

TELEMEDICINE AS AN INNOVATIVE MODEL FOR THE DIAGNOSIS AND TREATMENT OF HYPOTHYROIDISM

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ABSTRACT: Telemedicine has fundamentally transformed healthcare delivery by enabling remote diagnosis and treatment of many medical diseases. This innovative approach, integrating medical expertise with technical proficiency, seeks to enhance the accessibility and efficacy of care. Healthcare practitioners can efficiently address the requirements of patients globally by utilizing digital and communication networks for engagement. This study aims to investigate the advantages and disadvantages of utilizing telemedicine for the diagnosis and treatment of hypothyroidism. We will also examine the increasing utilization of telemedicine by patients and its implications for the future of healthcare.

Keywords: *Telemedicine, hypothyroidism, patient satisfaction, written reports vs consultations.*

I. INTRODUCTION

A significant proportion of individuals are affected by hyperthyroidism, a thyroid disorder. The deficiency of thyroid hormones is a characteristic of this illness. This metabolic change may lead to fatigue, sadness, and an increase in body fat. The probability of acquiring hypothyroidism escalates with age and predominantly impacts women. The limited information available to both patients and clinicians complicates the diagnostic process (Gottwald-Hostalek & Schulte, 2021).

Accessing expert medical treatment has been exceedingly difficult owing to the COVID-19 pandemic. Numerous private clinics and certain state-operated outpatient centers overseen by healthcare experts were compelled to cease operations due to this situation. Patients encountered greater challenges in obtaining diagnoses and sustaining professional medical treatment, while some private practices faced increased financial difficulties as a consequence (COVID-19's effect on physicians, n.d.).

Countryhealth originally diagnosed and managed hypothyroidism some months before the outbreak, utilizing both in-person and telemedicine treatments. Strategic preparation enabled their exclusive switch to telemedicine during the epidemic, guaranteeing continued treatment availability for patients with hypothyroidism. Patients in need of expert care can still receive diagnosis and treatment remotely through Countryhealth. This innovative approach is more effective than conventional in-person offices (Roine et al., 2001).

Patients in the United Kingdom, several European countries, Jordan, Kenya, and Singapore can utilize various services provided by CountryHealth. A diverse array of medical specialists, including pharmacists, certified home finger-prick laboratories, and venous blood testing services in proximity to patients' residences, participate in this joint initiative. Within a single year, the company successfully diminished its carbon footprint by almost 3.5 tons of CO₂ due to their telehealth program.

II. METHODS

Patient selection

Interested individuals may reach out to CountryHealth for complimentary pre-registration consultations by phone or WhatsApp. They possess an internet scheduling system accessible at any hour for individuals to secure an appointment. An email including essential corporate information, including pricing details, training video links, and blood testing instructions, will be dispatched immediately upon confirmation of your registration. An email is dispatched a few days before the meeting, and a text message is transmitted the day before to the appointment as a reminder. The objectives of these messages include minimizing appointment no-shows, acquainting prospective patients with the clinic, and streamlining the pre-registration call process.

To ascertain the patient's eligibility for the services and evaluate prospective benefits, Dr. Frey examines the patient's medical history during the session. Upon registration, a new patient will get an introduction email from the clinic outlining the registration procedure and further steps if the conditions addressed during the consultation are met.

Written reports instead of consultations

After awaiting an expert for weeks or months, patients are eager to express their worries, yet they often forget the details of the conversation. Kessels (2002) discovered that between forty and eighty percent of medical advice is quickly forgotten. A prevalent grievance among individuals with hypothyroidism is "brain fog," which further aggravates their illness (Samuels & Bernstein, 2022).

Recent modifications have occurred at Country Health regarding their business operations. Comprehensive written reports, including all employed sources, are supplied, as opposed to the typical online or in-person consultations. The patient's blood test results, symptoms, current medications, and medical history constitute the foundation of these reports. The package includes a treatment plan, recommendations for the subsequent examination, and a tailored supplement regimen.

Full Thyroid Panel to assess the patient's hormonal profile

The predominant method employed by clinicians to identify hypothyroidism is the TSH test. Diagnosis is established when the TSH level beyond the normal range.

Alevizaki et al. (2005) assert that TSH is not a sufficient indicator of thyroid function when utilized in isolation. A thorough thyroid assessment is required, encompassing TSH, FT4, FT3, and antibodies to evaluate thyroid function.

The principal aim of the thyroid axis is to attain and sustain appropriate T3 levels (Salvatore et al., 2022). The objective of the method is to attain optimal results rather than merely satisfactory ones.

They accomplish this by formulating a thyroid scale based on the laboratory's FT3 values. Despite the scale extending from -10 to +10, the majority of laboratories adhere to a typical range of -5 to +5. According to functional medicine, an ideal range is from -1 to +1.

This metric facilitates data comprehension, benefiting patients as well.

Patient questionnaires

Patients must complete a questionnaire before submitting their thyroid data beginning in early 2024. This has yielded numerous benefits:

1. Was the student's performance on the test accurate?
2. What is the standard dosage for this patient? Have the previous recommendations been altered in any manner?
3. Is the patient now using any more medications that their physician may not be informed about?
4. How does the patient assess the effectiveness of the medication?
5. What symptoms is the patient encountering? Countryhealth computes a symptom score for future follow-up reports.
6. 6. How would the patient evaluate their clinical practice after observation?
7. Has anything significant changed recently that the practice needs to be aware of?

Personalised Treatment Plans

The comprehensive thyroid panel, the patient's medical history, and any current medications are meticulously examined prior to formulating a personalized treatment plan. Consistent with the tenets of functional medicine, the criteria assess each individual comprehensively. Altering your food, engaging in regular exercise, consuming essential supplements to enhance thyroid function, and modifying medications as prescribed are integral components of this process. This personalized strategy enables the institution to more effectively cater to each patient and attain superior therapeutic results.

Prescriptions

Natural desiccated thyroid (NDT) and liothyronine are among Countryhealth's numerous treatments; yet, many healthcare practitioners predominantly prescribe levothyroxine. The primary reasons for administering NDT to patients are as follows:

- It amalgamates T4 and T3 for individuals who have difficulty with conversion.
- It possesses the capacity to mitigate autoimmune disorders.
- A more economical option to synthetic T3 therapy exists.
- Individuals can exercise greater control over their symptoms, as stated by Heald et al. (2024).

Patients who are lactating, attempting to conceive, or who are pregnant should have their FT4 levels assessed. The mother's thyroxine (T4) is crucial for the baby's development throughout the first trimester of pregnancy (Pearce, 2015).

Individuals seeking medical information may visit their website or utilize the link provided within their thyroid test results. If a local pharmacy lacks NDT personnel, they may direct patients with hypothyroidism to an affiliated pharmacy. All pharmaceuticals prescribed by physicians are consistently available at these certified and controlled pharmacies. Upon payment by the patient, the medication is dispatched directly to their residence.

Monitoring and Follow-ups

Upon finalization of the evaluation and treatment plan, the initial follow-up with the patient is arranged for 6 to 8 weeks subsequent to the commencement of the new treatment. They resubmit your evaluation form with revised results from a blood test. The center prepares a follow-up report utilizing this information. By juxtaposing the new data with the results of previous treatments, they pinpoint areas for enhancement in the therapy and record their observations in this report.

Subsequently, check-ins are arranged every 2-3 months until the symptoms diminish and blood levels stabilize.

Individuals attempting to conceive or currently pregnant should schedule follow-up appointments every one to two months.

Follow-ups are performed every three or six months based on the efficacy of blood level regulation and symptom management.

Utilizing WhatsApp for calls or messaging enables patients to arrange appointments and submit notes.

Patient Education and Empowerment

Countryhealth prioritizes patient empowerment by offering education and resources that enhance individuals' comprehension of their illnesses and encourage active participation in their healthcare. The extensive initial thyroid study, around 60 pages in length, including a "Thyroidpreneur Handbook" referencing over 200 academic references. With adequate information and resources, individuals need to make educated decisions concerning their thyroid health.

Collaboration with Complementary Healthcare Providers

The clinic partners with other medical institutions to broaden its patient demographic and ensure superior care for all individuals, irrespective of their geographical location. They can enhance patient support in domains outside their expertise through collaborative coordination.

III. RESULTS

Multi-award winning

Highlighting innovative methodologies, individualized care, and sustainable practices reflects a robust commitment to improving the health of individuals with hypothyroidism. The practice leads a push to transform healthcare delivery by prioritizing telemedicine. Their commitment and benevolence have earned them multiple honors.

- Premier Health Center in the Nation for 2024
- The United Kingdom's Premier Telehealth Clinic in 2023
- The premier holistic specialist telemedicine clinic in the UK for 2023
- Wellness Institution of the Year 2023
- The premier UK telemedicine clinic for hypothyroidism specialists in 2023 will be situated in
- The Premier Private Medical Practice for Specialists in East Anglia in 2022
- By 2022, it will have positioned itself as the foremost thyroid health clinic in the UK.
- Premier thyroid clinic in the UK for 2021
- This is the premier thyroid health clinic in the UK for 2019.

Excellent patient ratings

Numerous positive evaluations of Country Health can be found on the Hypothyroid Support Group UK website (<https://www.countryhealth.co.uk/testimonials/>) and their Facebook page (#thyroidpreneurs).

The majority of patients express satisfaction with the treatment they receive at their institution. The data herein derives from 46 authenticated assessment forms submitted in January 2024:

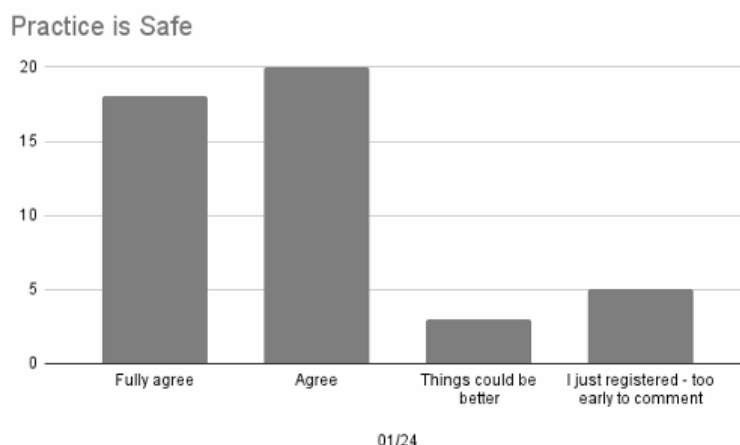


Fig. 1. The overwhelming majority (82.6) of patients felt safe, only 3 patients (6.5%) were unsatisfied. 5 patients just joined the practice and could not give a rating.

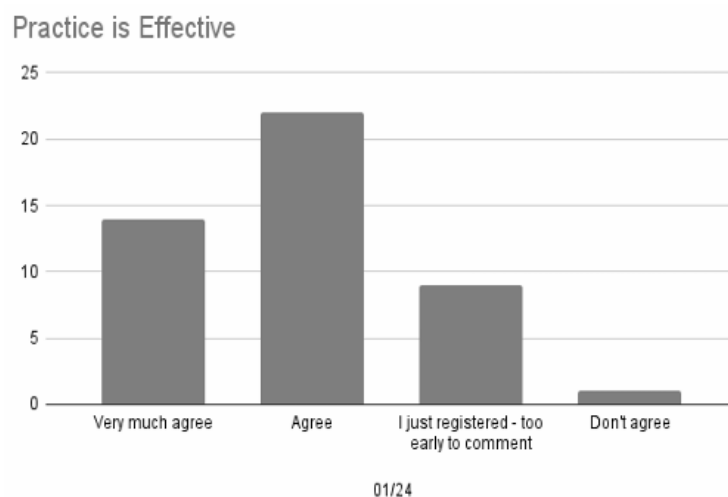


Fig. 2. Over 78% of all patients asked feel that the practice operates effectively, only 1 patient disagreed.

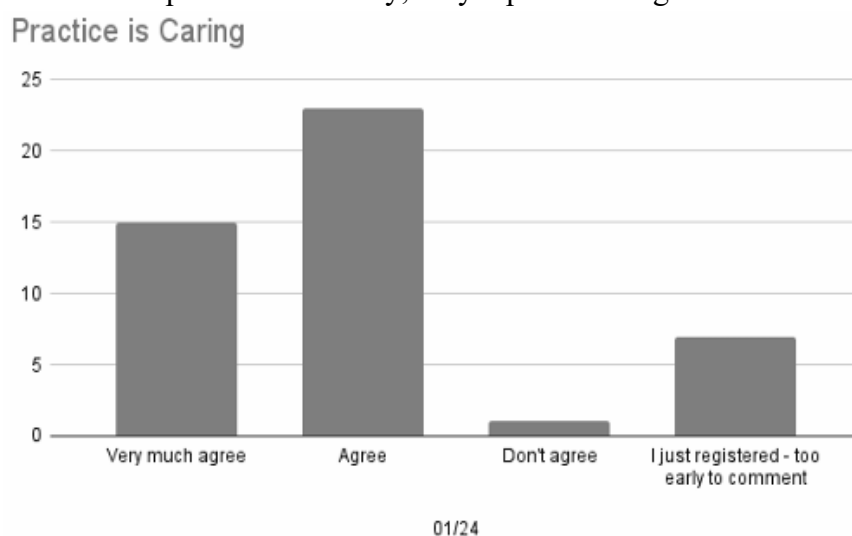


Fig. 3. 82.6% of all patients asked feel that the practice is caring, only 1 patient disagreed.

Practice is Responsive

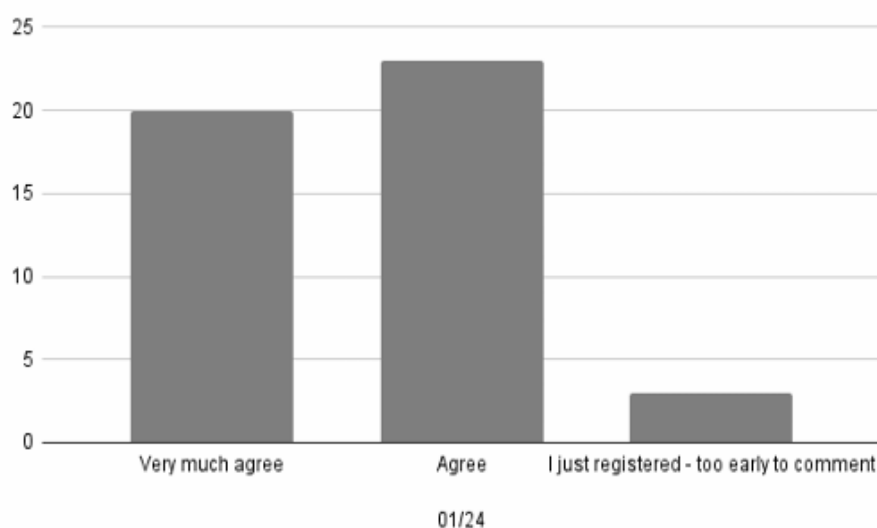


Fig. 4. All patients who were able to comment felt that the practice is responsive.

Practice is Well led

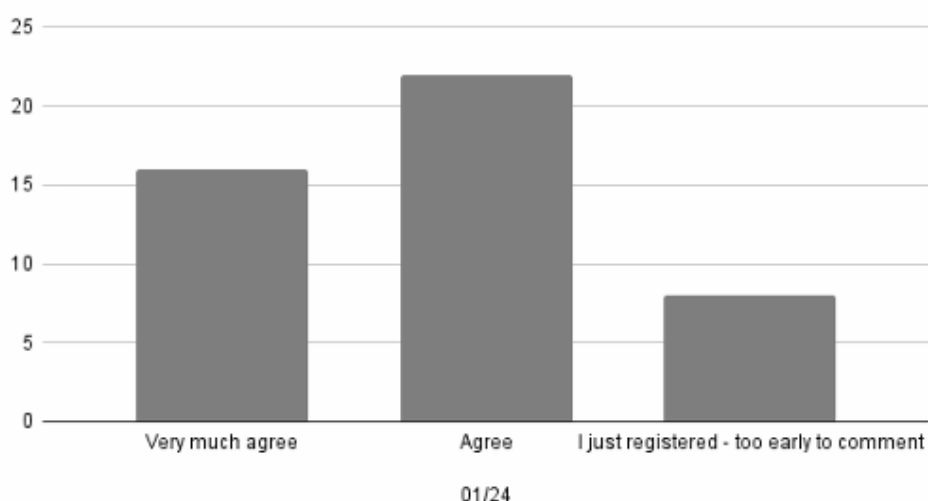


Fig. 5. All patients who were able to comment felt that the practice is well led.

IV. DISCUSSION

The significance of telemedicine as a method for expedited access to healthcare is increasing, especially for individuals with hypothyroidism and other ailments. Patients with hypothyroidism can significantly benefit from telemedicine services.

Gavin et al. (2023) assert that patients can engage with their physicians regarding health concerns, receive treatment advice, and acquire prescriptions via remote consultations, thereby obviating the necessity for in-person appointments.

Home sample testing for thyroid-stimulating hormone, free T4, and free T3 can assess thyroid function. Proximal testing facilities can get venous blood specimens if required. Comprehensive and consistent testing is crucial for adjusting pharmaceutical dosages and assessing therapeutic efficacy (Gavin et al., 2023).

According to Gavin et al. (2023), telehealth facilitates the renewal of medications and modification of dosages remotely by utilizing test results and patient data to inform decisions. By acquiring knowledge about hypothyroidism and its treatment via telehealth, individuals can proactively manage their condition and protect their health (Toft, 2018).

An individual's capacity to articulate their symptoms through telehealth offers essential insights for formulating personalized treatment strategies and assessing the need for additional testing or modifications to therapy (Gavin et al., 2023).

Collaboration with Integrative Medicine Providers: When a patient exhibits multiple symptoms potentially affecting thyroid function, telemedicine facilitates the cooperation of diverse medical providers, ensuring comprehensive evaluation of the patient's overall health (Gavin et al., 2023).

Video conferencing can enhance healthcare accessibility for individuals residing in remote areas or experiencing mobility challenges. Furthermore, it may prove beneficial in situations when obtaining routine in-person medical care is challenging, as noted by Gavin et al. (2023). While telemedicine has enhanced the convenience and accessibility of healthcare, it is essential to recognize that certain treatments may still necessitate in-person engagement. As stated in *Telehealth: The Pros and Dangers* (2020), this category include thorough medical assessments, specialist diagnostic techniques, and the management of intricate medical conditions.

The diagnosis and management of hypothyroidism is a medical specialism that facilitates efficient treatment without the necessity of an in-person consultation. An in-person initial visit may not be requisite to secure a referral for additional testing, such as a thyroid ultrasound. To ensure the security of transferring sensitive medical information online, compliance with data protection legislation is essential (*Telehealth: The pros and hazards*, 2020).

V. CONCLUSION

Innovative approaches to managing hypothyroidism have been developed by the groundbreaking telemedicine service at Countryhealth. In this domain, which emphasizes innovation, personalized care, and environmental conservation, they have received multiple accolades for their diligence and proficiency. Their telemedicine technique is efficacious, evidenced by their outstanding ratings and favorable feedback from patients.

Telehealth has enhanced hypothyroidism care by facilitating remote communication between doctors and patients, drug delivery, symptom assessment, education, and collaboration with other medical specialists. This holistic approach enhances patient autonomy in their care, leading to improved treatment outcomes and overall quality of life.

They recognize that specific elements of healthcare are essential and necessitate in-person connection. Hypothyroidism can now be safely and efficiently managed using telemedicine, obviating the necessity for in-person consultations.

The secure electronic transmission of sensitive patient information is a paramount concern for Countryhealth, which is dedicated to adhering to all relevant data privacy standards.

Due to their innovation, collaboration, and patient-centric approach, they were the pioneers in offering online services for hypothyroidism management. Countryhealth is committed to providing comprehensive care to individuals affected by this condition.

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