

Quality of Life among Hypothyroid Patients across Public Sector Hospitals in Taxila, Wah Cantt Distt: Rawalpindi - A Cross-Sectional Study

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ABSTRACT

Background:

Hypothyroidism is a common endocrine disorder which can affect quality of life (QoL). Limited evidence exists locally on factors influencing QoL among hypothyroid patients.

Objective:

To assess the QoL of hypothyroid patients and determine its association with disease duration, treatment duration, and compliance.

Methods:

A descriptive cross-sectional study was conducted over the span of 2 months in clinics, hospitals, and laboratories of Taxila/Wah Cantt, District of Rawalpindi. A total of 71 patients with hypothyroidism were recruited through convenience sampling. Data were collected using a structured questionnaire including sociodemographic and clinical variables, as well as the WHOQOL-BREF (Urdu) tool.

Results:

The assessment of quality of life (QoL) of thyroid patients showed that 23.9% of the participants had good quality of life, while 73.2% reported having moderate QoL. Only 2.8% reported poor QoL. On chi-square, a significant association was found between WHOQOL score and age of the respondent, compliance with the treatment, dose of medication and duration of treatment, whereas multiple linear regression showed that compliance with medication had a significant positive association with QoL, while disease duration and treatment duration were not significant predictors.

Conclusion:

Treatment compliance is a key determinant of QOL in hypothyroidism. Strategies to improve adherence may enhance patient outcomes.

Keywords: Hypothyroidism, Quality of life, WHOQOL-BREF, Compliance

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INTRODUCTION

Thyroid hormones are critical to the proper development of various human tissues and regulate the metabolism of almost all cells and organs in the human body throughout one's lifespan (1). Dysregulated thyroid function can result in predictable weight and lipid abnormalities, weight gain and hyperlipidemia for hypothyroidism, and weight loss with hyperglycemia and insulin resistance for hyperthyroidism. More recently, reviews have reiterated thyroid hormone's involvement in the maintenance of metabolic balance and the management of cardio-metabolic risk (2).

Thyroid dysfunction (TD) is marked by an excessive or insufficient secretion of thyroid hormones (TH). TDs are present as either hypothyroidism (either clinical or subclinical) or hyperthyroidism (either clinical or subclinical), indicated by circulating concentrations of free triiodothyronine (FT3), free thyroxine (FT4), and TSH (3). The deficiency of thyroid hormones results in a clinical condition known as hypothyroidism, which is, in fact, fairly common in the general population (1).

More than 1 billion individuals reside in regions lacking adequate iodine, spanning from Southeast Asia and South America to Central Africa. In America, the population identified with hypothyroidism is 4.6% while hyperthyroidism stands at 1.3%. In comparison, these figures in European countries were 3.05% and 0.75% respectively. Estimates suggest that 1 in 10 men suffers from thyroid disease, while the ratio is 1 in 8 for women. It is believed that there is a 50% rate of undiagnosed or misdiagnosed thyroid conditions. While not classified as a non-communicable disease (NCD), it is widely accepted that TDs serve as precursors to various NCDs, including diabetes mellitus, hypertension, cancer, and more. In Pakistan, the prevalence of hypothyroidism and hyperthyroidism stands at 4.1% and 5.1%, while 'subclinical' hyperthyroidism and subclinical hypothyroidism is at 5.8% and 5.4% respectively. There is a notably higher percentage of hypothyroidism and hyperthyroidism among females as compared to males and in older age groups compared with younger population. (4, 5). Another retrospective study in Karachi reported similar rates:

hypothyroidism 4.1% and hyperthyroidism 5.1% among tested population where as in Nawabshah (Sindh), among patients presenting with suspected thyroid dysfunction, subclinical hypothyroidism in females was 16.0%, overt hypothyroidism in females 9.2% and males had a lower rate (~6.4%) for overt hypothyroidism (6).

International narrative and systematic reviews confirm that overt hypothyroidism treatment generally improves QoL, particularly the physical and psychological domains, but a subset of patients reports persistent symptoms and impaired QoL despite normalized TSH (7). Most patients on thyroid hormone replacement therapy, particularly levothyroxine, have their TSH levels normalized. However, a considerable number continue to face the lingering symptoms, which negatively impact their Quality of life (QoL) (8).

For Pakistan, WHOQOL-BREF population defaults have been established and it seems appropriate for the clinical assessment of QoL. Availability of good representative studies that specifically use the WHOQOL-BREF with hypothyroidism patients is inadequate. The majority of studies that focus on QoL for hypothyroidism patients in Pakistan are of low sample size and of poor design (9). This study aimed to assess the quality of life of patients with hypothyroidism and to identify its relationship with various factors by filling the gaps by looking beyond the clinical aspects of hypothyroidism and focusing instead on how patients themselves experience the illness. By exploring quality of life in adult patients with hypothyroidism and examining how it relates to factors such as duration of illness, treatment use, and compliance with medical advice, this research will provide insights that are specific to our setting. The findings can help healthcare providers better appreciate the lived experiences of their patients and may also guide the development of more patient-centered strategies for managing hypothyroidism in Pakistan.

Methodology: Purpose and Type of the Study This research was conducted to determine the quality of life in individuals with hypothyroidism and to identify its

relationship with various factors. The research is descriptive and analytical.

Sampling and participants

This research was conducted over the span of 2 months in clinics, hospitals, and laboratories of Taxila/Wah Cantt, District of Rawalpindi. The sample size was calculated using WHO sample size calculator with a sample proportion of 4.8% and a margin of error of 0.05, resulting in a minimum sample size of 71⁽¹⁰⁾ patients (95% confidence). Inclusion criteria: Individuals who have been diagnosed with hypothyroidism, irrespective of age and duration. Exclusion criteria: Patients having other chronic diseases (Diabetes, hypertension, arthritis etc) were excluded from the sample. Data Collection Tools: Data was collected using structured questionnaire comprising of two parts. Part 1 included a sociodemographic profile of the patient, recent lab reports, duration of treatment, dosage and compliance to treatment. Part 2 comprised of the Urdu version of WHOQOL-BREF questionnaire (translated by the WHO)(11), specially designed to assess the quality of life of hypothyroid/underactive thyroid

Results:

According to this study, 71 respondents participated in the survey. The participants consisted of all ages, with most of the patients (42.3%) falling between 41-60 years of age. The majority of respondents were female, comprising 78.9% of the sample, while males made up 21.1% of the sample. Most of the respondents (57.7%) were from Taxila, however, 29.6% were from Wah cant and only 18.7% consisted of respondents from Rawalpindi/Islamabad. 29.6% of the participants fell under the 50000-750000 category of monthly income.

Table 1: Sociodemographic Variables of the Respondents:

Demographic variables	frequency (n)	Percentage (%)
1	Gender	
Male	15	21.1%
Female	56	78.9%
2	City of residence	
Taxila	41	57.7%
Wah cantt	21	29.6%
Rwp/Isb	9	18.7%

3	Age of respondents		
	1-20 years	3	4.2%
	21-40 years	29	40.8%
	41-60 years	30	42.3%
	61-80 years	9	12.7%
4	Monthly income of the respondents		
	25000-50000	13	18.3%
	50000-75000	21	29.6%
	75000-100000	16	22.5%
	100000-150000	18	25.4%
	200000+	3	4.2%

The mean value of the total WHO-QOL score was 84.15±11.34. The cut-off limits for the 25th, 50th, and 75th percentiles were 76, 83 and 94 respectively. In general, 2.8% of the participants had a poor quality of life, 73.2% had a moderate quality of life and 23.9% had a good quality of life.

Table 2: WHO-QOL Scores of Respondents:

WHO-QOL score	Frequency(n)	Percentage (%)	Cumulative Percent
Poor Quality of Life (26-60)	2	2.8%	2.8%

Moderate Quality of Life (61-94)	52	73.2%	76.1%
Good Quality of Life (95-130)	17	23.9%	100%

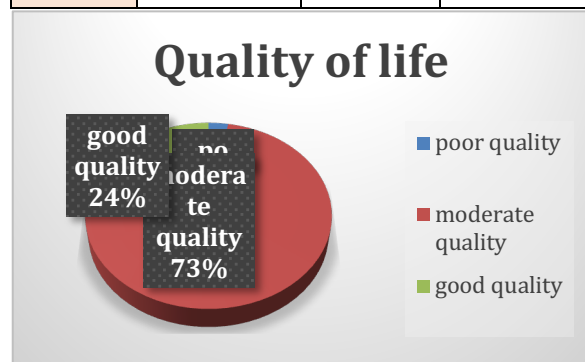


Figure 1: QOL among the respondents

The chi-square was used to find the association between the main variables and the WHO-QOL score. There were no significant associations between the WHOQOL score and monthly income (p -value = 0.85), the last recorded value of TSH (p -value = 0.377), duration of disease (p -value = 0.245) and the gender of the patient (p = 0.557), however, a significant association was found between WHOQOL score and age of the respondent (p -value = 0.04), compliance with the treatment (p -value = 0.004), dose of medication (p -value = 0.022) and duration of treatment (p -value = 0.05).

Table 3. Association between variable and WHO-QOL score

	Variable	Pearson chi square value	Asymptomatic significance
1	Compliance with the treatment	15.24	0.004**

2	Monthly income	4.005	0.857
3	Daily dose of medicine	50.093	0.022*
4	Recent TSH value	136.45	0.377
5	Duration of disease	73.52	0.245
6	Duration of treatment	81.032	0.05*
7	Age of the patient	101.103	0.04*
8	Gender of the patient	1.172	0.557

A multiple linear regression was performed to examine whether demographic characteristics i.e gender of the participants, city of residence, age, monthly income and compliance with treatment, predicted participants' Total Score. The overall model was not statistically significant, $F(5,65) = 1.806$, $p = .124$, and explained approximately 12.2% of the variance in quality of life scores ($R^2 = .122$; Adjusted $R^2 = .054$).

Among the above predictors, only compliance with treatment emerged as a significant factor ($B = -6.459$, $p = .013$). Specifically, each unit increase in non-compliance was associated with a decrease of nearly seven points in Total Score, reflecting a moderate negative effect. In contrast, gender, city of residence, age, and monthly income were not statistically significant predictors (all $p > .26$).

Overall, while the model indicates a modest explanatory power, findings highlight the critical role of treatment compliance in shaping the quality of life among hypothyroid patients, whereas demographic factors such as gender, age, residence, and income showed no significant associations. This suggests that adherence to the treatment was the only meaningful determinant of Total WHOQOL Score in this study population, whereas demographic variables played little role.

Table 4: Regression Coefficients for Predictors of Patient Outcomes

Predictor	B	Standard Error	β	t	p
Constant	96.665	9.797	—	9.866	<.001
Gender of the patient	—0.026	3.340	—	—0.008	.994
Age of the patient	—0.111	0.099	—	—1.118	.267
City of residence of patient	0.375	1.610	0.027	0.233	.816
Compliance with the treatment	—6.459	2.524	—	—2.559	.013*
Monthly income	—0.078	1.158	—	—0.067	.947

Discussion

Thyroid deficiency, particularly hypothyroidism, is recognized as a major public health concern all over the world, affecting millions of individuals of all the ages and contributing to a wide range of physical and psychological health complications. The current cross-sectional study aimed to evaluate the quality of life (QoL) among patients diagnosed with hypothyroidism residing in three neighboring urban areas of Pakistan namely —Taxila, Wah Cantt, and Rawalpindi—using the validated World Health Organization Quality of Life (WHO-QOL) assessment tool. A total of 71 participants, all of whom were under active medical treatment for hypothyroidism were enrolled in the study to assess various dimensions of their health-related quality of life, including physical, psychological, social, and environmental well-being. As per the current study hypothyroidism was found to be more prevalent among the middle age group (40 years and above). This finding aligns with a recent study conducted in Lahore which reported a significantly higher prevalence of thyroid disorders, particularly hypothyroidism, among the elderly population (4). However, contrasting evidence

emerged from a similar study conducted in the Kingdom of Saudi Arabia (KSA) which demonstrated that the majority of diagnosed thyroid patients belonged to younger age groups, primarily individuals aged 20–40 years. This discrepancy can be explained by regional differences in genetic predisposition, dietary habits (e.g., variations in iodine fortification programs), or earlier diagnostic screening practices in KSA (12).

In the current study, the data that was collected revealed, women exhibiting a significantly higher prevalence of the disorder compared to men. The observed pattern corresponds closely with findings from another large-scale study conducted in the Kingdom of Saudi Arabia (KSA), which identified hypothyroidism as being 7.5 times more prevalent in women (10). Similarly, a cross-sectional study in India reported that nearly 80% of diagnosed hypothyroid cases were female. Potential contributing factors that can lead to this disparity may include hormonal fluctuations especially estrogen's role in modulating immune responses, the impact of pregnancy on thyroid functions, and sociocultural factors influencing healthcare-seeking behavior of the women (13).

In the present study, all participants had hypothyroidism and had received treatment for the condition. The WHO-QOL findings of the study showed that 73.2% of the participants had a moderate quality of life. Only 2.8% of the participants were reported to have a poor quality of life. This finding was in accordance with the study done in KSA which showed that most of the participants (37.6%) had a good quality of life, and only a small number (4.8%) reported having a poor quality of life. A high percentage of participants reported having a good quality of life in our study because all of the participants were receiving treatment and taking medication regularly, which enhanced their QoL (10). In the present study, a significant relationship was identified between patients' adherence to the prescribed treatment regimen and their overall quality of life. This finding was found to be in alignment with the outcomes reported by a similar study conducted in South India. They observed that individuals who were actively following their treatment plans experienced a significantly better quality of life compared to those who were non-compliant or irregular in their treatment adherence (14). Similarly a study conducted in Germany reported findings that were consistent with those observed in the current research. Their investigation demonstrated that patients who maintained high levels of adherence with their prescribed medications experienced a notable improvement in their overall quality of life (15). But in contrast to the previous studies according to a survey In Hungary the association between compliance with

the treatment was found to be very weakly significant (16) whereas more recent study carried out in Belgium(17) , reached different conclusions. Interestingly, their results indicated that adherence to the prescribed treatment regimen did not lead to any significant improvement in patients' quality of life.

Our study further revealed a statistically significant association between the daily dose of medication consumed by the participants and their reported quality of life. This observation was found to be consistent with findings from similar previous studies conducted in different regions. For instance, an Indian study (14), as well as research conducted in Denmark (18), both reported a clear and direct positive correlation between the dosage of levothyroxine and improved quality of life among patients. These studies suggest that optimal dosing may play a crucial role in achieving symptom relief and enhancing daily functioning. However, this trend was not unanimously observed. A similar investigation conducted in Jordan found only a minimal to negligible association between the amount of medication taken and patients' quality of life. Their findings indicate that, in some populations, factors other than dosage, such as comorbid conditions, individual variation in hormone sensitivity, or psychosocial influences, may play a more prominent role in shaping patient-reported outcomes (19).

In the current study a significant association was observed between the age of the patients and their reported quality of life. Although a large proportion of the participants fell within the middle-aged group in this study, specifically between 40 to 61 years, the analysis revealed a noteworthy trend indicating that quality of life improved with increasing age. A Danish study showed similar results that QOL increased with the increase in the age of the patient, and in that study, it was hypothesized that the changes in quality of life would be due fluctuation of the hormones throughout the developing years (20). But the Indian study on thyroid disease concluded that age was not associated with the symptoms or quality of life of the patients (13). An online survey conducted in the United Kingdom reported a different pattern regarding the relationship between patient age and quality of life. According to their results, there was a negative correlation between age and quality of life, indicating that as individuals grew older, their perceived quality of life tended to decline (21).

In the current study, using multiple linear regression, it was found that, among gender, city of residence, and compliance with treatment, only compliance significantly predicted Total Score; gender and residence had no significant effects. Specifically, higher non-compliance (or conversely, poorer compliance) was associated with lower Total Score.

This suggested that patients' adherence to their treatment regimen played a meaningful role in determining their overall WHOQOL scores. These findings align with a broad body of literature showing that treatment adherence (or compliance) is a strong determinant of health outcomes. For example, it was found that patients with lower adherence to therapies achieved less improvement in clinical markers such as blood pressure compared to those with good adherence (22). In a similar study done on hypothyroid patients, it was assessed that adherence to thyroid therapy had a significant association with depressive symptoms i.e a substantial proportion of patients with suboptimal adherence to therapy had worse mental-health indicators (23). In opposition to this finding in a Dutch survey it was shown that treated hypothyroid patients often report impaired QoL and persistent symptoms even with largely normal TSH/FT4 (24) where as in Italy, it was found that 59% adherence; patients on liquid formulations sometimes had better adherence scores than those on tablets(25).

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