Thyroid dysfunction and mental health: a qualitative study towards optimal treatment

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Declaration

‘I declare that this thesis that I have submitted to Dublin Business School for the award of Higher Diploma in Psychology is the result of my own investigations, except where otherwise stated, where it is clearly acknowledged by references. Furthermore, this work has not been submitted for any other degree.’

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Abstract

This qualitative study aimed to explore the experiences of individuals living with thyroid disease and their accompanying mental health difficulties, highlighting the importance of thyroid function screening to ensure best care and treatment of the thyroid patient. Semi-structured, face to face interviews were conducted to collect data from 3 participants and 1 participant submitted written answers. Thematic analysis led to the emergence of 4 main themes: depression, anxiety and panic attacks, problems with cognition and alternative treatments. The findings supported the thyroid dysfunction-mental health link and underscored the thyroid patient's problems with cognition. Treatment with synthetic thyroid hormone replacement led to considerable reductions in psychological symptoms. The findings also revealed that thyroid patients were using alternative treatments alone and in conjunction with traditional medicine with positive results. The findings have implications for the treatment of thyroid disease and provide a base for future research on thyroid disease and alternative treatments.

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Introduction

Dysfunction of the thyroid gland is widespread worldwide with an estimated 300 million people currently affected and 1.6 billion people at risk of thyroid conditions globally. It is estimated that over 50% of those affected could be unaware (Alam et. al, 2002). In Ireland alone, levothyroxine is one of the most frequently prescribed medicines in community drugs schemes reflecting a high level of treated hypothyroidism in clinical practice (National Medicines Information Centre, 2014). The association between thyroid dysfunction and mental health disturbances has been known for over a century and modern advances in biotechnology have led to a better, but not a full understanding of the influence of thyroid hormones in the pathophysiology of psychiatric disorders (Chakrabarti, 2011). The scope of literature consulted during the course of this research will be presented in order to point out the steady observations about the thyroid gland and associated mental health disturbances. Interest surrounding this topic has decreased and currently receives very little consideration in the etiology of mental illness. This paper will bring focus back to this often overlooked aspect in the diagnosis of mental health disorders.

Thyroid gland dysfunction

This small butterfly-shaped gland located in the neck is essential for normal functioning. Its main role is to produce and store thyroid hormones which are vital in maintaining numerous fundamental processes within the body, particularly metabolism, heart and digestive function (Wondisford & Radovick, 2009, p. 3). The thyroid is directed by the hypothalamus by way of the pituitary gland which sends thyroid stimulating hormone (TSH) into the bloodstream. This then travels to the thyroid causing the release of thyroxine (T4), which is converted to triiodothyronine (T3). In an individual with thyroid disease, the gland does not respond appropriately to the TSH causing the T3 and T4 levels to drop

(hypothyroidism) or to increase (hyperthyroidism) (Abraham et al., 2005). Thyroid destruction causes are not completely understood but some indications are: infections, cancer, surgery or the most common, Hashimoto's Thyroiditis (Rapoport, 1991). This is a chronic autoimmune disease characterised by a destruction of the thyroid due to immune cells attacking the healthy thyroid cells. The thyroid can become inflamed and enlarged, sometimes causing goitre. It typically progresses slowly over years with antibodies against thyroid peroxidise (TPO) causing chronic thyroid damage. Hashitoxicosis is an initial hyperthyroid phase lasting one or two months before thyroid hormone levels drop causing an underactive thyroid (Shahbaz et al., 2018, Bastung, 2016).

The thyroid-mental illness connection

Beyond the purely physical manifestations of thyroid disease such as the classic text book examples of 'weight gain/loss, hair loss and high cholesterol' (Wondisford & Radovick, 2009, p. 144), research reveals significant mental health disturbances in the thyroid patient. Disorders of the thyroid gland have long been linked to mental illness. This was first observed in 1888 when the Committee on Myxoedema of the Clinical Society of London first hypothesized a link between this extreme form of hypothyroidism and psychosis (Neal & Yuhico, 2012). The term 'myxoedemateous madness' was later coined by Asher in 1949 who described myxoedema as 'one of the most important, one of the least known, and one of the most frequently missed causes of organic psychosis' (Asher, 1949, p. 555). These earlier recorded cases of hypothyroidism psychosis closely resembled paranoia, schizophrenia and melancholia but there is still a reluctance to recognise this as a potential cause of psychosis today. The most common examples of mental health disturbances which often present due to a malfunctioning thyroid are depression and anxiety, but on examination of the thyroid patient, a myriad of dysfunction may be revealed from mild attentional impairment to substantial

delirium or psychosis (Heinrich & Grahm, 2003). Patients may be misdiagnosed as having clinical depression, bipolar disorder or paranoid schizophrenia (Hall, 1983).

Biological basis for mental health disturbances

It is important to distinguish between hyperthyroidism or thyrotoxicosis from mania or panic disorder (Greer, Ramsey & Bagley, 1973). It is possible that clinicians are not looking into the possibility of an underlying organic cause in patients presenting with depression, anxiety or problems with cognition. The most commonly affected cognitive areas are memory and executive function. This can be seen through functional magnetic resonance imaging (fMRI) studies showing evidence of decreased hippocampal volume in patients with overt hypothyroidism. The hippocampus plays a key role in consolidation of information especially in memory (Hickie et al., 2005). After six months treatment with levothyroxine, these abnormal functions were no longer observed in fMRI (Samuels, 2014). One study found that approximately 50% of patients with depression had hypothyroidism. It was also noted that up to 20% of patients with depression had detectable thyroid antibodies and high levels of thyroid antibodies were found in patients with bipolar disorder (Howland,1993). A neuroscientific study looked at the importance of the hippocampus as a thyroid hormone (TH) rich receptor area, describing the importance of this area of the brain for mood regulation (Yu et al., 2007). T3 receptors are high in concentration in the hippocampus. T3 is the biologically active form of thyroid hormone and even subtle changes lead to considerable changes in TSH levels which is why the standard method for screening for thyroid disease involves measuring TSH levels (Rosenthal, Goldner & O' Reardan, 2011). T3 has been shown to have a considerable benefit in the treatment of mood disorders. Rosenthal et al. (2011) explain how treatment with T3 can regulate mood both alone and in combination with antidepressant therapy. T3 has a serotonergic effect mainly through desensitisation of the 5-HTA1 receptor (serotonin receptor)

in the brain stem by way of T4 to T3 intracellular conversion, therefore increasing 5HT (serotonin) release in the hippocampus. There has been a positive correlation between serotonin levels and T3 levels and T3 has been shown to be as effective as lithium in the treatment of depression (Joffe et al., 1993). Interestingly, lithium treatment has also been shown to have powerful antithyroid effects exacerbating hypothyroidism or inducing hypothyroidism altogether (Lee & Hutto, 2008; Chakrabarti, 2011). Further clinical trials need to be conducted in order for T3 to be accepted as a treatment option for depression as not all patients will respond favourably to this hormone replacement therapy (Rosenthal et al., 2011). It is reasonable to say that by looking at the evidence of past research that thyroid replacement therapy can have antidepressant effects, yet it is still overlooked by many clinicians.

Case study – mania and hyperthyroidism

In addition to depression as a result of hypothyroidism, mania can be present as a result of hyperthyroidism. A biological explanation for this is that thyroid hormones increase the beta adrenergic receptor sensitivity, increasing catecholamine action leading to mania (Chakrabarti, 2011). In order to recognise hyperthyroidism in patients presenting with mania, research suggests that clinicians should firstly screen for thyroid dysfunction before treating with mood stabilizers or antipsychotics. Often patients are misdiagnosed as having bipolar disorder and later found to have a thyroid condition (Lee & Hutto, 2008). One study describes the case of a 59 year old female who presented with a manic episode consisting of decreased sleep, hypersexuality, impulsivity and psychotic symptoms. She was admitted to a psychiatric unit and placed on 300mg of lithium. Her dosage was increased to 900mg yet her psychosis and insomnia continued. On examination of her TSH level it was less than 0.005 mU/L when the normal range is within 0.4 -4.0 mU/L, further investigation revealed that her TSH had been depressed for over three years. Her symptoms of insomnia, psychosis and tremor should have

given rise to a suspicion of thyrotoxicosis when adequate dosages of lithium were given without results. She was started on methimazole for the treatment of hyperthyroidism and subsequently her sleep improved, with a rapid reduction of her psychotic symptoms (Lee & Hutto, 2008). This case study supports other literature that emphasises the importance of clinicians considering hyperthyroidism in patients presenting with manic symptoms, especially if they are only partially responsive to the standard treatment with psychiatric drugs.

Thyroid function screening

Dickerman & Barnhill (2012) argue that an active search for thyroid disease must follow when an individual presents with neuropsychiatric symptoms such as depression, mania and dementia, but they emphasise that abnormal thyroid function tests should be interpreted with caution and that psychiatric intervention should not be abandoned completely. Another study took sixty clinically diagnosed depressed patients and sixty healthy matched controls. The researchers used the Ham-D scale to classify depression into mild, moderate and severe grades and blood test kits to measure T3, T4 and TSH (Hamilton, 1960). The results showed a significant decline in T3 and elevation in T4 in the depressed patients compared to healthy controls, but no significant difference in TSH levels. As mentioned earlier, the TSH is the standard go-to test for most clinicians but the researchers of this study point out the importance of including a full panel of thyroid screening tests, particularly among depressive patients, in order to properly manage these cases (Kamble et. al, 2013).

Stress and autoimmune thyroid disease

It has been recognised that stressful events can exacerbate or induce autoimmune diseases and there seems to be an association between thyroid autoimmunity and depression (Pop et al., 1998; Dayan & Paniker, 2013). A recent study supports the theory that the immune system can be a factor contributing to mental disorders (Jucevičiūtė et al., 2019) The

researchers hypothesise that the dysfunction of the immune system leads to a reduction in monoamine synaptic readiness which is known to be a vital function in the pathophysiology of depression (Brigitta, 2002). The thyroid gland is most often effected by autoimmunity and many studies support the view that this autoimmunity can in turn cause mental health disturbances. Many clinical trials over the years have found a positive correlation between patients with elevated thyroid antibodies (TPOAb) and depression (Pop et al, 1998; Engum et al., 2002; Carta et al., 2004). The causes of many psychiatric illnesses are not fully known, particularly depression and bi-polar disorder. It is commonly hypothesised that genes, environmental and psychosocial factors play a part but it is not definitive (Jucevičiūtė et al., 2019). There is a need for clinicians to acknowledge biological factors, such as thyroid autoimmunity, as a cause of mental disturbances in order to improve patient care and quality of life (QoL).

Thyroid disease and quality of life

There are few studies that look into the impact of thyroid disease on QoL. However, one such study was found during the course of this research used a thyroid specific QoL measure called ThyPRO (Watt et al., 2010). The authors examined patients with autoimmune hypothyroidism, they did a thyroid ultrasound and took blood samples before the participants completed the questionnaire. The results showed that only TPOAb was related to QoL and not thyroid function but they outline that the vast majority of the participants were euthyroid, with only 2% being hypothyroid. They put this down to the design of their study as a limitation, the cross sectional design did not allow for a range in thyroid dysfunction and suggest a longitudinal design evaluating patients with autoimmune thyroiditis and normal thyroid function (Watt et al., 2010). Another limitation to the study is that it does not account for those who may have thyroid disease but have not been diagnosed. These individuals may have been

misdiagnosed as having a psychiatric illness and their QoL assessed on that basis, not looking into the glandular explanation for their symptoms.

Thyroid disease and mood disorders

Another study looks at symptoms, such as anxiety and insomnia, that are usually reported by patients with hyperthyroidism or thyrotoxicosis. In about 10% of cases, full blown mania can present as a result of hyperthyroidism but many of these patients have a personal or family history of a mood disorder. The study suggests, that although there may be a history of mood disorders, the thyroid should be treated first and antipsychotics/manic agents should only be prescribed when symptoms do not improve after restoring the patient to a euthyroid state (Chakrabarti, 2011). The study concludes that thyroid hormones have a major effect on brain activity and that mood disorders are closely associated with thyroid dysfunction, awareness of these facts are necessary in clinical settings. In addition to stressing the importance of thyroid hormones in relation to mood disorders, the study highlights the importance of future research in this area. Chakrabarti acknowledges that more extensive explanations about the precise cellular and molecular mechanisms fundamental to the role of thyroid hormones in mood disorders need to be explored. 'Bench to bed' studies are suggested as being potentially beneficial in improving knowledge of the thyroid-mental illness relationship. By taking what is known in science and biology, improvements of health outcomes could be developed by finding optimal ways to manage the potentially devastating effects of living with mental health symptoms that are actually a result of a malfunctioning thyroid (Chakrabarti, 2011).

It is wise for clinicians to be aware of and be highly suspicious of endocrinopathy in patients presenting with mental health symptoms. Failure to recognise thyroid disease as the cause of mental health disturbances may lead to difficulties in recovery of the thyroid gland and ultimately lead to exaggerated mental health symptoms. The studies consulted during this

research show support for the connection between thyroid pathology and mental illness, particularly depression and bipolar disorder. Clinicians need to pay attention to these findings in order to improve patient outcomes.

Rationale

A gap in the literature was noted, whereby most research was quantitative in nature.. A qualitative, idiographic study concerned with capturing the individual's perspective is needed. The current study will attempt to fill this gap by exploring the pervasiveness of psychiatric symptoms and diagnoses which are so often seen in the thyroid patient. This study will aim to unveil the struggles of the thyroid patient beyond the physical symptoms, exploring the thyroid patient's experience of mental health disturbances due to a malfunctioning thyroid. The nature of the study is exploratory and not designed to test a hypotheses but rather investigate a complex phenomenon. The data gathered from the participants narrative will be used to generate theory. If a more traditional quantitative design was used, there would be a threat of potentially diluting the honesty and depth of such complex data.

There is strong evidence, as outlined in the reviewed literature, that thyroid hormones play a major role in the regulation of mood and cognition, yet incorrect psychiatric diagnoses are widespread (Heinrich & Grahm, 2003). Thus, the current qualitative research will be a valuable contribution to the existing literature. Through qualitative analysis, the data can be organised and understood without loosing the richness and individuality of the responses. The findings may provide a basis for identifying common issues and may lead to earlier diagnosis and treatment of thyroid dysfunction and not just psychotherapeutic treatment. Using thyroid tests to assess psychiatric symptoms remains controversial, but the insights gathered through this phenomenological research may prove useful to healthcare providers in order to implement earlier interventions and change in thyroid patient treatment. By bridging the evidence-practice

gap, action can be taken to ensure that the thyroid patient is receiving the best care and treatment possible.

Research Questions

Participants were invited to share any general personal experiences about thyroid disease at the beginning of the interview. Participants discussions on the general topic of thyroid disease were self-directed to ease them into the interview which then naturally progressed with the help of some prompts.

1. Can you take me through from the start how you became diagnosed with thyroid disease? (prompts – what were your first symptoms/concerns? What tests were given to lead to the diagnosis? What was the name of the diagnosis given to you? What treatment options were you given?)
2. Diagnosis specifics (if not mentioned). Tell me about how your diagnosis was explained to you. (prompts – was it clear? What was your understanding at the time of the diagnosis? How did you feel/initial thoughts/ thoughts now surrounding diagnosis?
3. Take me through your treatment and how you felt/feel about the process in general. (prompts – what information was given to you about your treatment options? Were you told about any risks? How did you feel about the treatment? What were your expectations vs your experiences of the treatment?)
4. A malfunctioning thyroid often presents the same symptoms as a number of mental health issues including depression & anxiety, tell me about your own experiences surrounding this. (Prompts -how would you describe any mental health issues that you have had? Has there been a difference in these symptoms since starting treatment for your thyroid disease? Is there anything or anyone in particular (doctor/friend/therapy/book/group/website) that has been influential in the management of mental health symptoms?

5. Tell me about your coping mechanisms and future plans for dealing with this illness.

Methodology

Participants and recruitment

Since thyroid disease is so widespread, the strategy for recruiting suitable participants was by talking to people with known diagnosis of thyroid disease and anyone that they may know. Participants from all socioeconomic backgrounds were considered. The criterion for inclusion was: a) aged 18 years or older, b) diagnosed with chronic thyroid disease – hypothyroidism, Hashimoto's thyroiditis, hyperthyroidism or Grave's disease. Since the prevalence of thyroid disease is much higher in females, 3 females and 1 male took part. Two had a diagnosis of hypothyroidism and two with Hashimoto's disease. A strong effort was put in to find a participant with hyperthyroidism or Grave's disease but was not obtained. Participation was voluntary and no pay or incentives were provided in return for participation.

Design

The current study is a small scale qualitative study rich in descriptive data. Semi-structured interviews were carried out with a close researcher-participant relationship. The flexibility of a semi-structured interview allowed for a flowing conversation to evolve. Natural prompts and answers arose from the conversation, permitting the researcher to collect powerful and in-depth data. The study was idiographic and concerned with capturing the individuals perspective by using a phenomenological approach. Three of the interviews were face to face and one participant chose to submit a written response via email. A 'Grounded Theory' (Glazer & Strauss, 1967) approach was used in order to build a theory rather than empirically test a theory. The research questions and literature review by themselves led and supported

conceptual thinking and theory. Inductive reasoning was used to observe patterns and regularities in the data in order to reach a conclusion.

Ethics

Participants were informed of the nature of the study, participation was voluntary and participants could withdraw at any time. An information sheet and consent from was included in the invitation to participate as well as hard copies to read and sign before interviewing commenced (see Appendix A/B). Information sheets explained what the study was about, what taking part involved and any possible risks or benefits of taking part. Consent forms outlined that the interview would be audio recorded, retained and transcribed. It was made clear that the data would be stored in a password protected computer for 5 years. The consent form was signed by the researcher and participant in advance of the interview. In order to protect the identity of participants, privacy and anonymity was vital during the course of the research. Participants names were replaced by numbers and particular locations were omitted.

Debriefing occurred at the end of the study where the researcher identified any misconceptions that the participant may have developed. This also involved thanking the participant and a sheet was provided with researcher and supervisor contact details and information about withdrawing their consent for participation. Appropriate support groups and helplines were provided should they be affected by any of the issues raised during the study (see Appendix C)

Materials

A voice recorder application on a Microsoft Surface Pro 7 was used for primary recordings and the voice memo application on an iPhone 7 for backup. Gmail was used to send the participants information about the research and to set up interviews as well as obtain written interview responses from one of the participants. Microsoft Word was used to write up the

interview questions and to fully transcribe all interviews verbatim. Pen and paper was used to write notes and the software Nvivo was used in order to conduct a thematic analysis of the data.

Procedure

An interview schedule was prepared in advance to aid the researcher with the structure and flow of the interview. When ethical approval was granted by DBS, participants were contacted via email or text to set up interview dates and times. Written and verbal consent was obtained before the interview commenced. One interview was held at the participants home, two in a private area of a café and one participant submitted answers via email. Each participant was asked a similar set of questions relating to their overall experience of living with thyroid disease before moving onto the more sensitive topic of mental health. The questions were mostly open ended in order to allow for more scope to express themselves freely. Interviews lasted approximately thirty minutes. At the conclusion of the interview, subjects were given a debrief form. Follow up text messages were verbally agreed upon for the purpose of clarifying any statements made in the interview.

Data analysis

In order for a full familiarisation with the data, all the interviews were listened to and read multiple times by the researcher. A thematic analysis was conducted following Braun & Clarke's (2006) guidelines firstly by hand, creating codes and initial themes, later refining them by using the software Nvivo. In order to define the themes and labels, ideas were spoken about to other people in order to identify problems and gain more clarification. The thematic analysis was driven by grounded theory method in order to inductively generate a theories about thyroid dysfunction and mental health. The researcher referred back to the literature when conducting the analysis and critically reviewed the participant's responses in order to identify codes and organise emerging themes.

Results

The two main themes surrounding mental health that emerged from this research were 'depression' and 'anxiety and panic attacks'. A third important theme recognised was 'problems with cognition'. The participants reported experiencing their thyroid problems and these mental health states in different ways, either as co-related problems, independent problems or as uncertain as to whether it was their personal situations or the thyroid that was causing the mental health disturbances. The individual narratives were unique but there were recurring facets across their experiences. All 4 participants had experiences of depression, anxiety and 3 had experienced disorders of cognition. Another theme that emerged, which was not in the literature review, was 'alternative treatments'.

Theme 1: Depression

All 4 participants experienced depressive symptoms at different stages of their diagnosis, pre and post development of thyroid disease. Three out of the 4 participants had been prescribed antidepressants as well as thyroid hormones. Participant 2 described having a life-long battle with depression.

> *I've been in suicidal depression for a very long time (…) always, as long as I can remember, I've always been not happy (…) I think there was always a level of depression there for me".* (Participant 2)

At the time of the interview, Participant 2 was not taking any medications for thyroid disease or depression. They had been on levothyroxine for hypothyroidism in the past and the latest antidepressant taken was cipramel. Participant 2 also experienced insomnia, directly contributing it as a symptom of depression. There was an uncertainty in regards to whether depressive symptoms were a direct cause of thyroid dysfunction as they had been living with mental health difficulties for many years and there seemed to be a circle of cause and effect.

Even when medicated with antidepressants, pre- thyroid diagnosis, the depression still lingered. Participant 1's experiences with depression appeared to develop later in life and although they had been diagnosed with hypothyroidism almost 30 years ago, depressive symptoms only arose within the last five years. They mainly attributed this to aging. They took an Existentialist approach to life.

> *I would never said I've suffered from depression. I think people kind of overuse the word. And I have never been non-functioning. I have never been that I wouldn't do what I wanted to do. The only thing I found, and I thought was possibly more of an aging thing, was about (…) five years ago (...), I began to find that I was getting very 'Celtic', as I would call it. My thoughts could be quite morbid and the dark side would attract me more than the light side. (…) I wouldn't call it depression because it never really stopped me doing anything. It was just like, which I still believe to some extent, that life's one big con job. (…) but I think in order to get through it, you have to convince yourself it means more than it does. (*Participant 1)

Participant 1 also talked about irritability which is often a symptom of depression, mentioning that this was more to do with their personality than thyroid related.

> *(…) sometimes people tell me that I'm contrary and I'm irritable and that but I'm like that all my life. I don't think that's anything to do with my thyroid. (…) I don't think it's anything to do with me thyroid. It's just my personality. I can't blame everything on me poor thyroid, right?* (Participant 2)

Participant 1's GP prescribed Prozac immediately upon presentation of their depressive symptoms and they felt that the medication worked. Other than this late development of depression, Participant 1 describes having a straight forward experience in regards to thyroid disease and considers themselves lucky as it was picked up early. They mentioned that they

would not say they had a disease or ill health if someone asked them. Participant 4 recalled that when they visited the doctor when their existing depression intensified, that the doctor suggested that her antidepressant medication should be adjusted.

> *(…)she did suggest depression as a potential issue and I went along with it until I went back again. I was already taking antidepressants so I guess it was natural for a doctor to attribute how I was feeling to this. (…) I visited the doctor maybe three times before blood tests were ordered, in first visits she just adjusted my dose of antidepressants.* (Participant 4)

Participant 3 recalled a conversation pre-diagnosis of Hashimoto's thyroiditis, certain that it wasn't depression of the mind, but more of a bodily experience.

> *(…) it's like I'm in a total depression, except that I know I'm not depressed. (…) I wasn't depressed. I don't suffer depression. I don't get down. But this was, I would describe it as energetically down.* (Participant 3)

Participant 3 used metaphors often to describe symptoms and the slow decline in health. Metaphors may have been used to make sense of their struggles and in order to help others, who may not understand, to enter their world.

> *How do you boil a frog? You put the frog in the cold water and you can raise it by a degree and the frog will not leave the water because he can't sense the slight difference between one degree or two degrees and right up to one hundred degrees, the frog won't leave the water. And I was that frog. (…) The machine was just turning off (…) very little energy (…) no petrol in the tank. (…) its slow, you know. Its not like a car crash, it's like you're going down a hill slowly, you know, but you're going down."* (Participant 3)

Participant 3 experienced depression seemingly unrelated to the thyroid in the past and also directly related to the thyroid before diagnosis. Sadness was also experienced due to a change in life as a result of the thyroid dysfunction post diagnosis. Participant 4 experienced a sense of grief because of time lost due to being so ill with Hashimoto's disease. The despair experienced due to thyroid problems surpassed their existing depression.

> *I can honestly say I lost about two years of my life to my thyroid issues. I have suffered with depression since my teens and I have spent over a decade on and off antidepressants. I think for a long time, when my thyroid was starting to malfunction, I put it down to depression and so I didn't go to a doctor for a long time. I recall months and months on end where I would go to work, come home, get into bed at 5pm and only get up to eat something and then go back to bed until the next morning. (…) Thyroid disease definitely brought a whole new depression into my life and exacerbated how awful I felt mentally.* (Participant 4)

Although Participant 4 had a long history of mental health difficulties, since being treated with thyroxine in combination with antidepressants, they describe themselves now as a 'new' and 'different person'. Participants described having major stress in their lives: a divorce, an abusive relationship and single parenting, as well as physical stressors such as infection and problems with the liver. Participant 3 had significant problems with a dental infection and also had an operation to remove gallstones. Liver problems were experienced by three participants, Participant 1 linking a Hepatitis B vaccination to liver problems. Participant 2 also talked about vaccinations as a possible cause of their thyroid dysfunction. Extreme stress, whether psychological or physiological was experienced by all participants. Participant 2 seemed to have an understanding of their depression as stemming from a traumatic past rather

than directly related to the thyroid, yet from the literature, it is clear that a stressful life event can trigger autoimmune thyroid disease.

> *Or is it trauma? You know, I have found a lot of these things are linked to traumas so I have been working on that.* (Participant 2)

All participants had physical symptoms relating to their thyroid dysfunction which overlap with symptoms of depression such as tiredness and weight gain. These symptoms were experienced by all four participants.

> *I began to feel very tired. The tiredness got to a point where I would have to nap after work daily and on weekends I would spend most of the day in bed. No amount of rest seemed to alleviate the fatigue. (…) I rapidly piled on a large amount of weight (…) a friend said she noticed my weight had ballooned and I looked very puffy.* (Participant 4)

The relationship between thyroid dysfunction and depression is very apparent and in line with the reviewed literature. Participant 3 and 4 both had elevated thyroid antibodies which, according to the literature, have positive correlations with depression in patients. It is unsure if Participant 2 had autoimmune thyroid disease but the mental health symptoms were effecting their quality of life. There was a lot of doubt whether depressive symptoms were directly caused by thyroid disease in Participant 1 or due to life circumstances.

Theme 2: Anxiety and panic attacks

None of the participants explicitly mentioned symptoms of mania or psychosis, but anxiety and panic attacks were a major issue for all participants. When presenting to the doctor with anxiety, thyroid issues were not discussed at all.

> *I remember going to one doctor here, very, very distressed and she just wrote me up a prescription for Valium or something in like five minutes. Mad!* (Participant 4)

Generalised anxiety and panic attacks were experienced post diagnosis and when medicated with levothyroxine, but it was hard for participants to attribute this to the thyroid dysfunction, medication or their personal life stressors at the time.

> *I had a bit more anxiety but its awfully hard to say whether it was directly related. I remember I had a panic attack (…) I was about two years on the thyroxine. Like my levels were normal (…) there was about two/three years where I had panic attacks.* (Participant 1)

Participants described their very frightening experiences of panic attacks. Participant 1, who was a nurse, had prior knowledge of such attacks and was able to maintain a sense of control during the episodes. Throat sensations and an inability to breathe properly were common symptoms of their panic attacks.

> *(…), I had a polo, I've never worn a polo neck again. (…) I will not wear one because thee feeling comes back. I had a polo neck on me and I actually felt like it turned into one of those metal things (…). It was getting tighter and tighter and I couldn't breathe. (…) I was pulling the collar but it was like it had turned into metal and it was choking me and I was going, 'Jesus Christ, I can't breathe' (…) this is a panic attack. You've read about them, you've heard about them, you've treated patients with them. (…) And I talked myself out of it but I will never forget the sensation. And I have never worn a polo neck since then.* (Participant 1)

One participant assigned mental health symptoms as being physical initially, for example, thinking a panic attack was a heart attack. This participant mentioned being on a very high dose of levothyroxine, 200mg, which is the maximum dosage (IBM Watson Micromedex, 2019). Overmedication with thyroid hormones may lead to hyperthyroidism and the effects on the individuals psychological state are discussed in the reviewed literature. The participant was referred to a cardiologist but was told it was just anxiety or stress related.

Hashimoto's disease can have symptoms of hyperthyroidism in the early stages of the disease before total destruction of the gland ensues (Shahbaz et al., 2018) Participant 4 describes a troubling period in the lead up to a diagnosis of Hashimotos. It is possible that it was an episode of psychosis with negative symptoms.

> *I had take three weeks off work. I developed an extreme phobia of socialising and wouldn't take phone calls or meet people and this particular period of my illness was the toughest.* (Participant 4)

Participant 2 had abandoned all traditional western medicine even with a diagnosis of depression and hypothyroidism. Their mental health symptoms seemed to have a profound effect on them.

> *(…) it's like I'm drowning, but I'm just drowning and drowning. (…) I can't even come up for air. (…) I'm swimming in the sea and like, no one can actually help me.* (Participant 2)

The participants responses show the clear link between thyroid disease and anxiety and panic attacks. The consequences have been distressing for the individuals and this obvious connection has been overlooked by their clinicians.

Theme 3: Problems with cognition

In line with the literature outlining the important role of thyroid hormones and cognition, 3 of the participant's experienced profound problems with cognitive abilities. They all mentioned 'brain fog' as being particularly debilitating.

> *Things were breaking down on me, my mind wasn't functioning. I couldn't really retain things or concentrate very well.* (Participant 3)

> *I had terrible brain fog, I couldn't concentrate on anything and I felt like the creative part of me was gone. I couldn't really think clearly. (…) I was living in a horrible fog and I couldn't concentrate or socialise.* (Participant 4)

Dysfunction of the thyroid gland can mimic symptoms of dementia as mentioned in the literature (Dickerman & Barnhill, 2012). Problems with memory were significant.

> *(…) I couldn't remember things very well and even in work, I was struggling to remember things.* (Participant 3)

Although participant 1 did not seem to experience cognitive decline, their nursing career had exposed them to situations in which the thyroid and dementia or cognitive disorder were intrinsically linked.

> *(…) sometimes older people came in and where diagnosed with dementia and it turned out they stopped taking thyroxine. (…) I would hope to Jesus that if I ever end up in a nursing home or a bit flippin' doolally that they would cop on that I'm on thyroxine.* (Participant 1)

Participants 3 and 4 described a massive improvement in cognitive symptoms within weeks of being treated with levothyroxine. As mentioned in the literature, hypothyroidism may present as cognitive decrement especially in memory and executive function which is

reflected in the participants concentration levels, problems remembering things and a lack of creativity. Participant 2 disregarded that they had a diagnosis of thyroid disease and although they knew it wasn't a good thing, their mechanism for dealing with it was 'ignoring'. They didn't think they had any symptoms relating to the thyroid during the time of the interview but admitted to neglecting their health in the past. It was suggested by the researcher that they visit a doctor and have a full thyroid panel of bloods taken.

Theme 4: Alternative treatments

'Alternative treatments' was not evident as a theme in the literature review. In contrast, all of the participants reported trying alternative treatments as a way in which to manage their thyroid dysfunction or mental health issues. Two of the participants used natural desiccated pigs thyroid gland over synthetic hormones like levothyroxine, but both continued long term on levothyroxine after experiencing side effects. Participant 1 attended a homeopathy practice when first experiencing symptoms and was put on natural thyroid hormone which worked for six years before thyroid blood levels became unstable, levothyroxine was then prescribed by a G.P.

> *I did try that (Armour) (…) and then I got a kind of a rash (…) along my belly button. (…) They did a biopsy to check that out and they can't find any reason for it, (…) It didn't work so once I went back off the Armour, the rash went.* (Participant 3)

Diet was a significant factor in the treatment of the participant's thyroid related symptoms. Gluten intolerance was experienced by the participants and eliminating it from their diets eased a lot of symptoms as well as helping to control their weight.

> *(…) if I'm eating a healthy diet, I feel grand but (…) if I'm just eating on the run, (…) and its scones and its bread, I could actually put on four pounds in a*

week, my rings won't go on my fingers and my joints start to ache. Its all to do with refined carbohydrates. (...) It absolutely bloats me and makes me feel sluggish as well. (Participant 1)

*When it comes to the thyroid, food has (...) been helping me and I can see the effects of different foods when I eat (...) wholegrains and whole foods diet that I do, I am a lot better (...) the symptoms are definitely less. (...) at the time back then, it was the gluten free, the celiac disease was just like, 'oh that's just in your head, you're crazy'. I learned I'm intoleran*t, *I've had all the tests, (...) I was really called crazy. So I started looking into alternative treatments a long time ago.* (Participant 2)

Participants were let down when medication alone didn't cause them to loose weight but eating a clean diet and avoiding gluten where possible was considerable in managing weight gain. Sometimes dieting became extreme.

(...) I just threw myself into dieting culture, to loose all that weight, (...) going very strict and then going into an eating disorder. (Participant 2)

I know a pill can't reverse weight gain but I did feel really deflated that something out of my control had made me not feel or look like myself anymore. (Participant 4)

Participant 4 relied on exercise as an alternative treatment for thyroid related symptoms.

I took up the gym and although it was a battle at the start, I have been consistently going for almost three years. It has done wonders for my fatigue and brain fog, which in turn has alleviated my depression. (Participant 4)

Self-help books were also an important element in the treatment of depression and anxiety. The books, 'Fear the fear and do it anyway' (Jeffers, 1991) and 'Dare' (McDonagh, 2015) were mentioned.

> *Depression is actually normal. (…) it was a very, very good book (…) it just brought back into focus the fact that the human condition is prone to being negative at times and its just a matter of managing it. (…) I'd be intelligent enough to sort of weed out the nonsense from something that might be helpful.* (Participant 1)

Holistic treatments were also used to manage mental health issues. A holistic approach to healing the thyroid and mental disturbances was particularly important to Participant 2 as they felt that Western medicine had somewhat failed them. They talked about Ayurveda, which was described as an ancient Indian healing, a practice of balancing the bodily systems through diet, herbs and yoga breathing. Participant 3 also mentioned that their spouse was a herbalist but they declined to use it as an alternative treatment and relied on traditional medical practice. Participant 2 also used acupuncture and massage as alternative treatments in order to bring about balance in the body.

Discussion

The main aim of this study was to explore the psychiatric symptoms and diagnoses that are often seen in the thyroid patient. It attempted to fill a gap in literature by producing an in depth qualitative study where the majority of research on the topic of thyroid dysfunction and mental health is quantitative in nature. The study was concerned with capturing individual experiences in order to gain a better understanding of living with thyroid dysfunction and associated mental health difficulties. There is a chance that 'psychiatric' presentations actually have biological underpinnings as outlined in the literature review. This paper offers information

to healthcare providers that may minimise missed thyroid diagnoses, ensuring the highest possible care and treatment for thyroid patients. The findings were in line with the reviewed literature which consistently reported a significant connection between thyroid dysfunction and mental illness. Depression and anxiety were the most common mental health disturbances experienced by all 4 participants. Participants also experienced problems in cognition which can coexist with depression, yet, as the literature points out, is a completely separate phenomenon in thyroid patients. The reviewed research demonstrated that treating hypothyroid patients with levothyroxine can reverse abnormalities in specific brain structures that are important in cognitive functioning (Samuels, 2014). The current study mirrors this result with participants reporting a highly significant reduction of cognitive problems of memory and concentration upon treatment with levothyroxine. A theme that was prominent but not explored in the literature was 'alternative treatments'. Based on the analysis, there was strong evidence of a high level of engagement with alternative treatments, such as natural desiccated thyroid hormone replacement, reading self-help books, a gluten free diet, exercise and alternative healing practices to combat physical and psychological symptoms of thyroid disease.

The relationship between thyroid dysfunction and depression was experienced by participants as both independent and inter-related. Three out of 4 participants experienced depression before their diagnosis which they did not directly attribute to their thyroid disease and described a worsening of mental health issues prompting them to investigate further. It is not entirely unreasonable to suggest that, due to the slow progression of autoimmune thyroiditis over many years, participant's mental health symptoms were always attributable to thyroid dysfunction. As there is no way to empirically support this hypothesis, it remains a retrospective speculation. Participants using a combination of antidepressant therapy and levothyroxine or levothyroxine alone reported major improvements in mental health. The mood regulating effects of thyroid hormone replacement alone and in combination with

antidepressants was evident and in line with the reviewed literature (Joffe et al., 1993, Yu et al., 2007).

Stress has been shown to aggravate or induce autoimmune thyroid disease (Pop et al., 1998, Dayan & Paniker, 2013). The participants experienced psychological stress relating to interpersonal conflicts, physiological stress of infections and reactions to vaccinations. Participant's also described stressful events post diagnosis causing a flare up in symptoms, particularly psychological disturbances. This is consistent with the literature supporting the view that autoimmunity can cause mental health disturbances (Brigitta, 2002). Two out of 4 participants had positive results for thyroid antibodies and a diagnosis of Hashimoto's thyroiditis. The literature points out a positive correlation between elevated thyroid antibodies and mental health issues, such as depression and bipolar disorder (Howland, 1993). One participant was unsure whether there were antibodies present at diagnosis. Hashimoto's disease is the most common cause of thyroid destruction and it is possible that this participant's illness was due to an autoimmune response but cannot be verified without blood tests (Rapoport, 1991). This participant was not taking any thyroid hormone replacement at the time of the study and had been experiencing ongoing depressive symptoms even when medicated with antidepressants in the past. Treatment with thyroid hormone, such as the synthetic form levothyroxine, has been shown to have considerable benefits in the treatment of mood disorders (Rosenthal et al., 2011). This effect is evident in the other participants with Hashimoto's disease. They experienced an overwhelming reduction in depressive symptoms when treated with levothyroxine. One participant did not have elevated thyroid antibodies and reported no depressive symptoms for almost thirty years. Hypothyroidism was detected on routine blood tests before the patient experienced any symptoms and they were prescribed thyroid hormone replacement early in treatment. These findings support the literature that emphasises a need for thyroid function screening when patients present with psychiatric symptoms (Dickerman &

Barnhill, 2012). Further interpretation also points out a necessity for general screening in asymptomatic patients which may be helpful in early detection and lead to better treatment outcomes.

All participants experienced negative effects to their QoL as a result of their physical and psychological symptoms. The relationship between TPOAb and QoL found in Watt et al.'s (2010) study correlate with the current study's findings in participants with autoimmune thyroid disease. It does not account for those with hypothyroidism alone which confirms the need for a full panel of thyroid screening blood tests when assessing those presenting with mental health symptoms. This backs up the reviewed literature which emphasises testing for thyroid antibodies and not just TSH in order to best manage individual cases (Kamble et al., 2013).

The reviewed literature demonstrated the profound connection between thyroid dysfunction and mania and psychosis. Mania is largely recognized as a result of an over active thyroid (hyperthyroidism) and both are associated with bi polar disorder (Lee & Hutto, 2008, Chakrabarti, 2011). No participant in the current study had a diagnosis of overt hyperthyroidism or bipolar disorder, but it is known from the literature that in Hashimoto's disease, a period of hyperthyroidism occurs before full blow hypothyroidism develops (Shabaz et al., 2018). One participant in the current study was prescribed Valium when presenting with high levels of nervousness and anxiety and describes a period of social isolation akin to negative psychosis in the weeks predating a thyroid diagnosis. It took several trips to the doctor before a thyroid problem was considered. This finding underscores the literature which emphasises a need for clinicians to seriously consider the possibility of an underlying biological cause for mental ill health before treatment with psychiatric drugs (Asher, 1949, Greer, Ramsey & Bagley, 1973, Hall, 1983, Lee & Hutto, 2008, Dickerman & Barnhill, 2012).

The results of this study showed that anxiety and panic attacks were greatly experienced by all participants. Interestingly, the generalised anxiety or panic attacks transpired post treatment with levothyroxine. Anxiety is typically associated with hyperthyroidism or thyrotoxicosis (Chakrabarti, 2011). A possible indication is overmedication with levothyoxine leading to hyperthyroidism. It is also possible that the panic attacks are completely unrelated to the thyroid dysfunction. However, the evidence from the literature outlined the biological and neurological basis for mental health disturbances, even in subtle changes in thyroid hormone concentration. This suggests that these panic attacks have roots in the thyroid. The throat sensations experienced by the participants when having a panic were of particular interest. Participants described choking and tightness in the throat area and an inability to breathe. These symptoms overlap with the symptoms of thyroiditis where the gland becomes inflamed and enlarged (Bastung, 2016). Clinicians often look at the participant's anxiety as purely psychological but these results, again, stress the importance of investigating a biological cause for mental health symptoms, especially anxiety and panic attacks (Kamble et al., 2013).

The third theme identified, 'problems with cognition', mirrored the literature's findings which saw, using fMRI, a decrease in hippocampal volume in those with overt hypothyroidism. The hippocampus plays a key role in memory consolidation (Samuels, 2014). The current study does not use fMRI to ascertain abnormalities in the participant's brain structures, but upon exploration of their symptoms, problems with memory and impairments in attention emerged. For the most part, these symptoms disappeared when treated with levothyroxine. Dickerman & Barnhill (2012) point out that thyroid disease should be considered when a patient presents with depression, anxiety and also dementia. All participants were relatively young upon diagnosis, under the age of forty and dementia was not considered. The focus on thyroid screening is, yet again, prominent and in line with the reviewed literature (Kamble et al., 2013).

A theme that emerged, not included in the literature review, was ‘alternative treatments’. This is an important finding that may lend to further research in the treatment of thyroid disease. Participants experimented with natural desiccated pig’s thyroid which contains the active T3 as opposed to T4 only medications like levothyroxine (McAninch & Bianco, 2019). As the literature points out, T3 has powerful antidepressant qualities (Joffe et al., 1993). Not everyone responds well to this treatment and participants returned to the synthetic hormone (Rosenthal et al., 2011). The association between thyroid dysfunction and gluten was considerable, majority of participants reported experiencing adverse effects and worsening of their hypothyroid symptoms when they consumed a diet high in gluten. Participant’s reported reading self-help books as a way to cope with anxious and depressed moods and experienced positive outcomes. Exercise was also a positive factor in lifting mood and also reversing weight gain. Acupuncture and massage were also treatments that had a positive effect on mental and physical symptoms. It was clear from this emerging theme, ‘alternative treatments’, that instead of just taking a pill to manage symptoms as advised by their healthcare providers, participant’s empowered themselves to gain greater control over their health.

Strengths and limitations

The strengths to this study include its qualitative methodology, there is a scarcity of research exploring the individual experiences of thyroid patients. The semi structured interviews allowed the participants to disclose powerful information about their personal situations and experiences which contributed to rich findings and an in depth analysis. There was also numerous limitations to the study. Due to the qualitative nature of this study, it was heavily directed by the researcher which may have introduced bias throughout the study and analysis. The views expressed by the participants reflect only those from a large suburban commuter town. To minimise this effect, future studies should recruit participants from other

rural and urban populations. This study represents only those with a diagnosis of hypothyroidism and Hashimoto's disease so the voice of those living with hyperthyroidism and Grave's disease is not heard. One participant submitted written answers and although this yielded valuable information, a face to face interview may have produced richer data.

Future research

Future studies need to focus on whether psychological conditions could be improved by firstly treating thyroid dysfunction. If this is ignored, there is a threat to the patients quality of life and also a risk of progression to more severe thyroid dysfunction and worsening mental health issues. There is a danger here, especially with regards to autoimmune thyroid disease, where antibody levels are rarely screened for, that preventative interventions for the management of mental disturbances as a result of high levels of thyroid antibodies will be compromised. Future research could benefit from obtaining thyroid blood screening of participants at the time of interview. It would provide a useful tool in assessing whether their symptoms correlated with optimal levels and whether there was elevated thyroid antibodies in those most symptomatic. It would also be interesting to investigate the thyroid and antibody levels in participants who, like the one in the current study, are not medicated and using purely alternative treatments to manage symptoms.

The 'alternative treatments' finding is significant as it may provide a base for healthcare providers to inform patients on alternative ways in which to manage their illness if they feel let down by the traditional medical approach. It also paves the way for future research, not just on thyroid disease and alternative treatments, but on empowerment of the thyroid patient and its health benefits. Studies examining the effects of gluten on the thyroid and mental health could prove ground-breaking in the management of thyroid dysfunction and autoimmunity. Studies exploring the stress-thyroid relationship, incorporating stress reducing alternative treatments

and their benefits, would also be helpful to guarantee that all avenues towards best treatment for thyroid patients are explored.

Conclusion

This study captured the experiences of people living with thyroid dysfunction. Through careful analysis, it identified three important themes which related to the reviewed literature: ‘depression’, ‘anxiety and panic attacks’ and ‘problems with cognition’. A forth theme not included in the literature emerged: ‘alternative treatments’. The findings have implications for the treatment of thyroid disease and the insights gathered should be used by clinicians to carefully consider whether there is a biological explanation for patients psychiatric symptoms. Full thyroid blood work should be drawn as there is an over reliance on the typical TSH measurement. If thyroid disease is confirmed, clinicians should not abandon psychological support altogether. Due to the circular nature of the cause and effect of thyroid disease and mental health, it is difficult to know where one starts and the other ends. A holistic approach must be implemented incorporating medication and alternative treatments ensuring the best possible treatment outcomes and quality of life for the thyroid patient.

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Appendices

Appendix A

INFORMATION SHEET

Title: Thyroid dysfunction and mental health: a qualitative study

I would like to invite you to take part in a research study. Before you decide you need to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully. Ask questions if anything you read is not clear or if you would like more information. Take time to decide whether or not to take part.

WHO I AM AND WHAT THIS STUDY IS ABOUT

My name is Amy Buckley and I am a post graduate student of Psychology at Dublin Business School. This study aims to explore individuals experience of living with thyroid disease and the psychological symptoms associated with it. This research will go towards compiling my final thesis project for my Higher Diploma in Psychology.

WHAT WILL TAKING PART INVOLVE?

Topics that we will discuss will include your diagnosis, general health, mental health, particular symptoms associated with thyroid disease and your experience and satisfaction with healthcare professionals and doctors. The interview will take place at a time and in a private and quiet place that is convenient to you. The interviews will be audio recorded.

DO YOU HAVE TO TAKE PART?

Your participation is completely voluntary and you have the right to refuse participation, refuse any question and withdraw at any time without any consequence.

WHAT ARE THE POSSIBLE RISKS AND BENEFITS OF TAKING PART?

The benefits of taking part in this research include giving a better understanding of what it is like to live with thyroid disease from a patients perspective for the wider public and medical profession. By gaining a better understanding , the quality of care to thyroid patients could be improved.

Risks involved in taking part in this research include the possibility of psychological distress when talking about your experiences of living with this illness and your relationship with

healthcare professionals. If such a situation arises, you may stop the interview at any time or withdraw completely. Appropriate direction to support groups/helplines will be offered to you.

WILL TAKING PART BE CONFIDENTIAL?

Your confidentiality and anonymity will be treated with upmost importance. Any identifying information such as your name or any locations mentioned will be changed or omitted from the research in order to protect your identity.

HOW WILL INFORMATION YOU PROVIDE BE RECORDED, STORED AND PROTECTED?

The interview will be audio recorded and the data will be stored in a password protected device/locked safe. The researcher is the only person who will have access to this data. The data will be stored for 5 years before being destroyed. Under freedom of information legislation, you are entitled to access the information you have provided at any time

WHAT WILL HAPPEN TO THE RESULTS OF THE STUDY?

The results of the study will be made available to you should you wish to view. They will be used to complete my research thesis and will be submitted to Dublin Business School for grading and possible publication.

WHO SHOULD YOU CONTACT FOR FURTHER INFORMATION?

Please do not hesitate to contact me, Amy Buckley via email: xxxxxx@mydbs.ie or my Supervisor, Rosie Reid: rosie.reid@mydbs.ie

[THANK YOU]

Appendix B

CONSENT FORM

Thyroid disease masquerading as mental illness and the doctor-patient relationship, a qualitative study.

Consent to take part in research

I…… voluntarily agree to participate in this research study.

I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.

I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.

I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.

I understand that participation involves discussing sensitive topics surrounding thyroid disease, mental health and the patient-doctor relationship.

I understand that I will not benefit directly from participating in this research.

I agree to my interview being audio-recorded.

I understand that all information I provide for this study will be treated confidentially.

I understand that in any report on the results of this research my identity will remain anonymous. This will be done by changing my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.

I understand that disguised extracts from my interview may be quoted in the research thesis, conference presentations and published articles.

I understand that if I inform the researcher that myself or someone else is at risk of harm they may have to report this to the relevant authorities - they will discuss this with me first but may be required to report with or without my permission.

I understand that signed consent forms and original audio recordings will be retained in Dublin Business School for 5 years in a password protected device/locked safe.

I understand that a transcript of my interview in which all identifying information has been removed will be retained for 5 years. I understand that under freedom of information legalisation I am entitled to access the information I have provided at any time while it is in storage as specified above.

I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Researcher: Amy Buckley Email: xxxxxx@mydbs.ie

Supervisor: Rosie Reid Email: xxxxxx@dbs.ie

Signature of research participant

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Signature of participant Date

Signature of researcher

I believe the participant is giving informed consent to participate in this study

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Signature of researcher Date

Appendix C

Debriefing Sheet

Thank you for your participation in this study exploring thyroid dysfunction and mental health. Your contribution is valued as it may lead to increased thyroid function screening for those experiencing mental health difficulties and ultimately better care for thyroid patients. If you have been affected by any of the questions or issues raised in this study, please contact one or more of the support services listed below. Alternatively, please do not hesitate to contact me or my supervisor should you have any concerns or queries relating to this research. You may withdraw from this research at any time.

Researcher: Amy Buckley Email: XXXXXX@mydbs.ie

Supervisor: Rosie Reid Email: XXXX@dbs.ie

GROW: www.grow.ie Tel: 1890 474 474 Email: info@grow.ie

MENTAL HEALTH IRELAND: www.mentalhealthireland.ie Tel: 01 2841166

THYROID SUPPORT IRELAND: https://www.facebook.com/ThyroidIreland/

Appendix D

Semi-structured interview questions

1. Can you take me through from the start how you became diagnosed with thyroid disease? (prompts – what were your first symptoms/concerns? What tests were given to lead to the diagnosis? What was the name of the diagnosis given to you? What treatment options were you given?)
2. Diagnosis specifics (if not mentioned)

   Tell me about how your diagnosis was explained to you. (prompts – was it clear? What was your understanding at the time of the diagnosis? How did you feel/initial thoughts/ thoughts now surrounding diagnosis?
3. Take me through your treatment and how you felt/feel about the process in general. (prompts – what information was given to you about your treatment options? Were

you told about any risks? How did you feel about the treatment? What were your expectations vs your experiences of the treatment?)

4. A malfunctioning thyroid often presents the same symptoms as a number of mental health issues including depression & anxiety, tell me about your own experiences surrounding this. (this topic may have come up previously when discussing initial symptoms) prompts – how would you describe any mental health issues that you have had? Has there been a difference in these symptoms since starting treatment for your thyroid disease? Is there anything or anyone in particular (doctor/friend/therapy/book/group/website) that has been influential in the management of mental health symptoms?
5. Tell me about your coping mechanisms and future plans for dealing with this illness.