

ORIGINAL RESEARCH

Effect of teaching patients neck stretching exercises on neck pain and disability following thyroidectomy

Sahar A. Abd-El Mohsen*, Nagwa M. Ahmed

Adult Nursing Dept., Faculty of Nursing, Assiut University, Egypt

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ABSTRACT

Objective: The aim of this research was to evaluate the effect of teaching patients stretching neck exercises on pain and disability of the neck following thyroidectomy.

Methods: Research design: a randomized controlled trial was utilized. Setting: the study was conducted at the general surgery ward and outpatient surgery clinic-Assiut university hospital. Sample: 60 adult male and female patients scheduled to undergo thyroidectomy and are willing to take part in this study. Tools of data collection: Tool (I): Patient assessment sheet, Tool II: Neck pain and disability index questionnaire.

Results: There was no statistically significant difference between both groups regarding their socio-demographic variables and medical data while there was a highly statistical significant difference between both groups regarding pain in the neck and disability 7 days post thyroidectomy.

Conclusions: Teaching and applying neck stretching exercises significantly improved the neck condition of patients in the study group regarding pain and disability of the neck. Nurses working in the general surgery department must include the stretching neck exercises in care and follow-up protocols of patients undergoing total thyroidectomy and to use the validated neck pain and disability questionnaire in monitoring patient's condition.

Key Words: Stretching neck exercises, Pain and disability of the neck, Thyroidectomy

1. BACKGROUND

Thyroidectomy is a very common surgical procedure all over the world and has a significant role in the management of thyroid disease in patients with simple goiter, benign thyroid tumors, hyperthyroidism and thyroid.^[1]

Thyroidectomy is the surgical removal of all or part of the thyroid gland. Thyroid surgery commonly falls into one of three categories; total thyroidectomy, with the aims of achieving complete macroscopic removal of the thyroid tissue; subtotal thyroidectomy, in which bilateral thyroid remnants are left and thyroid lobectomy which involves removal of half of the

thyroid gland that has the nodule.^[2]

Thyroid surgeries have tripled over the past three decades; between 118,000 to 166,000 patients in the United States undergo thyroidectomy each year for benign or malignant disease, thyroidectomy is performed on both male and female patients but is more common on women.^[3]

Although complications following thyroidectomy are rare but their consequences can be life-threatening, it includes; hypothyroidism, damage to or inadvertent removal of parathyroid glands causing hypo-parathyroidism and hypocalcemia, hemorrhage, injury to the recurrent or superior laryngeal

*Correspondence: Sahar A. Abd-El Mohsen; Email: sara.saleh17@yahoo.com; Address: Adult Nursing Dept., Faculty of Nursing, Assiut University, Egypt.

nerve, thyrotoxicosis, and wound infection. Also, patients feel discomfort neck symptoms frequently as pain, stress and pressure in their neck, stiffness in the shoulder and limited shoulder and neck range of motion.^[4]

Nurses play a vital role in teaching patients about the signs and symptoms of potential complications, should also assess the intensity of pain and teach patient neck exercise which should continue until they are able to freely move their head and neck plus written and verbal information regarding wound care, medications, nutrition, and follow-up visits with the physician.^[5]

They should encourage patients to move their neck and shoulders and to stretch the neck slowly and fully as this is the simplest and most effective exercise to reduce pain and muscle weakness, improve flexibility and functionality level of patients.^[6]

Preoperatively, patients are encouraged to perform five replicates of each stretching exercise, three times per day (morning, afternoon and evening) and can perform these exercises on the morning of the first day of the postoperative period, in addition, to increase adherence to exercises at home, patients are told that the stretching exercises would not cause the wound to open or bleed. The stretching exercises consist of eight steps: relax shoulders and neck sufficiently, look down, turn face to the right, turn face to the left, incline head to the right, incline head to the left, turn shoulders round and round and slowly raise shoulders fully then lower them.^[7]

1.1 Significance of the study

According to Assiut University Hospital records from (2015 to 2016); incidence of thyroidectomy operations was “224”, most of them complained from neck pain or disability “but unfortunately the hospital lack complication documentation, this was only observed from our clinical practice & also the incidence of thyroidectomy in Egypt was not accessible”. So this study is considered the first in this geographical location to help such group of patients increasing their knowledge and practice in an attempt to decrease the incidence of this complication.

1.2 Study aim

To evaluate the effect of teaching patients stretching neck exercises on pain and disability of the neck following thyroidectomy.

1.3 Research hypothesis

Pain in the neck and disability among study subjects who will practice the neck stretching exercises will be lesser than those in the control group who will follow the routine hospital care.

2. PATIENTS AND METHODS

2.1 Research design

A randomized controlled trial was utilized.

2.2 Setting

General surgery department and outpatient surgery clinic at Assiut university hospital.

2.3 Sample

A total of 60 adult male and female patients scheduled to undergo thyroidectomy and are willing to participate in the study. Patients were randomly assigned into two equal groups (study and control) 30 patients for each. The study group who were taught the neck stretching exercises and the control group who received the routine hospital care.

2.4 Exclusion criteria

Patients under 18 years or older than 65 years old, those patients with orthopedic or rheumatic conditions of the neck (e.g., cervical osteomalacia), patients who are uncooperative or refuse to participate in the study.

2.5 Randomization process

The simple randomization technique was used to assign subjects to the study or the control one; patients who were admitted to the hospital in an odd day of the month (i.e., 1, 3, 5, etc.) were assigned to the control group and those admitted in an even day (i.e., 2, 4, 6, etc.) were assigned to the study group.

2.6 Tools of data collection

Tool (I): Patient assessment sheet

This tool was developed with the aim to collect data pertinent to both sociodemographic patient characteristics and their medical data and was divided into two parts:

Part 1: Socio-demographic data of the studied patients

Name, age, gender (male, female), marital status (e.g., single, married), level of education (educated, not educated) and occupation.

Part 2: Medical data of the studied subjects

Medical diagnosis, medical history as the presence of chronic illnesses (e.g. DM, HTN or heart disease), health habits as smoking, consumption of tea or coffee and practicing of exercises, and type of operation.

Tool II: Neck pain and disability index questionnaire (NDI)

It has been designed to give information as to how neck pain after operation has affected the ability to manage everyday life. NDI consists of ten items; pain intensity, personal care,

lifting, reading, headaches, concentration, work, driving, sleeping, and recreation.

Scoring system of neck pain and disability index questionnaire The NDI consists of 10 items, each with a score up to 5, for a total score of 50. The lower the score; the less self-rated disability.

Grading of neck pain and disability index questionnaire was as follows: No disability (0-4), Mild disability (5-14), Moderate disability (15-24), Severe disability (25-34), and Complete disability equals 35 or over.

Neck stretching exercises That consisted of the following patient instructions; relax your neck and shoulders sufficiently, look down, turn your face to the right side, turn your face to the left side, incline your head to the right side, incline your head to the left side, turn your shoulders round and round, and slowly raise your shoulders fully then lower them again. These instructions were prepared in simple Arabic language with illustrations.

2.7 Procedure

The study was conducted through the following three phases:

Phase I: Assessment phase

- Review of relevant literature (nursing and medical textbooks, journals, internet resources about thyroidectomy surgery, care and patient's outcomes).
- The content validity was done by 5 expertise in the medical surgical nursing field and general surgery field. Tools were designed and tested for reliability by using internal consistency for the tools measured using Cronbach test, the tools proved to be reliable at 0.73.
- An official permission was obtained from the head of Assiut University main Hospital, and the general surgery department head to conduct the study.
- A pilot study was carried out on 10% of the subjects to examine easiness and clarity of the tools; those patients were included in the main study as no modifications were done.

Phase II: Implementation phase

- Both the study and control group patients were interviewed by the researcher to initiate line of communication, patient's written agreement for voluntary participation was obtained after explaining the purpose and nature of the study.
- This phase comprised implementing the stretching exercises as the following; patients were equally and randomly divided (as mentioned in the randomization process) into either the control or the study group.

- Data were assured confidentiality and anonymity and were collected using the pre-mentioned study tools.
- The tools filled out through interviewing, this study was carried out at morning and afternoon shifts.
- Patients who constituted the control group were exposed to routine nursing care, while patients who constituted the study group received the neck stretching exercises. Then demonstration and return demonstration was done and a booklet containing the exercise instructions was given to these patients.
- Before discharge the researcher arranged with the study and control group patients the time and place for follow up which were 1st, and then after the 4th week postoperatively in the outpatient clinic at Assiut university hospitals.

Phase III: Evaluation phase

This phase was meant to evaluate patients regarding incidence of neck pain and disability in both the study and control group patients using the second tool (NDI) and it was carried out in the outpatient surgery clinic at Assiut University Hospital during the pre-specified time with each patient (after the 1st and 4th week) following the thyroidectomy surgery and this mainly to evaluate the effect of applying the neck stretching exercise on the incidence of neck pain and disability following thyroidectomy.

2.8 Ethical considerations

- (1) Research proposal was approved from Ethical Committee in the Faculty of Nursing.
- (2) There was no risk for study subject during application of the research.
- (3) The study followed common ethical principles in clinical research.
- (4) Oral agreement for voluntary participation was attained, after explaining the nature and purpose of the study.
- (5) Confidentiality and anonymity of subjects was assured through coding of all data.
- (6) Study subject had the right to refuse to participate and or withdraw from the study without any rational at any time.
- (7) Study subject privacy was considered during collection of data.

3. RESULTS

Data entry and statistical analysis were done using SPSS ver. 23 statistical software packages. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, mean and standard deviations

for the quantitative variables. The level of significance was set at ($p = .05$) to detect any indication of differences found in the data available.

Table 1 shows the highest percentage of the studied patients their ages ranged between 18-38 years old, with mean of 39.47 ± 10.23 years. Also there was a predominance of female in both the study and the control groups (73.5% and 76.7%) respectively. As regard the marital status, the majority of patients in the study and control groups were married (80.0% and 76.7%) respectively. Concerning the patient's educational level, 70.0% and 50.0% respectively in the study and control groups were illiterate. In relation to patients' oc-

cupation, the majority of the studied patients in both groups (53.3%) were un-employed.

Table 2 reveals that as regard patients' health history, about one third of patients (30.0%) in the study group had diabetes and less than one third (10.0%) had hypertension, while in the control group 26.7% had diabetes and 6.7% had hypertension. As regard health habits, less than half of the study group and control group used to consume of tea/coffee (46.7% and 43.3%) respectively. Finally, in relation to type of operation, this table shows that the highest percent of patients in the study and control group (53.3% and 43.3%) respectively underwent total thyroidectomy.

Table 1. Socio-demographic data of the study and control group (n = 60)

Variable	Study group n = 30		Control group n = 30		p value
	Number	%	Number	%	
Age					
18->39 years	20	66.6	14	46.6	.29 ns
39->59 years	8	26.6	13	43.3	
60-65 years	2	6.6	3	10	
Mean \pm SD	39.47 \pm 10.23				
Gender					
Male	8	26.7	7	23.3	.5 ns
Female	22	73.3	23	76.7	
Marital status					
Single	3	10.0	1	3.3	.5 ns
Married	24	80.0	23	76.7	
Divorced	1	3.3	3	10	
Widowed	2	6.7	3	10	
Educational level					
Illiterate	21	70	15	50.0	.2 ns
Educated	9	30	15	50.0	
Occupation					
Un employed	26	86.6	26	86.6	.8 ns
Employed	4	13.4	4	13.4	

Table 2. Comparison of medical data between both groups (n = 60)

Variable	Study group n = 30		Control group n = 30		p value
	N.	%	N.	%	
Medical history					
Diabetes	9	30.0	8	26.7	.5 ns
Hypertension	3	10.0	2	6.7	
Heart disease	0	0.0	0	0.0	
Renal disease	0	0.0	0	0.0	
COPD	0	0.0	0	0.0	
Asthma	0	0.0	0	0.0	
Health habits					
Use of tea-coffee	14	46.6	13	43.3	.63 ns
Smoking	6	20.0	5	16.6	
Practice exercise	2	6.7	3	10	
Type of operation					
Total thyroidectomy	16	53.3	13	43.3	.50 ns
Subtotal thyroidectomy	10	33.3	11	36.7	
Hemi thyroidectomy	3	10.0	6	20.0	
Near total thyroidectomy	1	3.3	0	0	

Table 3 shows that after one week of teaching the study group neck stretching exercises, more than half of them (56.7%) had no disability, about one third of patients (30%) were complaining from mild disability and only (13.3%) were complaining from moderate disability, no patient was complaining from severe or complete disability. On the

other hand, more than one third of the control group subjects (36.7%) were complaining from severe disability and (10%) had no disability with statistically significant difference ($p > .01$). While after four weeks, the majority of patients (96.7%) and (90%), in both the study and control groups respectively, had no disability with no statistically significant difference.

Table 3. Comparisons between the study and control groups as regard neck pain and disability index questionnaire after 1st and 4th weeks from discharge (n = 60)

Variable	After 1 week				p	After 4 weeks				p
	Study n. (30)		Control n. (30)			Study n. (30)		Control n. (30)		
	N.	%	N.	%		N.	%	N.	%	
No disability	17	56.7	3	10	.001**	29	96.7	27	90	.3 ns
Mild disability	9	30	1	3.3		1	3.3	2	6.7	
Moderate disability	4	13.3	15	50		0	0	1	3.3	
Severe disability	0	0	11	36.7		0	0	0	0	
Complete disability	0	0	0	0		0	0	0	0	
Total	30	100	30	100		30	100	30	100	

** $p < .01$

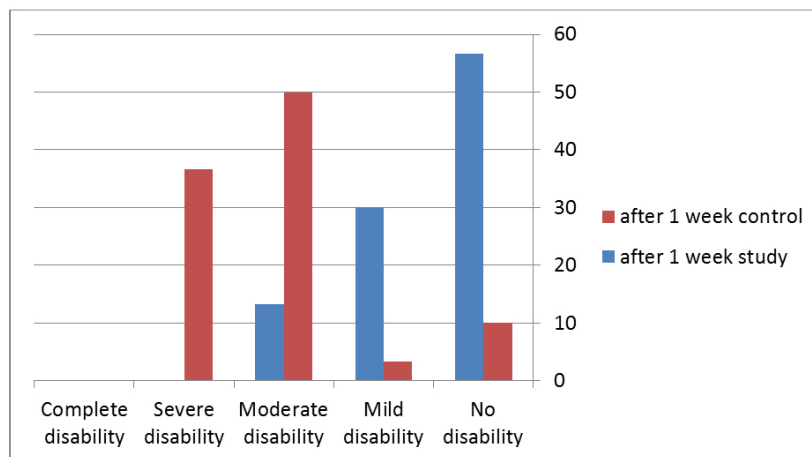


Figure 1. Distribution of the study and control subjects regarding neck pain and disability one week post thyroidectomy

4. DISCUSSION

Thyroidectomy is considered one of the most commonly performed surgical procedures worldwide; it represents the principal treatment modality for both benign and malignant thyroid diseases, such as hyperthyroidism, symptomatic goiter, indeterminate thyroid nodules, and thyroid cancer.^[8]

Complication rates are largely dependent on surgeon’s skill and experience, the extent of surgery, and indication of surgery. Reported complications following thyroid surgery are rare but their consequences can often be life-threatening as compared to other surgeries being performed routinely.^[9]

Perioperative care given by the nurse should cover the com-

prehensive needs of the patient, improving patient’s confidence to face surgery, and return to regular life activities Chen et al.^[10] Our aim was to evaluate the effect of teaching patients stretching neck exercises on pain and disability of the neck following thyroidectomy.

The current study showed; the mean studied sample age was 39.47 ± 10.23 years. This study result was in the same line with El-Khateeb et al.^[11] who mentioned that the mean age of the patients undergoing thyroidectomy was 37.53 ± 10.48 . Also, Mishra et al.^[12] found that, thyroid diseases are very common in middle-aged and older adults.

The majority of the studied patients were females; this was

in agreement with the study result carried out by Hariadha et al.^[13] which revealed that thyroid disorders were present among females more than males. Vanderpump^[14] also mentioned that more female undergo surgery as compared to males (5:3).

Regarding level of education, more than two thirds of patients in the study group and half in the control group were illiterate. Concerning occupation, more than half of patients in both groups were housewives. This study finding was in agreement with Desoky et al.^[5] who revealed that more than two thirds of the studied patients were illiterate and a little more than three quarters were housewives, and this may be due to the nature and community characteristics of the studied sample.

As regard medical history, more than one quarter of the study and control group was having diabetes, while third of the study group and a little more than fifth of the control group were having hypertension. This finding was congruent with Al-Geffari.^[15] who mentioned that diabetic patients have susceptibility to different types of thyroid dysfunction. In the same context, Vargas et al.^[16] stated that thyroid hormones affect the development and/or maintenance of various forms of arterial hypertension.

As regard health habits, the present study showed that less than half of patients in the study group and control group used to consume tea or coffee and about one fifth of the study and control group subjects were smokers. These results were in agreement with Wiersinga et al.^[17] who concluded that smoking has distinct association with thyroid function and size in healthy subjects. However this finding disagreed with Ahmed et al.^[18] who found in their study that the majority of patients were nonsmokers and this is most likely due to the majority of the studied sample were females.

Also the findings of the present study found that more than half of patients in the study group and less than half in the control group underwent total thyroidectomy. This finding was nearly the same as that reported by Abboud et al.^[19] in their study entitled safety of thyroidectomy and cervical neck dissection without drains who found that the majority of the studied patients performed total thyroidectomy.

The previous study finding disagreed with Desoky et al.^[5] in their study which was conducted in the general surgery department at Assiut University Hospital, who reported that subtotal thyroidectomy was the more frequently performed procedure for most of patients. Also our study disagreed with Memon et al.^[9] who emphasized that the most frequent surgery performed was subtotal thyroidectomy followed by hemi-thyroidectomy.

As regard to neck pain and disability index questionnaire, the findings of the present study indicated that neck pain and related disability significantly reduced in the study group when followed one week after thyroidectomy than in the control group. In the same line, Takamura et al.^[20] reported that discomfort in the neck was less in the intervention group one week following total thyroidectomy. Jang et al.^[21] in the same line found that discomfort in the neck and movement limitations were much lesser in the intervention group during evaluations made two weeks after a thyroid surgical removal.

Anyway, in the present study, no significance difference was found between the study and control groups in terms of neck pain and disability, one month after the total thyroidectomy. Jang et al.^[21] also, didn't found any significant difference between stretching exercise and control groups in terms of neck discomfort and range of motion 3 months after a thyroidectomy. This might be due to that neck pain and disability ameliorates naturally within 1 month after thyroidectomy.

5. CONCLUSION

Teaching and applying neck stretching exercises significantly improved the neck condition of patients in the study group regarding pain and disability of the neck.

Recommendations

Nurses working in the general surgery department must include the stretching neck exercises in care and follow-up protocols of patients undergoing total thyroidectomy and to use the validated neck pain and disability questionnaire in monitoring patient's condition.

CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

REFERENCES

- [1] Tidy C. *Thyroid disease and surgery*. Egton Medical Information. 2011.
- [2] Liu ZW, Masterson L, Fish B, et al. Thyroid surgery for Graves' disease and Graves' ophthalmopathy. *The Cochrane Library*. 2015; 15(11): 1-76. <https://doi.org/10.1002/14651858.CD010576.pub2>
- [3] Chandrasekhar SS, Randolph GW, Seidman MD, et al. Clinical practice guideline: improving voice outcomes after thyroid surgery. *Otolaryngology—Head and Neck Surgery*. 2013; 148(6): S1-S37. PMID:23733893 <https://doi.org/10.1177/0194599813487301>

- [4] Lewis SL, Bucher L, Heitkemper MM, et al. Medical-surgical nursing: assessment and management of clinical problems, single volume. Problems Related to Regulatory and Reproductive, Elsevier Health Sciences, 9th ed. 2013. 1189-1218 p.
- [5] Desoky AA, Mohamed MA, Ahmed MT, et al. Assessment of Nursing Performance for Patients Undergoing Thyroidectomy. AAMJ. 2009; 7(2): 1-19.
- [6] Shenouda MMS. Efficacy of Stretching Exercises Versus Post-isometric Relaxation Technique on Pain, Functional Disability and Range of Motion in Patients with Cervical Spondylosis. A Randomized controlled trial. Bulletin of Faculty of Physical Therapy. 2012; 17(2): 74-80.
- [7] Choi N, Son YI. Early Neck Exercises to Reduce Post-thyroidectomy Syndrome after Uncomplicated Thyroid Surgery-A Prospective Randomized Study. Journal of Korean Thyroid Association. 2014; 7(1): 70-6. <https://doi.org/10.11106/jkta.2014.7.1.70>
- [8] Adam MA, Thomas S, Youngwirth L, et al. Is there a minimum number of thyroidectomies a surgeon should perform to optimize patient outcomes? Ann Surg. 2017; 265(2): 402-7. <https://doi.org/10.1097/SLA.0000000000001688>
- [9] Memon AA, Junejo A, Balouch TA. Postoperative Complications of Thyroidectomy—An experience at Tertiary Care Hospital. Medical Channel. 2012; 18(4): 4-11.
- [10] Chen HC, Wang MH. An Experience in Perioperative Nursing Care for a Patient Who Underwent Total Thyroidectomy. Tzu Chi Nursing Journal. 2011; 10(5): 98-107.
- [11] El-Khateeb AI, Ali HA, Makhlof GA, et al. Total extracapsular thyroidectomy versus subtotal thyroidectomy in nonmalignant goiter. The Egyptian Journal of Surgery. 2015; 34(3): 166. <https://doi.org/10.4103/1110-1121.163120>
- [12] Mishra A, Sabaretnam M, Chand G, et al. Quality of life (QoL) in patients with benign thyroid goiters (pre- and post-thyroidectomy): a prospective study, World J Surg. 2013; 37(10): 1-8. PMID:23838927 <https://doi.org/10.1007/s00268-013-2133-3>
- [13] Hariadha E, Sulaiman SAS, Gillani SW, et al. A preliminary study on post-surgical complications after thyroidectomy in Pulau Pinang, Malaysia. International Journal of Pharmacy & Life Sciences. 2013; 4(6): 2717-21.
- [14] Vanderpump MP. The epidemiology of thyroid disease. Br Med Bull. 2011; 99(1): 39-51. PMID:21893493 <https://doi.org/10.1093/bmb/1dr030>
- [15] Al-Geffari M, Ahmad NA, Al-Sharqawi AH, et al. Risk factors for thyroid dysfunction among type 2 diabetic patients in a highly diabetes mellitus prevalent society. International Journal of Endocrinology. 2013.
- [16] Vargas F, Moreno JM, Rodríguez-Gómez I, et al. Vascular and renal function in experimental thyroid disorders. European Journal of Endocrinology. 2006; 154(2): 197-212. PMID:16452532 <https://doi.org/10.1530/eje.1.02093>
- [17] Wiersinga WM. Smoking and thyroid. Clinical Endocrinology. 2013; 79(2): 145-51. <https://doi.org/10.1111/cen.12222>
- [18] Ahmed AM, Mekkawy MM, Mojelly AM, et al. Outcomes of Clinical Pathway Implementation for Patients Undergoing Thyroidectomy, Doctoral thesis. 2016.
- [19] Abboud B, Sleilaty G, Rizk H, et al. Safety of thyroidectomy and cervical neck dissection without drains. Canadian Journal of Surgery. 2012; 55(3): 199. PMID:22449723 <https://doi.org/10.1503/cjcs.025710>
- [20] Takamura Y, Miyauchi A, Tomoda C, et al. Stretching exercises to reduce symptoms of postoperative neck discomfort after thyroid surgery: prospective randomized study. World Journal of Surgery. 2005; 29(6): 775-9. PMID:16078129 <https://doi.org/10.1007/s00268-005-7722-3>
- [21] Jang JY, Chang YS, Kim EH, et al. Early neck exercises to reduce post-thyroidectomy syndrome after uncomplicated thyroid surgery: A prospective randomized study. Journal of Korean Thyroid Association. 2014; 7(1): 70-6. <https://doi.org/10.11106/jkta.2014.7.1.70>