the qualitative approach was to gain knowledge about subjects’ experiences and actions and get descriptions based on their own understanding, intentions, norms, and values. All the semi-structured interviews were performed by first author, HCS, who was a graduate student at the time of the interviews and has 5 years’ experience of

working with patients with COPD. HCS was supervised by second author, HMC, with 19 years of research experience in the field of both qualitative research and respiratory medicine. The method of semi-structured interviews was chosen to gain knowledge from a first-person perspective from subjects in the project. The interview study was inspired by Brinkmann and Kvale’s 7 stages of interview inquiry.¹² To ensure consistency and quality of the data of the study, a semi-structured interview guide was developed according to the analytical framework of critical psychology¹³ and recurring themes, derived from a literature search on subjects’ experiences with COPD and LTOT, as well as subjects’ assessment of the LTOT follow-up program, virtual or attendance consultation, respectively. The interview guide was structured around 3 broad themes: (1) subjects’ conduct of everyday life with very severe COPD and LTOT, (2) subjects’ experience with virtual consultations, and (3) subjects’ assessment of how the LTOT follow-up program is organized.

An open and relaxed conversation with the subjects was essential to obtain rich data.¹² As a stress-reducing gesture, all subjects were contacted by HCS in advance to make an appointment for the telephone interview at a time most suitable to them. This provided subjects with a sense of the interviewer as a person and a sense of control with their own time. All telephone interviews were audio recorded, lasting from 30–60 min, and were transcribed verbatim by HCS.

Data Analysis

The preliminary thematic analysis was informed by critical psychology and carried out with inspiration from Malterud’s text condensation¹⁴ and from Kvale and Brinkman’s procedural suggestions.¹⁵ Transcripts and notes were read several times by HCS and read once by HMC, looking for meaning units drawing on critical psychology concepts such as first-person perspectives, meaning of everyday life with COPD and LTOT looking for conditions, meaning, possibilities, and constraints. Meaning units were further analyzed and discussed by HCS and HMC in a collaborative, reflexive process of grouping meaning units together. To reduce interpretation bias, meaning units were subsequently discussed in 2 workshops with a team of clinicians involved in the LTOT follow-up program from the Department of Respiratory Medicine, leading to the analysis’ final thematization.

Table 2. Subject Characteristics

| Characteristics | Physical Attendance (n = 10) | Virtual Consultation (n = 10) | All (N = 20) |
|----------------------------------|---------------------------------|----------------------------------|--------------|
| Sex | | | |
| Female | 7 | 7 | 14 |
| Male | 3 | 3 | 6 |
| Age, y | | | |
| Mean | 74.3 | 71.1 | 72.7 |
| Median (range) | 75.5 (62–88) | 68.5 (53–89) | 76.5 |
| Civil status | | | |
| Living alone | 5 | 6 | 11 |
| Married | 4 | 4 | 8 |
| Nursing home | 1 | 0 | 1 |
| Distance to clinic | | | |
| < 15 km | 9 | 7 | 16 |
| > 15 km | 1 | 3 | 4 |
| Interviewed together with spouse | 1 | 1 | 2 |
| Duration of LTOT, y | | | 1–9 |

Data are presented as n unless otherwise noted.
LTOT = Long-term oxygen therapy

Table 3. Themes With Subthemes

| | |
|---|---|
| Theme One: Limitations and Vulnerability | |
| Subthemes | Limited resources Constant alertness Anxiety LTOT challenges Struggle with bureaucracy Isolation |
| Theme Two: Independence and Quality of Life | |
| Subthemes | Self-reliant Being a burden Self-image Well-being and meaningful activities |
| Theme Three: Personal Strategies | |
| Subthemes | Economization Adaption Active lifestyle Social support |

LTOT = Long-term oxygen therapy

Using critical psychology as a theoretical approach, the focus on investigation was to gain knowledge from a first-person perspective. It is based on historical, dialectical materialism, and views subjects as dialectically interacting with social structures in concrete action contexts.^{13,16,17} As human beings, we do not only live under certain societal conditions, but we also influence and produce conditions. Furthermore, patients are historically and socially embedded as human beings, where history and society have an impact on how

possibilities and constraints are experienced and acted upon in the conduct of everyday life. Insight into historicity along with social conditions and meanings from a first-person perspective are necessary to understand the ways a person act and relate to a specific context, in this case how subjects with COPD experience their possibilities and constraints using telemedicine as contact to the hospital concerning LTOT compared to physical attendance.

Ethical Considerations

The project was carried out in accordance with the Declaration of Helsinki. All informants signed informed consent before start-up. All participating subjects will appear anonymous. The project was approved by the Danish Data Protection Agency (journal nr.: 20/44367), and all rules regarding data security were complied with. Currently, the Danish National Committee on Health Research Ethics does not require the approval of research projects with qualitative methods. Informed consent was obtained on the day of attendance or by virtual contact by post or e-mail. To ensure anonymity, all participants are identified by numbers only and represented by numbers (S1–S20) in this article.

Results

All subjects in the study agreed to participate in the telephone interview (Table 2). None refused to participate, and none withdrew from the study. Results were structured along 3 main themes divided into subthemes (Table 3), depicting the subjects’ experiences of everyday life and how this influenced their assessment of the semi-annually follow-up in the clinic including their assessment of the virtual consultation.

Theme One: Limitations and Vulnerability

The theme reflects the conditions for the conduct of everyday life when living with COPD and LTOT, focusing on the experiences of constraints. All the subjects stated that everyday life was conditioned by limited resources of energy and air, causing a visit to the clinic to be an extensive challenge: “Just having to go in and register at the out-patient clinic and walk down to the waiting room and walk all the way down the other end of the hallway for the consultation, well, then I’m just totally exhausted,” S14.

The condition was perceived as stressful by the subjects and called for constant alertness to manage and secure their resources, leaving no room for spontaneity. “You must be alert constantly and then I must also think about the transport cylinder, because if I get 3 L, then it doesn’t last very long. Then I count just how long I reckon I’ll be there,” S1.

Shortness of breath meant that activities such as bathing, getting dressed, cleaning, had to be conducted at a slow pace and

with many breaks to catch one's breath. Transportation to the clinic was thus an extra incumbrance since it was perceived as both time- and energy-consuming due to waiting time and the need for transport of heavy and cumbersome portable oxygen cylinders: "I think it's a bit of a hassle... I need to have a walker with me, I need to have oxygen with me, and I must get out to the car and get everything stuffed in there, and then drive there, and get everything out again but there's really nothing to do, right?," S1.

The constant alertness was enhanced by anxiety due to the risk of becoming dyspneic, but also the risk of severe consequences, if infected by COVID-19, was a great concern to many of the subjects: "I don't want to go and sit in a waiting room with a lot of people, I don't know, where they have been... With corona it just doesn't work! I don't need to be sicker than I already am. I have plenty to fight with as it is," S6. The fear of COVID-19 also resulted in extensive isolation for most of the subjects, leading to loneliness, loss of meaningful social life, and to a few even depression.

LTOT challenges: All the subjects expressed that starting LTOT treatment was (to various degrees) a change in the conduct of everyday life. Some still struggled with adaptation. All though LTOT provided a necessary resource to manage daily life activities, it also resulted in limitations, which were described as annoying or stressful: The oxygen generator was noisy, which to some resulted in sleep trouble. A woman described how the tube made her feel like a chained dog, always with the catheter in her nose and dragging a long tube behind her. The tubes lying all over the house involved a risk of falling for both subject and relatives, demanding extra precaution. To some these challenges led to feelings of constraint and isolation: "I can't go anywhere without having to bring oxygen, right? So, it was a great change. We've always been going down south on vacations and stuff like that, well that's over! I can't do that with all the oxygen equipment. We must consider it all the time, and if we're going anywhere, we're going to have to bring extra oxygen and it is a burden, that's what I'd call it".

Struggle with bureaucracy: More subjects reported that their need for individualized help was challenged by bureaucratic processes in several different areas. Some described it as a struggle to arrange accessible public transportation to the hospital. Others reported on controversy with the oxygen supply company in receiving the right kind of LTOT devices and accessories. They struggled to get the right kind of help from the public home care provider or long and slow case processing procedures in relation to aids and financial support in the public system. These struggles were described as stressful and, in some cases, a prominent factor leading to depression. A woman stressed how living with bodily limitations caused by COPD left no resources to deal with other challenges, such as bureaucracy: "...but there just can't be anything at all, because we already have plenty as it is, when we can't breathe".

Subjects explained that performing routine spirometry whether virtually or via an in-person consultation was demanding both physically and emotionally. The results were interpreted by several subjects as a predictor of remaining lifetime. Spirometry results were compared to those from the last consultation leaving subjects either encouraged, relieved, or devastated. They did not discuss their emotions regarding these values with the nurse. One woman explained that she generally, despite her condition, felt well and happy about her life, but learning about the result of her FEV₁ status ruined her mood for a whole week.

Theme Two: Independence and Quality of Life

This theme reflects what the subjects found meaningful and thereby gave reason to their actions and strategies. All the subjects expressed a need to feel independent. They invested a great amount of their sparse energy to stay as self-reliant as possible for as long as possible. Being able to take care of oneself and being resourceful or, at the least, not being a burden to others was highly esteemed. Several of the subjects referred to self-reliance as something they have learned since their childhood. "I've always learned to manage on my own and I should preferably keep doing that for as long as possible. And it's so easy to sit on your behind and say, I want help with this and that – well, that's not going to make my situation, with breathing and all that, any better".

Some subjects associated dependence on the help of others with feelings of shame or depression. Several described how they did not want to burden their family members with the task of taking them to the clinic. Although this could relieve the demanding efforts of the visit considerably, the risk of being a burden was perceived as worse.

Self-image: Some of the subjects described how they did not use LTOT when leaving the house, even if it challenged their well-being. A woman stated: "I'll take it off if we're going shopping and stuff like that it's not everyone else's business, that I need oxygen if I'm visiting one of my sons, right? Then I'm not wearing it either".

Several subjects expressed that they were not able to wear a face mask, as required, when going to the clinic due to COVID-19 precautions. They were entitled to wear a badge, saying "exempt." However, the possibility of special treatment was not considered desirable by the subjects. This suggested a fear of stigmatization and a need to maintain an appearance of someone not in need of aid, either in the form of oxygen or special treatment.

Most subjects expressed that even though LTOT was challenging it was also a necessary means to maintain a sense of independence and well-being in being able to engage in meaningful activities such as social events, nature excursions, traveling, exercise, and house maintenance. This was highlighted by a subject's recap of her daughter's response to a nurse's

Table 4. Subjects' Preferences for Consultation Procedures

| Group | Physical Attendance (n = 10) | Virtual Consultation (n = 10) | All (N = 20) |
|--|---------------------------------|----------------------------------|-----------------|
| Physical attendance consultation | 2 | 0 | 2 |
| Virtual consultation | 4 | 9 | 13 |
| Physical attendance preferred but virtual is also okay | 2 | 1 | 3 |
| Inconclusive | 2 | 0 | 2 |

Data are shown as n.

proposal of terminating the LTOT treatment: “Then she will have no quality of life whatsoever. She will have to sit on the couch all day long and that’ll make my mother wither away”.

Theme Three: Personal Strategies

This theme reflects how the subjects acted upon the constraints of their everyday life to sustain independence and quality of life. The interviews revealed several different personal strategies for dealing with limitations and vulnerabilities. Because of limited resources (oxygen, energy, and time), subjects constantly economized their sparse resources: “Sometimes you spend some energy, which you in fact don’t have, right? It’s like when you decide, well am I going to do the laundry or descale the coffee machine today? You can’t to both”. “When I visit a friend, I always bring a full cylinder, so I won’t have to feel nervous about running short of oxygen . . . , then I use the small oxygen remains when I walk my dog”.

To avoid the risk of becoming a burden to others, the help acquired was also economized. Several subjects explained that family and friends gladly offered their help, but often the subjects planned and prioritized carefully what kind of help they asked from who and how much.

Adaption: Life with COPD and LTOT required adaption for subjects as well as their relatives. They developed various daily life solutions to deal with limitations such as adjusting pace, frequent breaks, medication, and various aids, Several also took on a positive attitude: “You must learn to live with it and greet it with a good smile and then think about, well, it’s no use sitting around feeling sorry for oneself,” S6. “I’m happy now. . . I still have home oxygen, but what’s the alternative? ‘that is feeling unwell. So, I live with it, and say, it is something that helps me, instead of being negative, right? It’s a companion, my pet. After all, we must make the best of it”.

Active lifestyle: Several subjects expressed a belief that physical activity helped relieve their symptoms, their mood, and in some cases even improved their lung capacity. They had integrated exercise, house maintenance, and time with friends and family into daily life routines. Some prioritized

going to town or traveling despite all the planning and extra work required.

Social support: Many described how they found joy, comfort, and encouragement within their social network. In many cases, family and friends were seen as important resources in overcoming challenges related to their constraints. Relatives provided both practical, cognitive, and emotional support.

Quality Assessment of Virtual Consultation

Table 4 depicts the subjects’ preference for consultation procedures in the out-patient clinic. Thirteen subjects preferred virtual consultation over physical attendance, whereas 2 subjects were against the concept and preferred the conventional consultation. Because of limitations and vulnerabilities, most subjects found the offer of virtual consultation most welcome. Being able to stay at home was perceived as oxygen and energy preserving and consequently stress reducing: “But when you get it on the screen, you know it in advance, and you feel fresh and ready to be there and it works great! [Interviewer:] “And it doesn’t cost that much?” “Exactly! neither on the energy, nor the air or anything else!”.

“Well, then you don’t have to deal with oxygen cylinders and then out of the door and all that, then I think, hey you might as well do it at home, then you have the energy for something else afterwards”.

Avoiding exposure to COVID-19, stressful planning, transportation, and waiting time were highlighted as great advantages of the virtual consultation. Subjects explained how these preserved time, and energy resources could instead be spent on more meaningful activities, like going for a walk, house-keeping, or meeting with friends. Not having to involve others for help with transportation meant avoiding the risk of being a burden.

All but one subject, having tried the virtual consultation, would make use of this opportunity in the future. They found the interaction with the nurse as good as or even better than in the attendance consultation. In the attendance group, a few expressed that they anticipated the interaction with the nurse would perhaps feel unnatural in a virtual consultation. They reported feeling safe going to the clinic,

confident that COVID-19 precautions would prevent infection. They did not experience transportation as challenging as many other subjects and denied any feelings of being a burden when asking their relatives to take them. The ones who preferred the attendance consultation explained that it was perceived as a welcome break from the current isolation and trivial daily life. All but 2 subjects stated they would not object to virtual consultation if it became necessary or mandatory.

Almost half of the attendance group were found to have some degree of cognitive impairment or hearing problem. It seemed difficult for them to comprehend the concept of virtual consultation, which resulted in mixed messages during the interview, leaving 2 subjects' preferences inconclusive (Table 4).

In both groups, with only a few exceptions, technology was not perceived as challenging. Many, regardless of age, were familiar with the use of computers, tablets, Skype, and several had telemedicine experience from other settings. It was also notable that only half of subjects in both groups considered the risk of COVID-19 as essential to their preference.

Overall, the offer of virtual consultation provided a possibility for the subjects to avoid some of the constraints in relation to LTOT and COPD when going to the out-patient clinic, thus generating possibilities of maintaining independence and quality of life.

Discussion

LTOT was perceived as a necessity to maintain a sense of independence and quality of life. However, the treatment also resulted in additional limitations and vulnerabilities, such as cumbersome equipment and feelings of anxiety and isolation. These limitations, alongside the fear of COVID-19, made going to the out-patient clinic a costly event for most subjects in terms of physical and social burden. For more than half of the subjects, the virtual consultation was considered oxygen, energy, and time preserving due to avoiding comprehensive planning, stressful transportation, waiting time, handling oxygen tanks, and not having to involve others for help. Being able to stay at home also provided a sense of security concerning the risk of COVID-19 infection.

The results derived from this critical psychology analysis correspond with the shifting perspectives model of chronic illness developed by B L Paterson.¹⁸ The model indicates that living with chronic illness is an ongoing and continually shifting process between an illness-in-the-foreground or wellness-in-the-foreground perspective. Going to the clinic for the semi-annual follow-up was associated with confronting limitations and vulnerabilities, when dealing with requirements to take care of stressful planning and transportation, which made the illness salient. However, these appointments were considered necessary to get relevant help, which could

hopefully relieve or solve problems and bring wellness to the foreground. It was perceived as a paradox and an ongoing balancing act. Subjects needed LTOT to feel as well and independent as possible. On the other hand, all the practical implications of LTOT treatment often resulted in an experience of illness in the foreground. This dilemma is also described in a study by Almutairi and colleagues¹⁹ concluding that because of technical and physical characteristics of the LTOT devices oxygen-dependent individuals may be at risk of adverse outcomes associated with decreased mobility, such as isolation, decreased autonomy, and decreased quality of life. The offer of virtual consultations was a 30-min event compared to a day trip and eliminated several implications associated with leaving the home. Virtual consultation thus has the potential to support a wellness-in-the-foreground perspective. It must, however, be noted that some subjects experienced the visit to the clinic as a welcome break from feeling isolated in their homes. Some of those, who preferred the physical attendance follow-up, also suffered from hearing or cognitive disabilities, which could result in additional limitations comprehending a new concept such as virtual consultation or sound problems. When offering virtual consultation, clinicians should, therefore, pay attention to both the patients' preferences and potential disabilities. Several researchers point to shared decision making as a way of improving patient involvement in LTOT treatment programs.²⁰⁻²² Shared decision-making aims to establish a partnership between the health care professional and the patient. The health care professionals convey medical knowledge and treatment options, and patients share their personal perspectives, preferences, and reservations. The most appropriate treatment is identified through dialogue to obtain the patient's perspective.²³

Subjects' feelings regarding spirometry were an incidental finding not directly relevant to the research question. However, it contributed to a sense of illness in the foreground and revealed a need for existential support in this specific situation, which clinicians should be prepared to offer. At the same time, it raises the question whether spirometry tests should continue to be performed routinely as a part of the LTOT follow-up program, since the result has no obvious therapeutic consequence in relation to treatment (Table 1). Spirometry tests could instead be optional as part of a shared decision making process.

Focusing on subjects' perspective in relation to conditions, meanings, and reasons, we gained an insight into what enhances or diminishes illness in the foreground. Being able to offer patients a choice, enables processes of shared decision making, thereby ensuring a more patient-centered approach in future clinical practice.

Strength and Limitations

Due to COVID-19 precautions, we did not ask participants to engage in face-to-face interviews. The interviews

were instead conducted as telephone interviews, although it is a method generally considered to be an inferior alternative to face-to-face interviews.²⁴ The method did, however, prove viable as a way of producing rich data in most cases. One woman even stated that it was easier to discuss sensitive matters over the telephone. This is also found in a study by Drabble and colleagues,²⁵ aiming at an exploration of effective interviewer strategies. In some cases, the subjects' hearing loss or cognitive impairment turned out to be too great a barrier to overcome in the context of the telephone interview. As a result, 2 interviews had to be left out of the analysis due to inconclusive responses. The use of telephone interviews, nonetheless, made it possible during a short period of time to include as many subjects as needed to achieve data saturation.¹¹ The inclusion of 20 subjects turned out to be an appropriate sample size regarding data saturation, as many similar issues were repeatedly brought up in various interviews. The last interviews revealed only a few outlying themes leading to the conclusion of data saturation.

As the focus of the study was on the subjects' own perspective, a deliberate decision was made to not collect medical descriptors such as comorbidities at the time of inclusion. However, in several cases, the interviews revealed that subjects perceived their comorbidities, such as depression, anxiety, and chronic back pain, as contributors regarding the complexity of making the follow-up visit to the out-patient clinic. Further research should, therefore, include the most common comorbidities as variation parameters in the purposive sampling process to enhance validity.¹²

Other studies have also detailed the annoying and stressful challenge of LTOT use in the complex management of COPD and the imperative for patient adaptation.^{19,22,26,27} Fear of stigmatization and feelings of isolation are well described by Braeden and colleagues.²⁸ However, none of these studies address the issue of LTOT follow-up procedures as specifically as this study.

The testing of virtual appointments began before COVID-19 was considered a real threat, and the completion of the study during the COVID-19 pandemic was thus a coincidence. Nonetheless, COVID-19 proved to have a great impact on the daily lives of the subjects, making an even stronger argument for virtual consultations at the time. The subjects' positive attitude toward virtual consultation in this study is also found in a smaller study by Sølling and colleagues²⁹ predating COVID-19. The context is, however, different, set in the primary sector, focusing on subjects with COPD but not specifically on those with LTOT. Although some studies have focused on subjects' perspective toward telemedicine interventions directed at subjects with COPD, we have not been able to find studies aiming specifically at subjects with LTOT.³⁰ This study thus offers a unique insight. Many telemedicine solutions are time-limited add-ons to existing clinical

procedure trying to enhance patient empowerment or reduce readmission to the hospital,³¹⁻³⁴ whereas this study offers an alternative solution to the existing out-patient practice, which is justified in subjects' perspective on its relevance.

Conclusions

The aim of the study was to uncover reasons for absences from the LTOT follow-up program in the out-patient clinic and the subjects' experience of virtual consultations to promote a more patient-centered clinical practice for those with COPD and LTOT. The analysis of 20 semi-structured telephone interviews revealed 3 main themes: limitations and vulnerabilities, independence and quality of life, and personal strategies. Everyday life with LTOT and COPD was characterized by limited resources in terms of energy, oxygen, and time. These limitations, alongside the fear of COVID-19, made going to the out-patient clinic a costly event for most subjects, both physically and socially. Being able to stay at home, most subjects considered the virtual consultation as oxygen-, energy-, and time-preserving. By avoiding the risk of COVID-19 infection outside their home, they felt safer. The subjects' perspective showed that a virtual follow-up of LTOT was considered a valuable offer. Our findings, thereby, support the continued use of virtual consultations as a patient-centered clinical practice.

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