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Management of Hypothyroidism

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1) Introduction:

Long-term conditions is one of the key challenges for healthcare systems across the world. These conditions usually need ongoing management, long-term treatment and ongoing observation, often affecting the physical, psychological and social well-being of patients and their families. Data from the World Health Organisation shows that chronic diseases account for about 74% death across the world and represent a huge burden for health services and economies (Organization , 2023). Hypothyroidism is one of the increasingly recognised public health concerns among several long-term conditions.

Hypothyroidism is a chronic disorder caused by decreased production of Thyroid hormones by the thyroid gland. These hormones are vital in regulating metabolism, cardiovascular activity, neurological function, and energy production (Charker, et al., 2017). If the production of hormones dwindles, several body systems are affected and lead multiples symptoms such as fatigue, gaining weight, depression and so on.

Even though Hypothyroidism is manageable through medication, the condition requires long-term treatment and observation. Therefore, effective and efficient management approaches must integrate clinical treatment, patient awareness and healthcare policy interventions. Failure to manage and treat hypothyroidism efficiently can lead to severe complication including cardiovascular disease and life-threatening conditions (McAninch & Bianco, 2016). This booklet will critically explore and examine Hypothyroidism as a long-term condition by exploring its

prevalence, causes and impacts on patients. This research will also evaluate treatment strategies within the UK healthcare system, examine theoretical models applied in chronic disease management and consider the health policy role to improve the outcomes for patients who are experiencing long-term condition.

Hypothyroidism is the result of the thyroid gland not producing enough thyroid hormone. It can be secondary/central or primary, resulting from an anomaly in the thyroid gland itself. Hypothyroidism affects 3.8% to 4.6% of the general population. Pituitary and hypothalamic problems can also result in hypothyroidism. (Chaker, Bianco and Peeters, 2017; Garber et al., 2012).

2) Definition of Hypothyroidism

Hypothyroidism is a clinical condition which diminishes the supply of thyroid hormones, specifically thyroxine (T4) and triiodothyronine (T3).

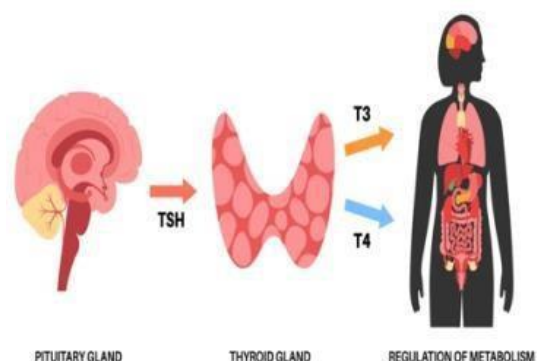


Figure: Hypothyroidism

Source: National Toxicology Program (NTP)

The metabolic process is regulated by these hormones throughout the body, including cardiovascular function, energy

metabolism, Thermoregulation, and neurological function (Chiovato, et al., 2019).

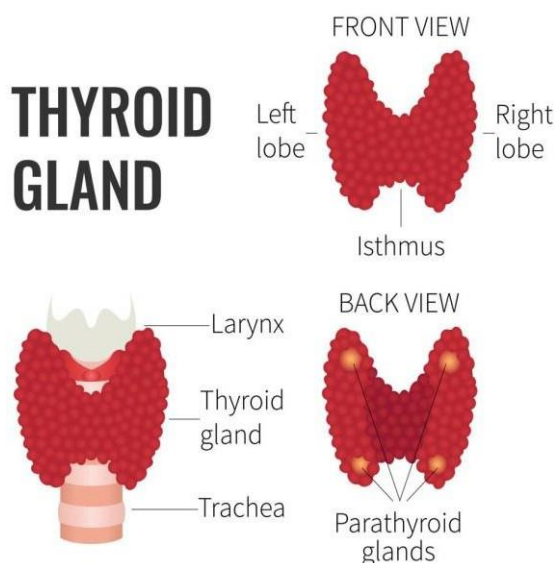


Figure 2: Thyroid Gland in Hypothyroidism

Source: National Institute of Environmental Health Sciences (NIEHS) (n.d.)

The thyroid gland is located near the neck (at the base) and forms part of the

endocrine system. It produces hormones that influence nearly every organ in the body. When thyroid hormone levels reduce, metabolic processes decline, which results in a wide range of physiological changes.

2.1) Pathophysiology of Hypothyroidism

Hypothyroidism can be categorised in different ways:

- ✓ Primary hypothyroidism; caused by dysfunction of the thyroid gland itself.
- ✓ Secondary hypothyroidism, caused by disorders of the pituitary gland.
- ✓ Subclinical hypothyroidism; categorised by elevated thyroid-stimulating hormone (TSH) levels with normal

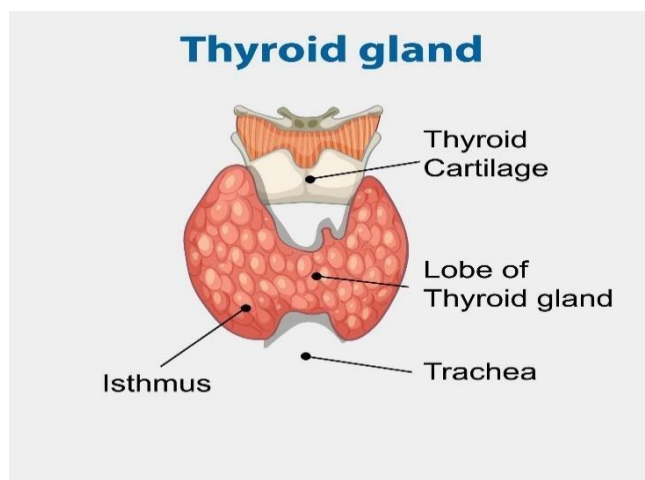


Figure 3:

Source: National Institutes of Health (NIH) (2015).

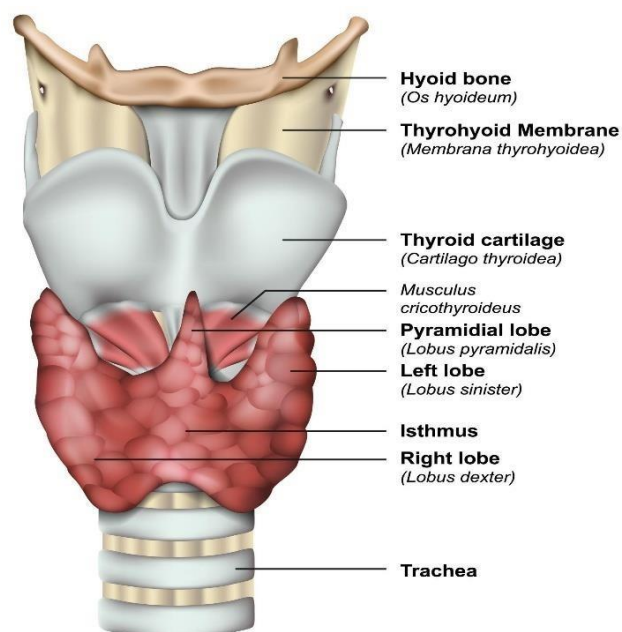


Figure 4: Anatomical location and structure of the thyroid gland

Source: StatPearls Publishing, NCBI Bookshelf (n.d.)

Primary hypothyroidism is responsible for most of the cases and is significantly associated with autoimmune thyroid disease, specifically Hashimoto's thyroiditis

(Caturegli, et al., 2014). The immune system attacks thyroid tissue, leading to a gradual impairment of hormone production. If patients do not receive treatment, hypothyroidism may lead to complications including cardiovascular disease, infertility, and neurological impairment. This is a rare but life-threatening condition (Charker, et al., 2017).

3) Global and UK prevalence of the long-term condition of Hypothyroidism

Hypothyroidism is one of the most common endocrine disorders across the world. Epidemiological studies estimate that over hypothyroidism affect about 1 to 2% of the global population, one the other hand, subclinical hypothyroidism affects about 4 to 10% adults (Taylor, et al., 2018).

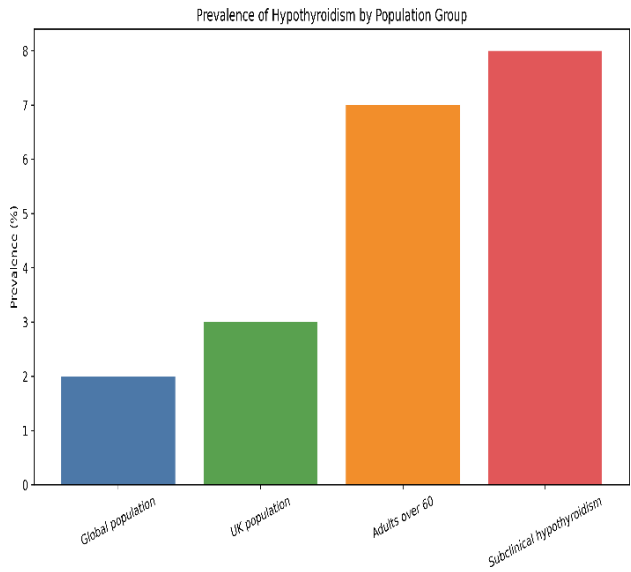


Figure 5: Prevalence of hypothyroidism across population groups.

Source: Taylor et al. (2018), Vanderpump (2019) and NICE (2019).

Hypothyroidism affects about 2 to 3% of the total population in the United Kingdom, with extended prevalence among women and older people (Vanderpump, 2019). Apart from that, the national database research

indicates that the number of treated cases boosted from 1.4 million in 2005 to about 2.2 million by 2014, indicating improved diagnosis and an ageing population (National Institute for Health and Care Excellence, 2023). Hypothyroidism is relatively rare in younger adults but becomes increasingly common with age.

The prevalence of hypothyroidism varies among unusual population classes, as shown in Figure 5. Roughly 2% of the worldwide population is affected, while the prevalence in the United Kingdom is around 3%. The condition is more general among older adults, with figures achieving about 7% in individuals over 60, and subclinical hypothyroidism affects around 8% of adults. The pressure of hypothyroidism goes beyond individual health results. The necessity for long-term curation and observation puts a financial burden on the healthcare system, and there is a possibility of affecting the productivity and the quality of human life (Pearce, et al., 2013).

4) The Risk Factor of the health condition Hypothyroidism

Hypothyroidism arises because of numerous biological and environmental factors that impair the normal function of the thyroid gland. Autoimmune thyroid disease is the common underlying cause in developed nations. Autoimmune disorders develop when the immune system unintentionally attacks healthy tissue, including the thyroid gland. The most common autoimmune condition linked with hypothyroidism is Hashimoto’s thyroiditis, that result in chronic inflammation and increasing thyroid gland failure (Chaker et al., 2017).

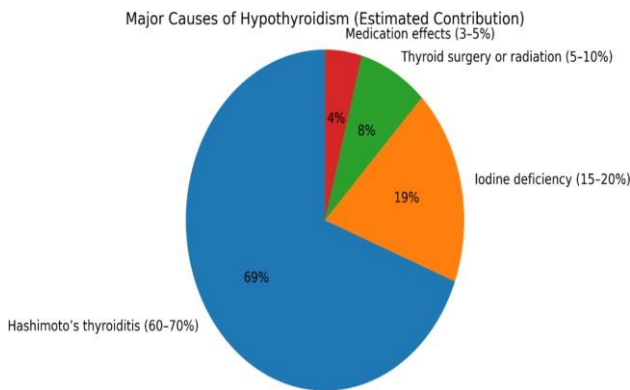


Figure 6: Major causes of hypothyroidism and their estimated contribution.

Source: *Jonklaas et al. (2014).*

Hashimoto's thyroiditis accounts for 69% hypothyroidism cases in iodine-sufficient regions, including the United Kingdom and other first-world countries. Iodine deficiency responsible for 19% is one of the common causes of thyroid dysfunction across the world because it is necessary for thyroid hormone production (World Health Organization, 2022). Other medical factors can also play significant roles in hypothyroidism. Surgical removal of part or all the thyroid gland, commonly performed to treat thyroid cancer or severe hyperthyroidism, can significantly lead to a reduction of hormone supply, leading to hypothyroidism. Additionally, Certain treatments can interfere with thyroid hormone synthesis or metabolism. For instance, Lithium and amiodarone are known for affecting thyroid function and growing the risk of hypothyroidism (Jonklaas, et al., 2014).

5) Impact of the Long-Term Conditions Hypothyroidism

Hypothyroidism has major impacts for patients, affecting physical health, psychological wellbeing and social functioning.

5.1 : Physical Impact

Diminished thyroid hormone levels slow metabolic systems in the body. Fatigue, weight gain, dry skin, muscle weakness, cold intolerance, puffy face, memory problems, depression, low mood, and reduced energy are common symptoms. (Biondi and Cooper, 2018). Hypothyroidism is also connected to cardiovascular issues. Lower thyroid hormone levels may increase the progression of atherosclerosis and coronary heart disease by elevating cholesterol levels (Klein & Danzi, 2007). These issues emphasise the importance of initial diagnosis and effective treatment.

SYMPTOMS OF HYPOTHYROIDISM

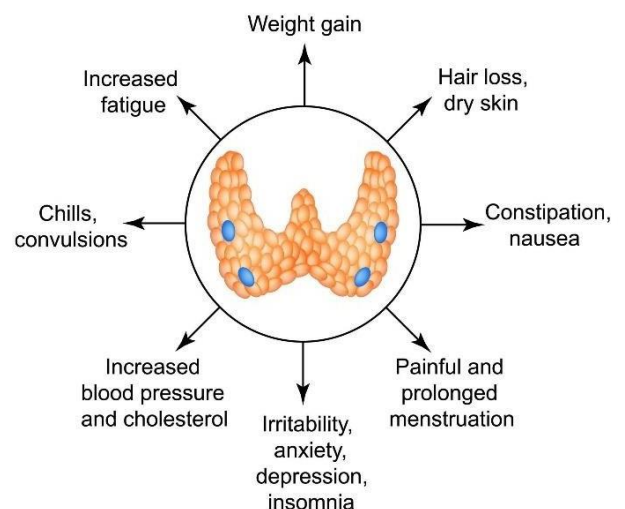


Figure 7: Common physical symptoms associated with hypothyroidism

Source: Based on symptom information from *NHS* (n.d.)

5.2 : Psychological Impact

Thyroid hormones are responsible for brain function and mood regulation. The research has shown that strong relationships exist between hypothyroidism and mental health

disorders, especially anxiety and depression (Demartini, et al., 2014). Neurocognitive dysfunction is also associated with patients commonly referred to difficulties with memory, focus and concentration.

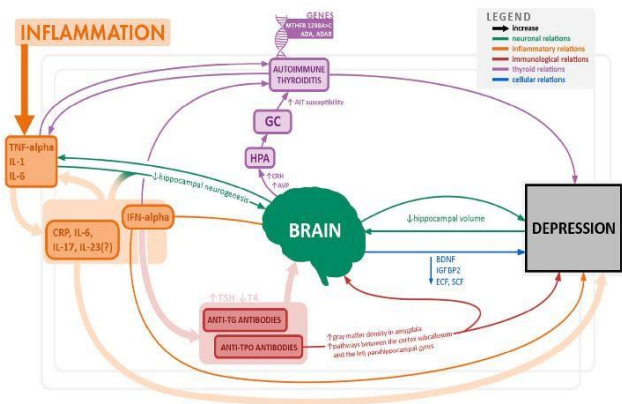


Figure 8: Psychological and cognitive effects associated with thyroid hormone imbalance.

Source: Kotkowska *et al.* (2022)

5.3: Social Impact

The social impact of hypothyroidism is frequently ignored. Long-term fatigue and mental decline may reduce output and affect people’s capacity to maintain employment. These visible physical and skin changes can reduce self-esteem and impact community ties.



Figure 9: Social and occupational challenges experienced by individuals living with chronic illness.

Source: Kotkowska *et al.* (2022)

Evidence shows that people with thyroid issues frequently report lower overall quality of life as opposed to the general population (Feller, et al., 2018). These varied impacts show that hypothyroidism is not only a clinical condition but a complex health issue requiring complete management approaches.

6) The wider Implications on Families involved in caregivers of Hypothyroidism

Chronic disorders not only affect patients but also affect family members and helpers. A person living with hyperthyroidism may depend on family members and want emotional support from them. Family involvement can therefore play a crucial role in ensuring treatment compliance and the effective management of chronic conditions (Gallant, 2003).

Caring for people with long-term illnesses is emotional and psychologically stressful for family members. Caregivers commonly report a higher level of anxiety, stress, and fatigue compared with individuals who do not have caring responsibilities (Schneider, et al., 2019).

In the United Kingdom, it is predicted that around 5.7 million people provide unpaid care to their family and friends and relatives living with long-term health conditions (Carers UK, 2023). Many of these carer’s balance looking after responsibilities together with employment and other family duties.

According to Carers UK (2023), around 45% of carers report that their mental health has been negatively affected by caring

responsibilities, there are 40% experience financial problems related to lower working hours or increased living costs. Moreover, nearly 35% of carers report reduced employment opportunities because of the time required to support family members with chronic illnesses. These pressures can impact financial insecurity and long-term home welfare.

Hypothyroidism can affect family life because patients may experience fatigue, mood changes, and cognitive difficulties. These challenges can change family roles and create emotional strain within families (Sav, et al., 2015).

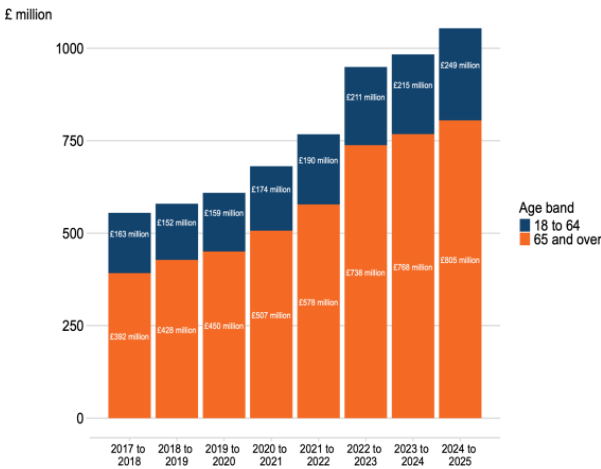
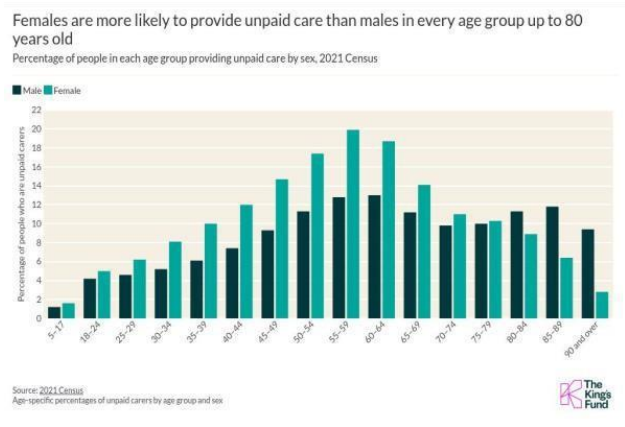


Figure 10: Example visualisation of the impact of caregiving responsibilities on family caregivers in the UK.

Source: Carers UK (2023) State of Caring Report.

On the other hand, if patients are supported by the family, it can also have a positive effect. Research indicates that if patients receive social support from their relatives, their treatment improves compliance and enhances the quality of life for managing chronic illnesses (Gallant, 2003).



advise that patients should have thyroid test every 6 to 8 weeks after starting the treatment, followed by annual monitoring once stable thyroid level are maintained. Clinical guidelines also priorities the importance of observation of TSH level to diminish the possibility of cardiovascular complications, osteoporosis, and other metabolic disorders caused by inefficient management of thyroid disease (Jonklaas et al., 2014).

Caregivers play important roles in diagnosing and managing hypothyroidism in NHS. The practitioners are mainly handing the functions tests, medicine prescriptions, and ongoing observation of patient progress. According to (Vanderpump, 2011)

About 3% of the total population in the United Kingdom receive hypothyroidism treatment, with women representing most of the cases. NHS emphasizes patient education, awareness, and self-management processes, encouraging the patient to take medicine, accordingly, maintain regular health check-ups, and understand the symptoms of hormonal imbalance.

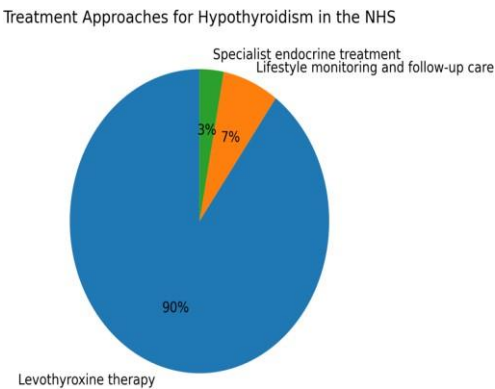


Figure 12: Treatment approaches for hypothyroidism in the NHS

Source: Author’s own illustration based on NHS (n.d.), NICE (2019), and NHS England (2023).

The NHS also encourages shared decision-making between the victims and healthcare professionals to enhance treatment for better outcomes. Community healthcare service, along with education, helps people to manage hypothyroidism efficiently and effectively for long term health and improved quality of life (NHS England, 2019).

The above figure demonstrates the main treatment strategies for hypothyroidism in NHS. Levothyroxine therapy is the main therapy about 90%, reflecting its role as the most common therapy for hypothyroidism. Lifestyle monitoring and follow-up account for 7%, meanwhile specialist endocrine treatment responsible for 3% as hypothyroidism treatment. (NICE, 2019; NHS, 2024).

8) Theoretical Models for Long-Term Condition Management

Effective management of long-term condition need integrated healthcare systems which assist patients with self-management and collaborative care. The House of Care Model (UK) and the Chronic Care Model (International) are two popular frameworks used for chronic disease management.

8.1) UK model: House of Care



Figure 13: House of care model UK

Source: Adapted from Year of Care Partnerships (n.d.) and NHS England (2015)

The House of Care Model delivers framework for coordination and person-centred care for patients living with long-term conditions.

The model uses the metaphor of house to demonstrate how the identical elements of the healthcare system should work closely to support

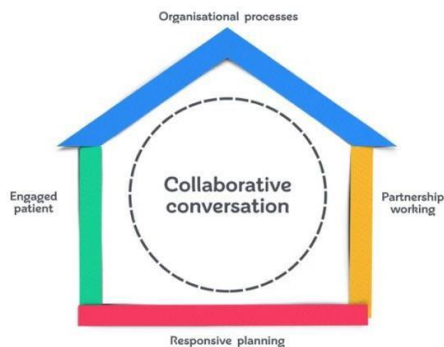


Figure 14: House of care model UK

Source: Adapted from Year of Care Partnerships (n.d.) and NHS England (2015)

care planning effectively and self-management (Coulter, et al., 2016). At the middle of this model, the care and support planning conversation takes place between patients and healthcare individuals. This conversation facilitates discussing their preferences, needs, and motives to make sure the decisions are made collaboratively (Fund, 2013).

house of care framework has four key elements:

- ✓ **Engaged and informed patients;** People participate in managing their condition and make healthcare decisions.
- ✓ **Healthcare professionals working in partnership;** Clinical support, shared decision-making and arranging personal care planning.
- ✓ **World Health Organisational processes and systems;** healthcare institutions provide resources and leadership for the patients.
- ✓ **Community resources;** Support social care, community groups, and voluntary organisations.

These components create a collaborative system that promotes holistic, patient-centred care and enhanced outcomes for patients with chronic illnesses (Coulter, et al., 2016).

8.2) International Model: Chronic Care Model (CCM)

The Chronic Care Model is an intentionally recognised framework to enhance chronic disease management through system-level healthcare reforms (Wagner, et al., 2001).

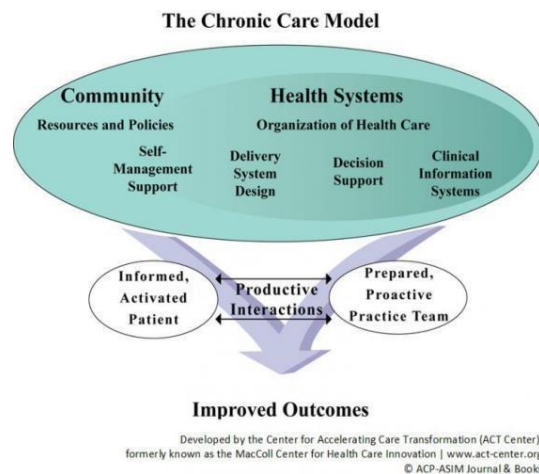


Figure 15: Chronic International Model

Source: Wagner *et al.* (2001)

The CCM includes six essential elements:

- ✓ Self-management support: Provide educational and behavioural support to manage patients' health.
- ✓ Delivery system design: Structured healthcare teams and planned patients' visits.
- ✓ Decision support: Help with clinical guidelines for treatment decisions.
- ✓ Clinical information systems: Monitor patients' data and health records.
- ✓ World Health Organisation: Prioritise chronic disease management through leadership.
- ✓ Community resources: External services that help patients with wellbeing. (Wagner *et al.*, 2001).

9) Implementation of Health and Social Care Policies in Long-Term Condition Management

Health and social care policies play important roles in managing long term condition in the United Kingdom. Chronic disease is one of the key burdens in the healthcare system, with studies reflecting that about 26 million people are living with at least one long-term condition in the UK (England, 2019).

The term conditions are forecasted to account for about 50% of all practitioner consultations and about 70% of hospital bed days, indicating the significance of an effective policy framework for chronic disease management.

9.1) Agenda for Local Health:

Local health authorities concentrate on increasing community knowledge of hypothyroidism, offering thyroid function tests in nearby clinics, and guaranteeing prompt diagnosis and treatment.

(Chaker, Bianco and Peeters, 2017).

9.2) The National Health and Political Agenda:

Governments at the national level carry out initiatives like national thyroid disease screening, iodized salt programs, and clinical recommendations for the accurate diagnosis and treatment of hypothyroidism.

(Garber *et al.*, 2012)

9.3) Agenda for Social Care :

Through long-term care, patient education, frequent follow-up, and assistance for vulnerable populations including the elderly and pregnant

women, social care aims to improve patients' quality of life.

(Chaker, Bianco and Peeters, 2017; Garber et al., 2012).

10) Provide recommendations for improvement of Hypothyroidism :

10.1) Person-centred care : focuses on adjusting care to the requirements, values, and preferences of the individual. promotes the patient and medical staff making decisions together. guarantees that patients are aware of the alternatives and results of their treatment.

(Chaker, Bianco and Peeters, 2017).

10.2) Self-Management:

teaches patients about symptoms, medication compliance, and hypothyroidism.

promotes changes in lifestyle, including food, exercise, and stress reduction.

offers resources for tracking symptoms, TSH levels, and overall health.

(Garber et al., 2012)

10.3) End of life care:

assures individuals with complex or severe hypothyroidism of their comfort and quality of life. emphasizes dignity, emotional support, and symptom management. includes family members and caregivers in the planning and decision-making process.

(Chaker, Bianco and Peeters, 2017; Garber et al., 2012).

11) Conclusion:

Hypothyroidism remains a common endocrine illness which can affect metabolic functions, physical health and the quality of life. It needs continuous clinical management and monitoring to keep it under control. (Hollowell, et al., 2002) stated that thyroid dysfunction affect considerable number of adult and women are more vulnerable in this case. This booklet has critically explored the fundamental triggers and risk factors connected with hypothyroidism, including autoimmune disorders and iodine imbalance. This booklet also emphasises the physical, psychological, and social effects on patients and their families.

Integrated healthcare strategies combining evidence-based treatment, patient education, and helpful frameworks are mandatory for better outcomes. House of Care and the Chronic Care Model are important to coordinate and manage chronic diseases. Research suggests that improved clinical monitoring and patient engagement can substantially reduce the risk of thyroid dysfunctions (Brent, 2002). Therefore, strengthening integrated healthcare approaches and promoting patient awareness remain essential for improving long-term health outcomes for individuals living with hypothyroidism.

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