



# Validity of St. George's respiratory questionnaire in lung cancer population

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## ABSTRACT

*The main aim of this study is: to determine the concurrent validity of St. George Respiratory Questionnaire with Chronic Respiratory Questionnaire as a gold standard measure to measure health related quality of life in respiratory (chronic airflow limitation) diseases. The research was objected to check the validity of St. George Respiratory Questionnaire in lung cancer population. A Cross Sectional Study design was followed. As the result it was found out that there is high to moderate correlation between domains of SGRQ and CRQ & there is moderate correlation between domain of SGRQ and SF – 36. One way of capturing the personal and social context of patients is to use HRQoL measures. The inclusion of HRQoL in clinical investigations has increased significantly during the last two decades, as has the development of psychometrically sound HRQoL instruments to measure a variety of health conditions. In present study, Results indicate high correlation ( $r = -0.826$ ,  $p < 0.05$ ) between SGRQ and CRQ and moderate correlation ( $r = -0.697$ ,  $p < 0.05$ ) between SGRQ and SF-36, because SF-36 is generic health related questionnaire while CRQ is disease specific questionnaire. Our results suggest that the SGRQ is a valid measure to assess HRQOL in subject with Lung cancer. The SGRQ is valid and compares well with the CRQ and SF-36. There was an excellent concurrent validity for SGRQ and CRQ, moderate concurrent validity of SGRQ with SF-36 in lung cancer.*

**Keywords**— Health Related Quality of Life, Lung Cancer, St. George Respiratory Questionnaire (SGRQ), Chronic Respiratory Questionnaire (CRQ)

## 1. INTRODUCTION

Cancer is the leading cause of death worldwide, it accounted for 7.4 million deaths (around 13% of all deaths) in 2004<sup>1</sup>. In 2005, cancer killed approximately 826,000 people in India<sup>2</sup>. Lung cancer is among the five main types of cancer leading to overall cancer mortality contributing about 1.3 million deaths/year globally<sup>1</sup>. Lung cancer accounts for 7% of total cancer DALY (Disability Adjusted life years) in India<sup>3</sup>. Cancer is defined as abnormal and uncontrolled division of cells that then invade and destroy the surrounding tissues<sup>4</sup>. Lung cancer is defined as any cancer arises from air passages is called lung cancer<sup>5</sup> Pulmonary symptoms are Dysnea, cough, wheeze, blood stain sputum and hoarseness.<sup>6,7</sup> Dyspnoea, an uncomfortable awareness of breathing, is a very common symptom of patients with lung cancer. Shortness of breath greatly affects the quality of life of these patients.<sup>8</sup> Dyspnea predominant in 80% of lung cancer patients.<sup>9</sup> Dyspnea is a one of symptoms that causes greatest stress to caregivers.<sup>9</sup> Dyspnea causes loss of physical stamina, so that even activities of daily leaving (ADL) became difficult or even impossible.

Quality of life can be defined as a composite measure of physical and social wellbeing as perceived by each individual or by group of individual.<sup>10</sup> HRQOL refers to multidimensional assessments that include at least the physical, emotional (or psychological) and social domains, and may also include other domains such as cognitive functioning. HRQOL instrument require the little technical support and can be used in high resources and in low resources areas<sup>12</sup>, but there is no disease specific instrument that has been validated for persons with lung cancer.

The St. George Respiratory Questionnaire (SGRQ) is an Index designed to measure and quantify health-related health status in patients with chronic airflow limitation.<sup>11</sup> SGRQ, an existing instrument that has been validated for use in patient with several types of lung diseases. I.e. COPD, cystic fibrosis, bronchial asthma and bronchiectasis<sup>11</sup> and pulmonary tuberculosis.<sup>12</sup> there is no study has been done to measure HRQoL by using SGRQ in lung cancer population.

The SGRQ divided into three sections component of “symptoms”, “activity” and “impacts” Chronic Respiratory Questionnaire (CRQ) measures physical and emotional function divided into four dimensions: dyspnoea, fatigue, emotion, and mastery.

Medical Outcomes Short Form 36: is a generic health-related quality-of-life instrument, which has been used to assess quality of life in a variety of chronic medical conditions including COPD and asthma<sup>35-36</sup>.

Its validity, reproducibility, and responsiveness to changes over time have been well demonstrated. SGRQ is measures respiratory disease specific HRQOL and reliability and validity of this questionnaire is done in many of the respiratory diseases, till now no study has been done to measure HRQOL in Lung Cancer by using Respiratory disease specific Questionnaire. So, the purpose of this study is to find out the concurrent validity and measurement of Health related QOL in lung cancer patients by using St. George Respiratory Questionnaire.

## **2. AIMS AND OBJECTIVES**

### **2.1 Aim**

To determine the concurrent validity of St. George Respiratory Questionnaire with Chronic Respiratory Questionnaire as a gold standard measure to measure health related quality of life in respiratory (chronic airflow limitation) diseases.

### **2.2 Objective**

**Primary objective:** To check the validity of St. George Respiratory Questionnaire in lung cancer population.

**Secondary objective:** To measure the health-related quality of life in lung cancer patients using self administered questionnaire.

## **3. METHODOLOGY**

### **3.1 Study Design**

Cross-sectional study design

### **3.2 Source of data**

The participants with Lung Cancer of this study were recruited from the following hospital

- Gujarat cancer research institute, Ahmedabad.
- Vedant hospital, Ahmedabad.
- Apollo hospital, Ahmedabad.

Permission with the ethical clearance was obtained from the ethical committee of Srinivas College of Physiotherapy and Research Center and also from the above-mentioned hospitals.

### **3.3 Sampling Technique**

Since the study was done on Lung cancer patients and subject were chosen based on the selectivity criteria. Hence purposive sampling was done.

### **3.4 Sample Size**

A total 59 number of cancer subjects were selected for the study. Out of 59 subjects 34 included in study as 17 subjects were not willing to take participation and 8 did not meet the inclusion criteria

### **3.5 Criteria for selection**

#### **(a) Inclusion Criteria**

- Patient with histopathologically diagnosed as lung cancer.
- Age more than eighteen years.

#### **(b) Exclusion criteria**

Subject with history of:

- Psychiatric disorders.
- Neurological impairments.
- Muscular dystrophies.
- Cognitive impairments.
- Pediatrics.
- Medically unstable.

## **4. PROCEDURE**

The participants who meet the inclusion criteria were asked to sign an informed consent form approved by the institution. Pre participation data was taken for each subject prior to study which includes Name, Age, Sex, Socioeconomic status, Concurrent disease, and Type of Lung cancer. Subjects were asked to fill the questionnaire which was design to measure their level of health-related quality of life by using SGRQ, CRQ and SF-36 respectively. The participants, who do not know to read and write, were explained about the questionnaire in their mother tongue and response was noted by the person interviewing.

### **4.1 Data Recording and Tabulation**

Data was collected in hard copies of all questionnaires, than the data for SGRQ was feeded in the SGRQ Microsoft Excel based calculator as recommended by the developer, while for the CRQ the scoring was done on a 7 point likert scale higher the score better the quality of life as suggested by developer and for SF – 36 the same Microsoft Excel based calculator as recommended by the developer.

### **4.2 Statistical Analysis**

Basic characteristics of subjects age, gender, height, weight and BMI was analyzed by Descriptive statistics. Concurrent validity of SGRQ with CRQ and SF-36 was validated with Spearman's correlation test. Statistical analysis done by using SPSS Version 14.0.

5. RESULTS

Table 1: Descriptive data of total scores of SGRQ, CRQ and SF-36

	Mean	Standard Deviation
Total SGRQ	54.2544	17.68
Total CRQ	75.2353	18.35
Total SF-36	46.5588	18.76

Table 1 shows the descriptive statistics i.e. mean and Standard Deviation of SGRQ, CRQ and SF-36 score (  $x = 54.25$   $SD = 17.68$ ,  $x = 75.23$   $SD = 18.35$  and  $x = 46.55$   $SD = 18.76$  respectively).

Table 2: Descriptive data of Domains of SGRQ, CRQ and SF-36.

		Mean	Standard Deviation
SGRQ	Symptoms	65.5368	17.09
	Activity	59.0712	20.11
	Impact	47.6065	18.63
CRQ	Dysnea	20.8235	4.69
	Fatigue	14.9706	3.97
	Emotional Functioning	25.2941	6.96
	Mastery	14.5588	4.11
SF-36	Physical functioning	52.5000	20.53
	Role-Physical	36.0294	29.63
	Bodily-Pain	42.0294	18.60
	General Health	39.5000	15.95
	Physical health Component Score	42.8235	18.32
	Vitality	44.5588	17.89
	Social Function	52.0294	21.17
	Role Emotional	50.9706	36.08
	Mental Health	55.0588	19.39
	Mental health Component Score	48.2941	18.46

Table 2 describes the descriptive statistics for subjects age and all the domains of SGRQ, CRQ and SF-36.

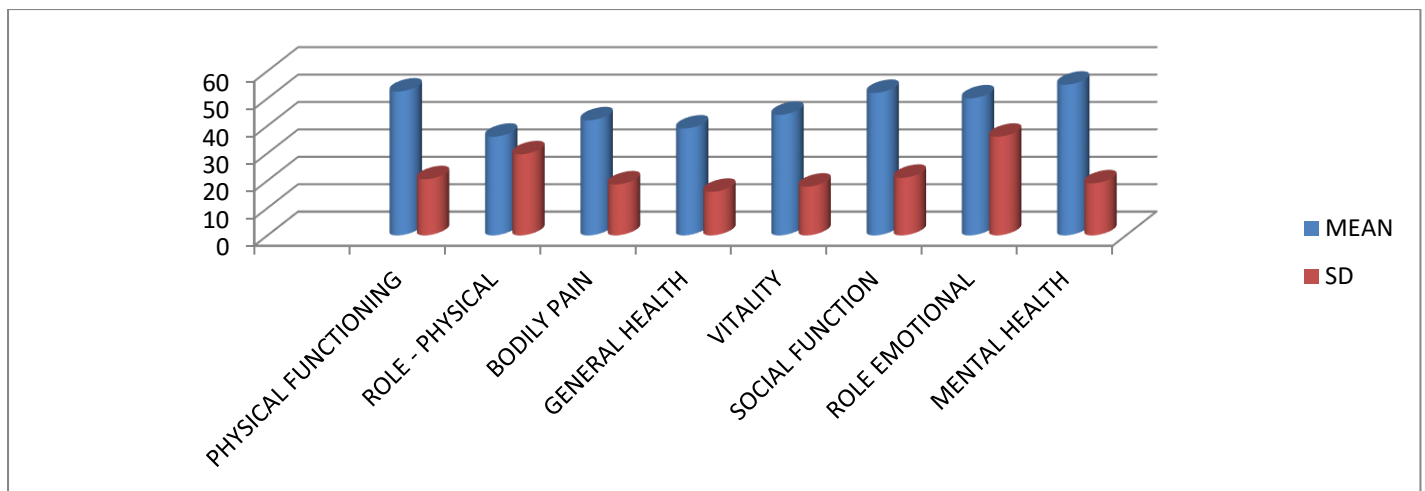


Fig. 1: Shows descriptive data of Domains of SF-36

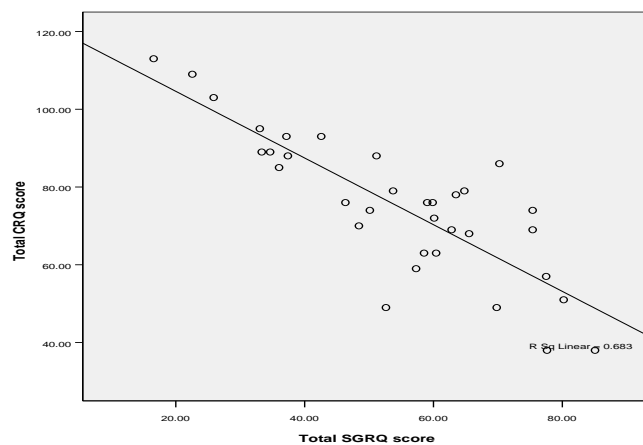


Fig. 2: Shows correlation between total score of SGRQ and total score of CRQ

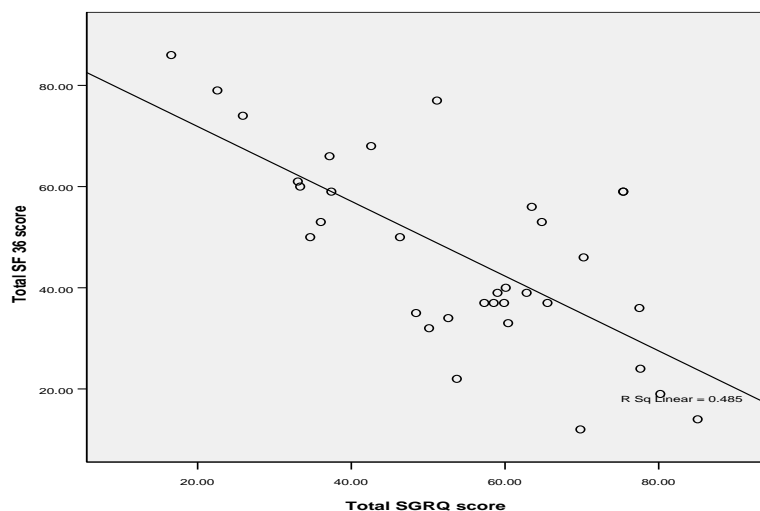


Fig. 3: Shows correlation between total score of SGRQ and total score of SF-36

Table 3: Correlations between the SGRQ domains and the CRQ

SGRQ Domains	CRQ Domains	Correlation(r)	Significance (p)
Symptoms	Dysnea	-0.396*	0.020
	Fatigue	-0.596**	0.0001
	Emotional function	-0.719**	0.0001
	Mastery	-0.751***	0.0001
Activity	Dysnea	-0.570**	0.0001
	Fatigue	-0.495*	0.0003
	Emotional function	-0.691**	0.0001
	Mastery	-0.619**	0.0001
Impacts	Dysnea	-0.609**	0.0001
	Fatigue	-0.460*	0.0006
	Emotional function	-0.711**	0.0001
	Mastery	-0.641**	0.0001
Total Score	Dysnea	-0.601**	0.0001
	Fatigue	-0.528**	0.001
	Emotional function	-0.757*	0.0001
	Mastery	-0.699**	0.0001

\*\*\*= high correlation \*\*=moderate correlation \*=low correlation.

Table 3 shows correlation between domains of SGRQ and CRQ

Table 4: Correlations between the SGRQ domains and the SF-36.

SGRQ Domains	SF-36 Domains	Correlation(r)	Significance (p)
Symptoms	PCS score	-0.669**	0.0001
	MCS score	-0.541**	0.001
Activity	PCS score	-0.676**	0.0001
	MCS score	-0.586**	0.0001
Impacts	PCS score	-0.662**	0.0001
	MCS score	-0.636**	0.0001
Total Score	PCS score	-0.716**	0.0001
	MCS score	-0.646**	0.0001

\*\*\*= high correlation \*\*=moderate correlation \*=low correlation.

Table 4 shows correlation between domains of SGRQ and SF-36.

## 6. DISCUSSION

The evaluation of lung function does not fully reflect the impact of the disease on a patient and, therefore, should be supplemented by using quality-of-life questionnaires.<sup>15</sup> One way of capturing the personal and social context of patients is to use HRQoL measures. The inclusion of HRQoL in clinical investigations has increased significantly during the last two decades, as has the development of psychometrically sound HRQoL instruments to measure a variety of health conditions.

In present study, Results indicate high correlation( $r = - 0.826, p < 0.05$ ) between SGRQ and CRQ and moderate correlation( $r = - 0.697, p < 0.05$ ) between SGRQ and SF-36, because SF-36 is generic health related questionnaire while CRQ is disease specific questionnaire.<sup>13</sup> Molken et al also found well correlation ( $r = - 0.725; P < 0.001$  and our result is  $r = - 0.826; P < 0.001$ ) between total of SGRQ and total score of CRQ. The total scores of both questionnaires (SGRQ and CRQ) correlated best with each other and with the each domain scores.<sup>9</sup> Even in our study also the total score of SGRQ correlated well with each domains.

Moderate to high significant correlation found between various domains of SGRQ and total score of CRQ ( $p < 0.05$ ) similarly same results were found by a previous study.<sup>9</sup>

Results of our study are supporting the results of studies<sup>10,11</sup> being done previously to measure the correlation between SGRQ and SF-36 in different diseases. Moderate to high significant correlation was found between and total score of SGRQ and PCS and MCS score of SF-36. Carolyn BW et al<sup>11</sup> other two previous studies,<sup>12,13</sup> found overall, SGRQ scores were more strongly associated with the PCS than MCS of SF-36. In general, scores of SF-36 were better correlated with the Impact component of the SGRQ than the Symptoms or Activity component. These may be due to Impacts component contains similar aspects as in PCS and MCS components of SF-36.

We found moderate significant correlation found between various domains of SGRQ and total score of SF-36 ( $p < 0.05$ ) (table 5.7). So, SGRQ is valid tool to measures HRQOL in various Respiratory Diseases as same as the gold standard tool CRQ. Moreover, SGRQ measures larger aspects of HRQOL compare to CRQ thus provide better idea about HRQOL of subjects and allow clinician/physiotherapist to measure impact of a disease on a patient's daily life and they can be especially valuable in clinical trials design to access the benefits, side effects and cost of different treatments.

SGRQ is available in 48 languages including 11 Indian languages while CRQ is available in only 8 languages (no Indian language) so SGRQ is better applicable to measure HRQOL in disease specific conditions in Indian scenario.

## 7. LIMITATIONS

- Smaller sample size.
- To precisely know HRQOL, how long its impact remains longitudinal study should be done.

## 8. FURTHER RECOMMENDATIONS

- Further research should be focused on specific type of locally language adapted questionnaire.
- Further research should be done with Cancer specific questionnaire along with HRQOL questionnaire.
- The SGRQ emerges as an excellent discriminative and a good evaluative instrument for LC subjects, and its use should be encouraged in routine assessment of patients' health status.
- Psychometric properties of Questionnaire should be done in Lung cancer.

## 9. CONCLUSION

Our study leads to following conclusions:

- Our results suggest that the SGRQ is a valid measure to assess HRQOL in subject with Lung cancer.
- The SGRQ is valid and compares well with the CRQ and SF-36.
- There was an excellent concurrent validity for SGRQ and CRQ, moderate concurrent validity of SGRQ with SF-36 in lung cancer.
- There was moderate to high significant correlation found between the domains of SGRQ and CRQ, except there was low significant correlation between SGRQ domain symptoms and CRQ domain dysnea, SGRQ domain activity and CRQ domain fatigue and SGRQ domain impacts and CRQ domain fatigue.
- Similarly, moderate to high significant correlation was found between the total score of SGRQ and various domains of CRQ.
- Moderate to high significant correlation found between various domains of SGRQ and PCS and MCS score of SF-36, and total score of SGRQ and PCS and MCS score of SF-36.
- High significant correlation found between various domains of SGRQ and total score of CRQ.
- Moderate significant correlation found between various domains of SGRQ and total score of SF-36.
- The SGRQ emerges as an excellent discriminative and a good evaluative instrument for Lung cancer subjects, and its use should be encouraged in routine assessment of patients' health status.

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