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Quality of Life for Tracheostomized Patients in Kingdom Of Saudi Arabia

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Abstract: **Background: Literature has proven the effectiveness of tracheostomy as well as its outcomes of health-related quality of life. Quality of life is the standard of health, comfort, and happiness experienced by an individual or group, and as tracheostomy affects the health, it surly has negative impact on health-related quality of life of patients. Aim of the study: To assess the quality of life of tracheostomized patient immediately (one week) and three months post procedure.**

Methodology: A Prospective descriptive exploratory design, purposive sample of 80 patient with permanent tracheostomy ,the tool used in the present study is the modified version of quality of life scale .University of Washington, It is developed by Vinciya Pandian 2015 .The tool consisted of 2 parts demographic characteristics , Quality-of-Life Questionnaire for Mechanically Ventilated Patients Undergoing a Tracheostomy.

Results: showed that participants in this study reported poor quality of life in general immediately and slightly improved after 3 months of tracheostomy.

Conclusion: The present study provides evidence for experiencing a poor quality of life among patients who have a permanent tracheostomy immediately after tracheostomies and a noticeable improvement in the quality of life with time. Participants in the current study reported difficulties with most of the items related to quality of life and some levels of anxiety and poor sleep in the immediate period. On the other hand, participants reported an improvement in their quality of life 3 months after having the tracheostomy.

Recommendation: Follow up studies with larger sample, random selection and multi-sites would contributed to generalization of the results and replication of the study with including qualitative methodology would help enrich information gained and provide a broader view of the phenomenon under investigation and Using longitudinal research design to explore quality of life over time (6 months and 1 year) after having tracheostomy would help identifying challenges that patients and caregivers might face throughout their life. Such information will add to the nursing body of knowledge and assist improving nursing practice.

Keywords: **Quality of life, permanent Tracheostomy, surgical tracheostomy, percutaneous tracheostomy, Tracheostomy care.**

I. INTRODUCTION

Tracheostomy was introduced into medicine as a way of managing upper respiratory tract obstruction as early as the second century AD by Galen (Akenroye & Osukoya, 2013). It has been profoundly used to mainly relieve upper respiratory tract obstruction and also in other clinical conditions including protection of lower respiratory tract, tracheobronchial tilting and in the assistance of ventilation especially in patients with long unconsciousness. A tracheostomy can be defined as an opening established by a surgical crevice into the trachea's anterior wall in order to make an exterior hole or stoma. The main objective of tracheostomy is to avoid the hindrance of the upper airway in order to allow ventilation process and help in the removal of aerobic excretions.

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Tracheostomy could be described according to many criteria, it can be used for a short term, known as temporary tracheostomy, or a life-long measure, known as permanent tracheostomy. Temporary tracheostomy which is described when tube only stays in place from a few days to a few weeks. A permanent tracheostomy on the other hand is described when the tube remains on the patient for as long as he/she lives, (Akenroye & Osukoya, 2013).

Tracheostomy can also be described according to technique and method of its performance. The most common described method of performing tracheostomies in ill patients requires their transport from the intensive care unit to the operating theatre, for a surgeon to perform a surgical tracheostomy. This involves a full dissection of the peritracheal tissues and insertion of the tracheostomy tube into the trachea under direct vision (Mcwhorter, 2003).

Another tracheostomy technique is percutaneous dilatational tracheostomy that was first described in 1957 by Shelden, this technique involves the use of blunt dilatation to open the peri-tracheal tissue for passage of the tracheostomy tube. Advocates of percutaneous dilatational tracheostomy suggest that the minimal dissection results in less tissue injury, lowers the risk of bleeding and wound infection, and is easily done at the bedside in the intensive care unit, which may overcome the risks associated with transport of critically ill patients to the OT (Al-Ansari and Hijazi ,2006).

Regardless of the duration or technique of the tracheostomy, it's been proven to be a very effective way to deal with critical cases. However, no surgical interventions like tracheostomy come without complications and risks. Tracheostomy can be implicated in leading to sepsis, tracheal perforation, bronchospasm, pneumothorax, and many airway complications. Such complications can have a huge impact on patients' quality of life and a lot of which could lead to fatal outcomes. Quality of life can be defined objectively, as the ability of the patients to fulfill basic life demands to be able to do simplest tasks on their own. This also includes the way disease hinders the patient not only physically but also socially and economically (Simon et al ,2014).

Patients with tracheostomy require special care to all ensembles of the tracheostomy as approximately 20% of patients who have a tracheostomy will be discharged with it in situ (Eibling and Roberson ,2011) However discharging them can be a complex process (NCEPOD, 2014). The stoma needs meticulous care towards hygiene as asepsis is necessary. The area must be cleaned with normal saline and barrier cream to be applied to the local skin, also if double cannula is used, the inner cannula has to be removed to be cleaned with warm water. In comparison to care for tracheostomy tube, it also requires cleaning and in cases where cuffed tracheostomy tubes, the pressure should be measured twice daily and maintained between 15-30 cmH2O (Henderson, 2015).

The negative impact of chronic disease on patients' quality of life can be reduced by helping patients adjust their expectations and adapt to their ever-changing clinical status. This approach has already been adopted in many healthcare strategies, including some psychological interventions, self-management programs, and patients' education groups. The aim of technology is to help patients continue in their roles and meet their life expectations despite their physical impairment and disability (Alison J Carr,2001).

There is a greater requirement for psychosocial support from health-care professionals, family members, and friends. The tubes are restrictive, denying patients a chance to socialize freely with other people. Lack of interaction and low socialization developed into more pronounced psychosocial discomfort such as anxiety and hopelessness among patients (Flinterud and Andershed, 2015). Therefore, patients felt isolated from their friends and family members, who viewed them as disabled people. Gilony found through his research in 2005 that this in turn lead to withdrawal from social forums so that patients ending up living lonely lives .

To address these shortcomings and provide a comprehensive overview about, this research was proposed to address the quality of life for tracheostomized patients in The Kingdom of Saudi Arabia.

Aim of the Study:

The aim of this study Is to Assess the quality of life of tracheostomized patient immediately (one week) and three months post procedure.

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II. RESEARCH METHODOLOGY

Research design

A prospective exploratory research design was used in the current study

Setting of the study

This study was conducted at Prince Sultan Military Medical City, Riyadh City, Kingdom of Saudi Arabia.

Study sample

A purposive sample of 80 patients with permanent tracheostomy were recruited for the present study. This sample was calculated according to Public Service of Creative Research System with a level of confidence of 95% and confidence interval 5. The total patient size 100 permanent tracheostomies according to the census of Prince Sultan Medical City 2016-2017.

Tools of the study

Two tools were used to conduct the current study: **First** is the **demographic** characteristics and clinical data about the patients. This tool include age, gender, marital status , educational back ground, work, medical history, presence of co-morbid diseases as hypertension , diabetes, date about the reason for the tracheostomy, duration of the tracheostomy, and way of breathing. This tool was developed by the researcher after searching the literature to find out about factors that might affect or interfere with quality of life.

The Second is University of Washington quality of life of mechanically ventilated patients undergoing a tracheostomy (Pandian et. al.2015). The questionnaire provides clinicians with an accurate assessment of patients' quality of life and facilitate optimal decision-making regarding patients' plan of care. It was originally developed for patients who are treated in the ICUs. The questionnaire focuses on twelve items mainly: overall comfort, airway comfort, comfort of breathing, activity, bedside recreation, swallowing, speech, saliva spit control, mood, anxiety, sleep and autonomy. Responses to each item are Likert-scale type that range from 2 to 4 responses based on the nature of the item.

The total score of the questionnaire range from 0 to 100 with 6 responses (0) very poor, (20) poor, (40) fair, (60) good, (80) very good and (100) outstanding. For the reason that it would be difficult for a patient with tracheostomy to have an outstanding quality of life, the scoring system was redistributed as (0) very poor, (20) poor, (40) fair, (60) good and (80) very good.

Data were collected by the researcher after obtaining the official approval from KSU, and the administration of Prince Sultan Military Medical City. Data collection started after piloting the study, then the data were started to be collected through the following steps: Eligible subjects were recruited by the researcher based on the inclusion criteria , pre operatively or pre-procedure , the research aim was explained to the patients focusing on the main objectives and processes of the study , after obtaining the patients agreement to participate in the study , the first time interview was scheduled according to the physiological stability criteria which is: conscious level , vital signs and ability to react to the external environment , in a structured interview, the researcher read and explain the items of the questionnaire and ask the patient to choose one of the alternatives which it more suit their feeling , needed explanation were provided in accordance with the patient's needs and understanding which effected the require time to filed the questionnaire , after finishing the interview, scheduling of the second one is fixed to be 3Months later and during the follow up, data collection was started at March 2018 and lasted August 2018 .

III. STATISTICAL ANALYSIS

Data were categorized, coded and validated before data entry. Data were entered in SPSS (Statistical Package for Social Sciences) version 20. Descriptive statistics such as mean, range, standard deviation, number and frequencies were used to describe the study variables. Exploratory analysis was used to examine the association between demographic characteristics of the study sample and the outcome which is quality of life.

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IV. RESULTS

Descriptive statistics for the study variables showed that the mean age was reported as 53.31 (18.37) years. 72.5% were males and 27.5% were females. 57.5% were married 23.8 % widowed, 12.5% divorced and 6.2% were singles. Regarding education, 37.5% had primary school education, 36% had high school, 17.5% were illiterate and 9% had bachelor's degree. 51% were retired, 32.5% were working, 12.5% were house wives and 4% were not working.

Diagnosis of the study participants was reported as 45% respiratory causes (respiratory failure, chronic obstructive pulmonary diseases, Aspiration pneumonia, hospital acquired pneumonia, subglottal edema, carbon monoxide poisoning), 35% neurological causes (spinal cord injury, CVA, post RTA, head trauma, Intraventricular haemorrhage, stroke, hydrocephalus, intracranial haemorrhage), 6.2% cardiac causes (coronary artery disease, congestive heart failure, cardiogenic shock, ischemic heart disease), 3.8% cancer (different types) and 10% were due to general causes such as (septic shock, end stage renal failure, epilepsy) . As for comorbidities, 42.5% had one chronic illness, 28.8% had from 2 to 3 chronic illnesses, 1.3% had 4 and more chronic illnesses and 27.5% reported having no chronic illnesses.

The reason for tracheostomy was to deliver oxygen to the lung in 58.7%, to bypass obstructed upper way in 21.3%, to clean and remove secretions in 20%. 57.5% of the participants were not on mechanical ventilation and 42.5% were breathing through mechanical ventilation. Demographic characteristics of the study participants are presented in table 1.

Table 1: Demographic characteristics of the study participant

Items	**Number (%)** **N= 80**
Age	Mean: 53.31 SD: 18.37
Gender	
Male	58 (72.5)
Female	22 (27.5)
Marital Status	
Married	46 (57.5)
Single	5 (6.2)
Divorced	10 (12.5)
Widowed	19 (23.8)
Education	
Illiterate	14 (17.5)
Primary school	30 (37.5)
High school	29 (36)
Bachelor	7 (9)
Work	
Working	26 (32.5)
Not working	3 (4)
Retired	41 (51)
Housewives	10 (12.5)
Diagnosis	
Respiratory	36 (45)
Neuro	28 (35)
Cardiac	5 (6.23)
Cancer	3 (3.8)
General	8 (10)
Comorbidities	
None	22 (27.5)
One chronic disease	34 (42.5)
2 to 3 chronic disease	23 (28.8)
4 and more chronic disease	1 (1.3)

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Reason for tracheostomy	
To deliver oxygen to the lung	47 (58.7)
To bypass obstructed upper airway	17 (21.3)
To clean and remove secretion	16 (20)
Way of breathing	
On mechanical ventilation	34 (42.5)
Not on mechanical ventilation	46 (57.5)

Scores for the quality of life scale range from 0 to 100 with 6 responses, (0) very poor, (20) poor, (40) fair, (60) good, (80) very good and (100) outstanding quality of life. For the reason that it would be difficult for a patient with tracheostomy to have an outstanding quality of life, the scoring system was redistributed as 0 very poor, 20 poor, 40 fair, 60 good and 80 is very good. To compare how total quality of life immediately after having the tracheostomy and 3 months later, it was found that quality of life was reported immediately after tracheostomy as poor in 76.2%, very poor among 22.5% and fair among 1.3%. Three months after tracheostomy showed that 50% reported fair quality of life, 32.5% poor quality of life, 8.75% reported very poor and good quality of life. Results of quality of life are presented in table 2.

Table 2: Comparison between the Quality of life of study participants immediately and 3 months after tracheostomy

Item	**Immediately #(%)**	**3 months after tracheostomy #(%)**
Very poor	18(22.5)	7 (8.75)
Poor	61(76.2)	26 (32.5)
Fair	1(1.3)	40 (50)
Good	0	7 (8.75)
Very good	0	0

To test which variable among demographics and clinical factors contributed the most to quality of life immediately and 3 months after tracheostomy, a multiple regression analysis was done. Demographics and clinical variables were regretted to the overall quality of life and results showed that immediately after tracheostomy all the demographics and clinical variables together explained 34% of variance on quality of life but the model was not significant (r = .34, p = .44).

Marital status was the more important variable that contributed to quality of life immediately after tracheostomy with singles having better quality of life than married (Beta = -.21, p = .26) followed by diagnosis (Beta = .15, p = .38) but they were not statistically significant.

Regarding 3 months after tracheotomy, all the demographics and clinical variables together explained 59% of variance on quality of life and the model was statistically significant (r = .59**, p = .000). Breathing way reported the most effect (Beta =. 31, p = .006), then education (Beta = .25, p = .02) and marital status (Beta = .23, p = .16) but the effect of marital status was not statistically significant. Results of regression analysis are presented in table 3.

Table 3. Results of regression analysis

Immediately after tracheostomy					
	Beta	P value	R	F	P value
Gender	.010	.95	.34	1.005	.44
Marital status	**-.214**	**.26**			
education	.027	.12			
Diagnosis	**.152**	**.20**			
Comorbidity	-.005	.97			
Tracheostomy duration	.072	.60			
Tracheostomy reason	-.084	.47			
Breathing way	.061	.63			

3 months after tracheostomy					
	Beta	P value	R	F	P value
Gender	.011	.93	.59	4.280	.000
Marital status	**-.23**	**.16**			
Education	**.25**	**.02**			
Diagnosis	.011	.91			
Comorbidity	.005	.97			
Tracheostomy duration	.000	.99			
Tracheostomy reason	-.124	.21			
Breathing way	**.31**	**.006**			

V. DISCUSSION

QOL is defined as the individuals' perception of his or her situation in life that is based on his or her own believes, values, culture, experiences, expectations and concerns (Mouser, 2013). It is essential for health care providers and caregivers to assess quality of life as experienced by specific patients' group to be able to decide the management and care plan. The purpose of the present study was to investigate the quality of life of patients immediately after having a tracheostomy and then 3 months later. Some clinical variables of interest were studied such as diagnosis, comorbidity, tracheostomy duration, tracheostomy reason and breathing way.

Results showed that participants in this study reported poor quality of life in general immediately and slightly better after 3 months of tracheostomy , it may be due to improving in general condition and having different tracheostomy tube which can help them to communicate with family and with health care provider , it also may be clarified by change on the environment like transferring from ICU to general ward or to home ,religious beliefs and starting to adapte with presence of the tracheostomy tube . This result were consistent with those of Depuydt et al (2016) who reported that there was no significant differences in long-term survival in patients discharged from the ICU with tracheostomy and were dependent on the ventilator and patients with tracheostomy who weaned at the time of discharge. Their results showed low physical QOL scores in both groups. Although their study was prospective, they recommended prospective and multicenter studies to confirm these results.

Hashmi et al. (2010) explored the quality of life and self-image in patients undergoing tracheostomy. Their results indicated that patients who did not undergo planned tracheostomy experienced a decrease in their physical and mental functioning. Although their sample was different than the sample of the current study since they studied patients undergoing an elective tracheostomy for non-malignant laryngotracheal pathologies, they reported a similar result of poor quality of life. They also recommended perioperative assessment to improve physical and mental health in patients undergoing elective tracheostomies.

In the current study, a considerable percentage reported moderate airway comfort in terms of moderate pain that need mediation and moderate difficulty with breathing immediately after having the tracheostomy which were changed to mild pain that needs medication and mild difficulty with breathing 3 months later. This specify that there was a pit improvement in the quality of breathing after having tracheostomy. This was reported by Davis, et al. (1999) who investigated changes in respiratory mechanics in terms of work of breath before and after tracheostomy. Their results showed reduction in the work of breath and an improvement in breathing pattern.

In addition, results of the present study was similar to the work of Kim, et al (1998) studied the effect of tracheotomy on breathing among patients with obstructive sleep apnea. Their results showed effective treatment of obstructed sleep apnea after having tracheostomy.

VI. CONCLUSION

The present study provides evidence for experiencing a poor quality of life among patients who have a permanent tracheostomy immediately after tracheostomies and a noticeable improvement in the quality of life with time. Participants in the current study reported difficulties with most of the items related to quality of life and some levels of anxiety and poor sleep in the immediate period. On the other hand, participants reported an improvement in their quality of life 3 months after having the tracheostomy.

VII. RECOMMENDATIONS

Up on the findings of the current study the following recommendations are summarized as

- Follow up studies with larger sample, random selection and multi-sites.
- Replication of the study with including qualitative methodology.
- Using longitudinal research design to explore quality of life over time (6 months and 1 year) after having tracheostomy would help identifying challenges that patients and caregivers might face throughout their life.
- Enhance quality of life for patients who are having tracheostomy through health education for patients, families and nursing homes if applicable.

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