

Telemedicine - A multi-award-winning concept for the Diagnosis and Treatment of Hypothyroidism

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Abstract: Telemedicine has revolutionised healthcare delivery by offering remote diagnosis and treatment options for various medical conditions. This innovative approach combines technology and medical expertise to provide convenient and efficient care to patients. By utilising telecommunication and digital platforms, healthcare professionals can now reach and treat individuals in remote areas, overcome barriers to access, and deliver timely interventions. This paper aims to explore the impact of telemedicine in the diagnosis and treatment of hypothyroidism, highlighting its benefits and potential challenges. Additionally, it will discuss the growing acceptance of telemedicine by patients and its implications for the future of medical practice.

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

I. INTRODUCTION

Hypothyroidism is a prevalent thyroid condition impacting numerous individuals. It is characterised by an insufficiently active thyroid gland that results in decreased production of thyroid hormones, affecting metabolism and contributing to symptoms like weight gain, fatigue, and depression. The occurrence of hypothyroidism is higher among women and tends to rise with age. The diagnosis is often delayed due to limited awareness and comprehension of the condition amongst patients and healthcare providers (Gottwald-Hostalek & Schulte, 2021).

The Covid-19 outbreak has led to significant disturbances in the delivery of specialised medical care. This included the closure of consultant-led outpatient clinics in the national health service and a cessation of operations at many private clinics. As a result, this created financial difficulties for numerous private practices and hindered patients' ability to access ongoing professional medical assistance or obtain diagnoses (COVID-19's impact on physicians, n.d).

Several months before the pandemic, Countryhealth had initiated a combined approach of face-to-face clinics and telehealth services for diagnosing and treating hypothyroidism. This proactive strategy enabled them to smoothly transition to 100% telehealth during the pandemic, ensuring continuous healthcare provision for patients with hypothyroidism. Countryhealth continues to offer its services for remote diagnosis and treatment, providing specialised care to patients in need with this innovative approach proving more effective than traditional face-to-face clinics (Roine et al., 2001).

Through collaborations with pharmacies, certified home testing labs for finger-prick tests, services for venous blood testing near patients' homes, and connected healthcare professionals, CountryHealth offers a comprehensive and patient-focused service to individuals across the UK, various European countries, as well

as in Jordan, Kenya and Singapore. Additionally, their Telehealth approach has made a positive environmental contribution by reducing the organisation's carbon footprint by more than 3.5 tons of CO2 within one year.

II. METHODS

a. Patient selection

CountryHealth provides a complimentary pre-registration consultation for potential patients, conducted over the phone or through WhatsApp. Prospective patients have access to their online booking platform 24/7 to schedule this call at their convenience. Upon making a booking, an automated email is sent out with valuable practice-related content including instructional videos, details about blood testing, and service pricing. Additionally, a reminder email is dispatched a couple of days before the appointment followed by an SMS notification the day prior. These communications serve to familiarise potential patients with their practice, optimise the pre-registration call process, and minimise missed appointments.

During the consultation, Dr Frey delves into the patient's medical history and determines whether they would benefit from their services and if there is a compatible fit between them. If all criteria are satisfied during the call, the practice proceeds by sending an introductory email along with guidance on registering as a patient at the practice and subsequent necessary steps.

b. Written reports instead of consultations

After enduring weeks or even months of anticipation to consult with a specialist, patients are enthusiastic about conveying all their concerns but struggle to recall the information they receive. A significant portion (40-80%) of medical advice from healthcare professionals is immediately forgotten (Kessels, 2002). This is even worse for patients with hypothyroidism who often complain of "brain fog". (Samuels & Bernstein, 2022)

Countryhealth has introduced a new approach in their practice. Rather than the usual in-person or video consultations, they offer comprehensive written reports that are fully referenced. These reports are based on the patient's medical history, symptoms, current medication, and detailed blood test results. They also include an action plan for treatment, recommendations for the next follow-up, and a customised supplement regimen.

c. Full Thyroid Panel to assess the patients hormonal profile

Most healthcare professionals depend on the TSH outcome to diagnose hypothyroidism. If the TSH level exceeds the normal range, a diagnosis is established.

TSH by itself is not a dependable indicator of thyroid function (Alevizaki et al., 2005). To evaluate thyroid function, a comprehensive thyroid panel is requested, which includes TSH, FT4, FT3 as well as antibodies.

Whilst achieving and maintaining normal T3 concentrations is the priority for the thyroid axis (Salvatore et al., 2022), the practice strives for the best possible outcomes, not just average results.

In order to accomplish this, they convert the FT3 findings provided by the laboratory into a thyroid scale. The scale spans from -10 to +10, with -5 to +5 indicating the reference range for most laboratories and -1 to +1 signifying the optimal range based on functional medicine principles.

This scale simplifies the interpretation of results, making them more accessible and comprehensible for patients.

d. Patient questionnaires

Since the start of 2024, the practice has implemented a process requiring patients to fill out a questionnaire prior to the preparation of their thyroid reports. This has proven advantageous for several reasons:

1. Has the patient adhered to the appropriate testing procedure?
2. What is the current medication dosage for the patient (are there any departures from prior recommendations)?
3. Is the patient using other medications that the practice may not have been informed about?
4. How does the patient evaluate the effectiveness of the treatment?
5. What symptoms is the patient encountering? Countryhealth computes a symptom score for future follow-up reports.
6. How does the patient rate their clinical practice, based on their experience?
7. Have there been any noteworthy occurrences that the practice should know about?

e. Personalised Treatment Plans

Upon examining the comprehensive thyroid panel, questionnaire, and any existing medication, personalised treatment plans are developed. Suggestions adhere to functional medicine principles with a holistic perspective, encompassing adjustments to medication as needed along with lifestyle modifications, nutrition considerations, and essential supplements for fostering thyroid health. This customised method enables the practice to cater to each patient's specific requirements and enhance their treatment results.

f. Prescriptions

While many healthcare providers only prescribe Levothyroxine to their patients, Countryhealth provides their patients with a range of treatment options, including Liothyronine and natural desiccated thyroid [NDT]. The majority of their patients are prescribed NDT due to its various advantages:

- It combines T4 and T3, which is particularly beneficial for individuals who have difficulty converting T4 to T3
- It has the potential to positively impact autoimmunity
- It offers a more cost-effective alternative compared to synthetic T3 treatment
- It facilitates improved symptom management (Heald et al., 2024).

Patients intending to become pregnant, are currently pregnant, or breastfeeding should also have their FT4 level optimised, as the foetus relies on maternal thyroxine (T4) during early pregnancy (Pearce, 2015).

Patients have the option to request a prescription through a hyperlink in their thyroid reports or via their website. Since local pharmacies often do not provide NDT, all prescriptions are forwarded, mostly electronically, to their affiliate pharmacies specialising in hypothyroidism. These pharmacies are fully accredited and authorised, and they maintain stock of all the medications the practice prescribes. Upon receipt of payment, the medication is dispatched directly to the patient.

g. Monitoring and Follow-ups

After the initial diagnosis and preparation of a treatment plan, patients are scheduled for their first follow-up 6-8 weeks after starting the new treatment. They provide updated blood test results and complete a new assessment form. Using this information, the practice generates a follow-up report in which they analyse the new data in comparison to previous results and make adjustments to treatments as needed.

Subsequent follow-ups occur every 2-3 months until optimal blood levels are achieved and symptoms are managed.

For individuals during conception and pregnancy, the practice advises follow-ups every 1-2 months.

Once optimal blood levels and symptom control have been attained, follow-ups become biannual or tri annual events.

In addition to their written reports, patients may schedule telephone/WhatsApp consultations if desired.

h. Patient Education and Empowerment

Countryhealth emphasises the importance of educating and empowering patients by offering resources and assistance to enhance their understanding of their condition, as well as encouraging active participation in their own care. The initial thyroid report is extensive, spanning nearly 60 pages and incorporates a "Thyroidpreneur Handbook" with around 200 citations from scientific research papers. The goal is to provide patients with the information and resources needed to make informed choices regarding their thyroid health.

i. Collaboration with Complementary Healthcare Providers

In their aim to broaden their impact and guarantee thorough

healthcare, the practice partners with alternative healthcare professionals, building a network of assistance for patients no matter their location. This collaborative strategy allows them to offer aid to their patients in areas outside of their specific expertise.

III. RESULTS

a. Multi-award winning

Dedication to innovation, customised healthcare, and eco-friendly practices reflects the strong commitment to enhancing the well-being of people affected by hypothyroidism. By prioritising telemedicine in their strategy, the practice is at the forefront of reshaping healthcare delivery standards. Their efforts have garnered multiple acknowledgments for their unwavering commitment and compassionate treatment:

- Holistic Health Clinic of the year 2024
- Most Dedicated International Telehealth Clinic – UK 2023
- Best Specialist Holistic Telehealth Clinic 2023 – UK
- Holistic Health Clinic of the Year 2023
- Best Specialist Hypothyroidism Telehealth Clinic 2023 – UK
- Best Specialist Private Medical Practice 2022 – East Anglia
- Most Trusted Thyroid Health Clinic – UK 2022
- Best Thyroid Health Clinic 2021 – UK
- Best Thyroid Health Clinic 2019 – UK

b. Excellent patient ratings

Countryhealth frequently receives positive reviews from their patients, both through their dedicated Facebook community "Hypothyroid Support Group UK and beyond - #thyroidpreneurs" and on their website <https://www.countryhealth.co.uk/testimonials/>

The overwhelming majority of their patients express satisfaction with the care they receive at their facility. The following data is compiled from 46 evaluation forms filled out in January 2024:

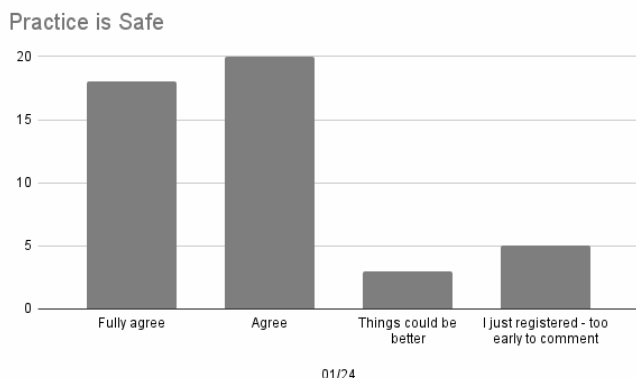


Fig. 1. The overwhelming majority (82.6) of patients felt safe, only 3 patients (6.5%) were unsatisfied. 5 patients just joined the practice and could not give a rating.

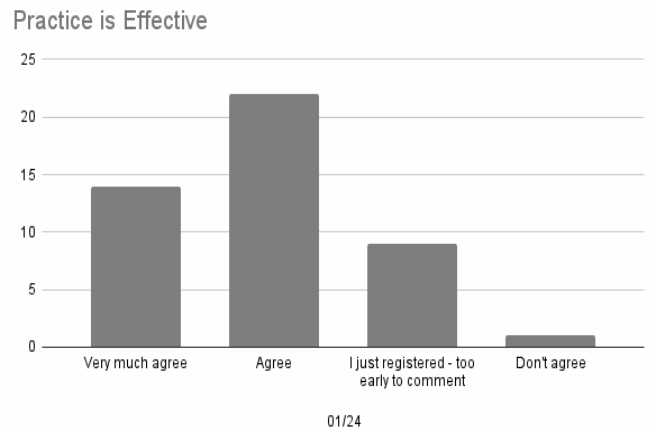


Fig. 2. Over 78% of all patients asked feel that the practice operates effectively, only 1 patient disagreed.

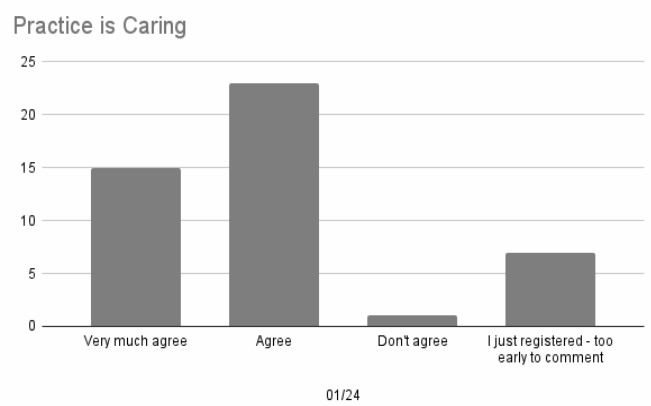


Fig. 3. 82.6% of all patients asked feel that the practice is caring, only 1 patient disagreed.

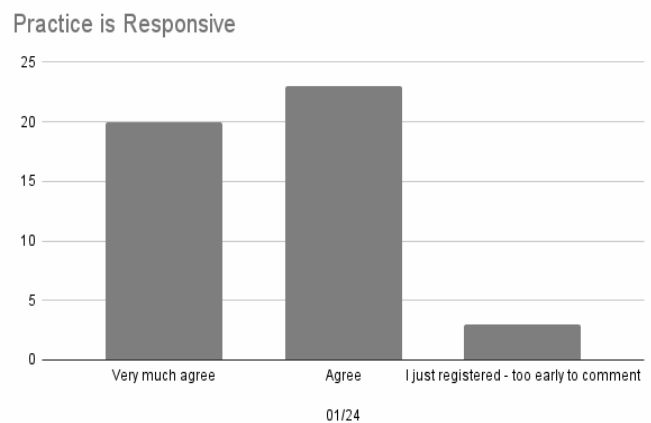


Fig. 4. All patients who were able to comment felt that the practice is responsive.

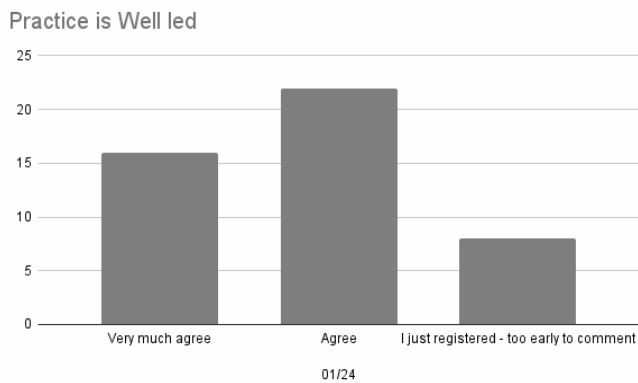


Fig. 5. All patients who were able to comment felt that the practice is well led.

IV. DISCUSSION

Telemedicine has grown in significance as a readily available method of delivering healthcare, particularly for the treatment of diverse medical conditions such as hypothyroidism. Integrating telehealth into the management of hypothyroidism can yield significant benefits.

1. Remote Appointments: Patients are able to describe symptoms, obtain treatment recommendations, and receive prescriptions without having to travel. (Gavin et al., 2023).
2. Monitoring Thyroid Function: Various specialised providers provide the option for at-home sample collection to monitor levels of thyroid-stimulating hormone, Free T4, and Free T3. Additionally, nearby testing centres are accessible for venous blood samples if needed. Consistent and thorough testing is essential in order to modify medication dosages and assess the efficacy of treatment (Gavin et al., 2023).
3. Telehealth enables the remote renewal of prescriptions and modification of dosages as necessary, using laboratory findings and information provided by patients to inform decision-making (Gavin et al., 2023).
4. Education and Guidance: Utilising telehealth for delivering information about hypothyroidism and its treatment can enable patients to take an active role in managing their condition and self-maintenance (Toft, 2018).
5. Symptom Evaluation: Via telehealth, individuals can communicate the symptoms they are encountering, providing important information for customising treatment strategies and determining whether further testing or adjustments to therapy are necessary (Gavin et al., 2023).
6. Collaboration with Providers of Integrative Medicine: Telehealth enables the coordination of care among various healthcare professionals, ensuring comprehensive attention to all facets of a patient's well-being, particularly in cases involving concurrent conditions that may impact thyroid health (Gavin et al., 2023).
7. Telehealth could enhance healthcare accessibility for patients residing in remote locations or experiencing mobility limitations. It can also be beneficial during times when traditional in-person medical services are not easily available (Gavin et al., 2023).

It is significant to acknowledge that although telehealth offers convenience and enhances accessibility, certain aspects of

healthcare may still necessitate in-person appointments. This includes initial comprehensive physical examinations, specific diagnostic procedures, or when dealing with more intricate medical issues (Telehealth: The advantages and disadvantages, 2020).

The identification and management of hypothyroidism represent a specialised area within healthcare where treatment can be administered safely without direct patient contact. In cases where additional tests such as a thyroid gland ultrasound are necessary, referral can be made without an initial in-person consultation. Adherence to data protection regulations is essential to safeguard the secure transmission of personal health information electronically. (Telehealth: The advantages and disadvantages, 2020).

V. CONCLUSION

Countryhealth's advanced telemedicine clinic has been at the forefront of reshaping healthcare standards for people dealing with hypothyroidism. Their emphasis on originality, personalised attention, and environmental stewardship has led to multiple accolades acknowledging their dedication and proficiency in this field. The impressive ratings and favourable feedback from their patients further validate the efficacy and impact of their telemedicine approach.

The incorporation of telehealth in managing hypothyroidism has proved to be extremely valuable by offering remote consultations, monitoring thyroid function, managing medication, educating patients, evaluating symptoms, and collaborating with complementary healthcare providers. This holistic approach empowers patients to take an active role in their own care which leads to improved treatment outcomes and quality of life.

While they understand the significance of certain elements of healthcare that require in-person appointments, telemedicine has proven its ability to provide safe and efficient healthcare for diagnosing and treating hypothyroidism, without requiring physical presence.

Countryhealth are committed to upholding data protection laws while ensuring the secure electronic transmission of personal health information.

Their commitment to patient well-being, combined with innovative practices and a collaborative approach, established them as pioneers in providing telehealth services for hypothyroidism management. Countryhealth is proud to make a beneficial difference in the lives of those affected by this condition, placing their holistic care at the forefront of their practice.

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