

Assessment of health-related quality of life among patients with non-communicable diseases

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ABSTRACT

Non-communicable diseases (NCDs) are a global challenge towards diminishing quality of life. Health related quality of life (HRQoL) is a widely accepted measure of burden of disease for individuals with chronic conditions. Due to paucity of data in Western Rajasthan, India, this study was planned to assess the HRQoL due to NCDs in Jodhpur, India. A descriptive cross-sectional study was planned in government NCD center of Jodhpur. Convenience sampling was used to select 398 respondents and socio demographic data was collected. Short Form-36 (SF-36) questionnaire was used to measure perceived effects due to NCDs across eight domains of analyzed using descriptive and inferential statistics. High combined mean scores were obtained in domains of Social Functioning (77.87) and Mental Health (75.36%) and lowest scores for General Health (54.70%), Bodily Pain (60.06%) and Role Emotional (60.33%). Males recorded higher mean scores than females across all domains with high statistical significance for Bodily Pain, Vitality, Role Physical and Mental Health. Findings suggested worst and least affected domains of regular life functions due to NCDs. Greater focus on emotional distress, active inclusion of females in national health programmes and integration of NCD control program with Mental Health Program would aid to improve overall HRQoL in affected individuals.

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1. INTRODUCTION

Non-communicable diseases (NCDs) are the leading cause of deaths of over 15 million people aged between 30 and 69 years in low- and middle-income countries every year. Out of these, 85% are “premature” and preventable deaths, occurring before 70 years of age [1]-[4]. Moreover, 80% of the deaths due to cardiovascular diseases and diabetes, 90% of deaths due to Chronic Obstructive Pulmonary Diseases and over two-thirds of deaths due to cancer occurring in developing countries can be prevented by eradicating the common risk factors [2]. In India alone, the figure reaches 5.8 million deaths every year, corresponding to one in every four deaths caused due to the four major NCDs (heart and lung diseases, stroke, cancer and diabetes) before a person reaches 70 years of age [5], [6].

Non-communicable diseases have also been documented as a global challenge leading to diminished quality of life (QoL) [2], [7], [8]. Once considered as diseases of developed nations and

affluent societies, statistics show that the non-communicable diseases are now posing a disproportionately large burden on low- and middle-income countries [9]. In India, there has been a marked increase in contribution of NCDs towards disability-adjusted life years (DALYs) from 30% in 1990 to 55% in 2016, indicating an ever growing disease burden [5].

Health related quality of life (HRQoL) is based on a multi-dimensional perception of an individual's own physical and mental health over time [10], [11]. It is a subjective assessment of the effects of disease on physical, social and emotional domains of a person's life and is a widely accepted measure of burden of disease [12]-[15]. HRQoL is particularly important for individuals with chronic health conditions and is significantly affected by anxiety, awareness regarding diseases, control and emotional disturbances, thus, may serve as an important predictor of survival for patients with chronic health conditions [16]-[18].

With the increase in prevalence of NCDs, increasing attention is now being paid to assess HRQoL due to NCDs in many parts of the country. Western Rajasthan region of the country has its own set of challenges due to a higher prevalence of people living in the lower socio-economic strata and harsh living conditions in the proximity to Thar Desert [19], [20]. Due to lack of such studies and scarcity of data in the Western Rajasthan region, this study was planned to assess the HRQoL due to NCDs in a dedicated health facility in the region. This study aimed to assess the HRQoL due to NCDs in patients visiting Government NCD Center of Jodhpur, India.

2. RESEARCH METHOD

A descriptive cross-sectional study was conducted in the government NCD center of Jodhpur city after due permission from the Institutional Ethical Committee of AIIMS Jodhpur. Convenience sampling was used to include patients attending NCD clinics of either gender over a period of two months. Considering the cross-sectional study design sample size was calculated using the formula $4pq/L^2$, considering 5% margin of error (L), 55% prevalence (p), and $q=100-p$ to reach the sample size of 396.

A pre-validated survey tool the Short Form-36 (SF-36) questionnaire was used to measure health related quality of life due to NCDs across eight domains of physical components, mental components and perceived change in health due to non-communicable diseases. To gather the socio-demographic data, questions related to age, gender and monthly income per capita were also asked [21] and the questionnaire was piloted amongst 20 respondents to check the feasibility. The scores were interpreted using the scoring approach developed by RAND healthcare for 36-Item Short Form Health Survey. In this two-step process of scoring, the pre-coded values relevant to every question were first noted in a table using a reference scoring key. Secondly, average scores were calculated by segregating the questions relevant to each of the eight domains [22]. Final scores were summarized using Microsoft Excel and Epi-Info version 7. Descriptive statistics was done using frequencies and to inferential statistics were calculated using unpaired t-test to compare the effect of NCDs on both genders. The statistical tests were two-tailed and the level of significance was set at 95%.

3. RESULTS AND DISCUSSION

A total of 398 participants were surveyed out of which 180 (45.2%) male participants had a mean age of 61.8 years and 218 (54.8%) female participants had a mean age of 58.3 years. Majority of the participants (51.8%) were in between the ages of 60 and 74 years and over 30% participants had monthly income less than INR 1,050 as shown in Table 1.

Table 1. Socio-demographic variables of respondents

	Number (n)	Frequency (%)
Gender of respondents		
Male	180	45.2
Female	218	54.8
Total	398	100.0
Age group		
15-29	6	1.5
30-44	46	11.6
45-59	102	25.6
60-74	206	51.8
>75	38	9.5
Total	398	100.0
Monthly income per capita (INR)		
<1,050	122	30.7
1,050-7,008	198	49.7
>7,008	78	19.6
Total	398	100.0

The highest combined mean scores were obtained in the domains of Social Functioning (77.87, 95% CI=72.89-82.85) and Mental Health (75.36, 95% CI=72.49-78.23); while least combined mean scores were obtained in the domains of General Health (54.70, 95% CI=51.62-57.78), Bodily Pain (60.06, 95% CI=56.42-63.70) and Role Emotional (60.33, 95% CI=56.59-64.07) as shown in Table 2. The observations were similar when seen separately for both genders, with highest scores in the domains of Mental Health (Males: 79.73, 95% CI=76.08-83.39, Females: 70.63, 95% CI=66.05-75.20) and Social Functioning (Males: 78.75, 95% CI=72.62-84.87, Females: 76.64, 95% CI=70.91-82.36) and lowest scores in the domain of General Health (Males: 58.61, 95% CI=53.89-63.34, Females: 50.40, 95% CI=46.27-54.54). Mean scores in all eight domains was found to be higher in males than in females with extremely high statistical significance in the domains of Bodily Pain ($p=0.0001$), Vitality ($p=0.0001$), Role Physical ($p=0.002$) and Mental Health ($p=0.002$) and as shown in Table 2 and high mean differences in Role Physical and Bodily Pain as shown in Figure 1.

Table 2. Showing mean scores and confidence intervals of SF-36 scales grouped according to gender of responders

Domains		Mean	95% CI	p-value
Physical functioning	Male	73.33	68.30-78.36	0.022
	Female	65.45	61.00-69.91	
	Combined score	69.78	66.52-73.03	
Role physical	Male	72.50	63.69-81.31	0.002
	Female	52.02	42.29-61.67	
	Combined score	62.25	55.75-68.75	
Role emotional	Male	61.48	55.95-67.01	0.632
	Female	59.59	54.20-64.99	
	Combined score	60.33	56.59-64.07	
Vitality	Male	75.61	72.14-79.09	0.0001
	Female	66.97	63.28-70.66	
	Combined score	71.68	69.18-74.17	
Mental health	Male	79.73	76.08-83.39	0.002
	Female	70.63	66.05-75.20	
	Combined score	75.36	72.49-78.23	
Social functioning	Male	78.75	72.62-84.87	0.622
	Female	76.64	70.91-82.36	
	Combined score	77.87	72.89-82.85	
Bodily pain	Male	67.69	62.29-73.09	0.0001
	Female	52.25	47.51-56.97	
	Combined score	60.06	56.42-63.70	
General health	Male	58.61	53.89-63.34	0.01
	Female	50.40	46.27-54.54	
	Combined score	54.70	51.62-57.78	

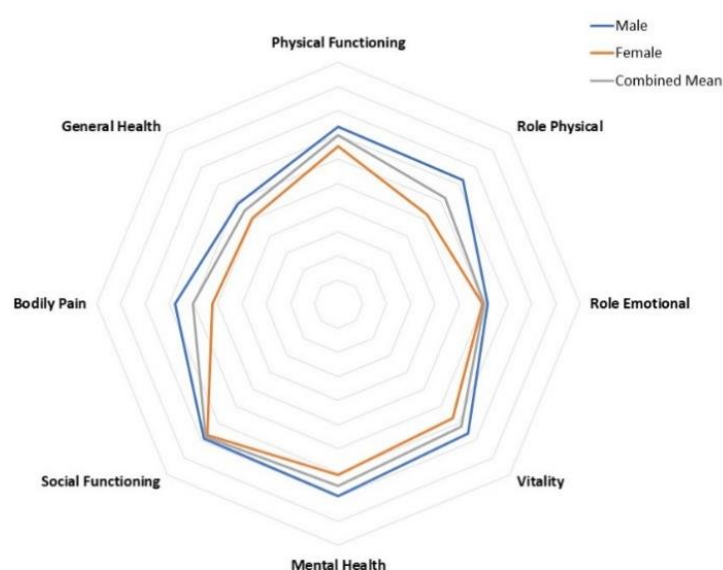


Figure 1. Radar chart with mean scores across eight domains measured using SF-36

3.1. Discussion

Till date, a major share of research regarding NCD related morbidity and mortality has been carried out, resulting in a deficient understanding of Health-Related Quality of Life due to NCDs in thar desert region of Western Rajasthan. In this study, an attempt was made to compare the least- and most-affected domains of individuals suffering from non-communicable diseases. While higher scores were obtained in the domains of Social Functioning and Mental Health, the domain of Role Limitations due to Emotional Problems, Bodily Pain and General Health received lowest mean combined scores. This indicated an inability to carry out essential day to day activities due to diseases related ailments resulting in restriction and oft-times incapacitation. It also highlights that the national programs focused towards general medical management and mental health need to take into account emotional distress produced by chronic illnesses as well. Similar findings were observed in the study conducted by Lahariya *et al.* in Central Delhi on impairment and disabilities due to NCDs [23], Kumar SA *et al.* in Shimoga, Karnataka on Type 2 diabetes patients [24] but were in contrast with studies conducted by Pius *et al.* who observed role emotional domain to be least affected (Mean=78.2) in Pathanamthitta district of Kerala [25].

Another major finding from the study indicated a poor perception of quality of life amongst females than in males in all the eight domains measured. This observation relates with the findings of Pius *et al.* who found most of SF 36 component scores significantly higher in men than women [25], Agarwal *et al.* who provided evidence regarding poor health seeking behavior in females (older widows) and its correlation with prevalence of communicable and non-communicable diseases in all States and Union Territories of India [26] and Samantha *et al.* who conducted the study on HRQoL of the oldest old [27].

Similarly, high mean differences between the genders were observed in the domains of Role Physical and Bodily Pain which was consistent with the findings in population-based studies conducted by Montazeri *et al.* and Garrat and Stavem [28], [29]. These observations indicate a need for more aggressive and comprehensive coverage of females from a national policy perspective, in ongoing NCD control programs and a larger focus on minimizing gaps across all the domains affecting quality of life as remarked by Anjana *et al.* and Mohanty *et al.* [30], [31].

The health survey questions of SF-36 were directed at the participants by specifying if the disease they suffer from has any effect on the activities listed. For example, “Do you have to cut down the amount of time spent on work and other activities due to diabetes?”, or “Do you feel worn out due to your lung disease?”. It is thus worth mentioning that even the highest mean score obtained (Social functioning-77.87%) implied that the individuals were able to carry out only a part of efficient working that they perceived themselves capable of doing, if they were not suffering from the disease.

3.2. Strengths and limitations

The study has certain limitations worth mentioning. Firstly, it is a cross-sectional study design, thus the respondents were analyzed at a given time and causal relationship could not be established. Secondly, the data collected was self-reported and recall bias as well as omissions may have occurred. To address this, prescriptions and medications were cross-checked with the information provided. Thirdly, this is a center-based study with participants from a limited geographic region, thus its validity may be enhanced with similar studies in other locations. Nevertheless, this study is the first ever conducted in this part of the country to provide an assessment of HRQoL of individuals suffering from NCDs and could be further scaled up to obtain more generalizable inferences.

4. CONCLUSION

This study showed that males recorded higher mean scores than females across all domains with high statistical significance for Bodily Pain, Vitality, Role Physical and Mental Health. The findings from this study provide an insight into worst and least affected domains of regular life functions due to non-communicable diseases. It thus provides an opportunity for a greater focus on emotional distress and general healthcare of patients rather than merely symptomatic treatment. The findings of the study could serve as a baseline for further community-based studies for a greater geographical coverage and generalizability. Another scope presented through the study findings indicates the need of a more active inclusion of females in the ongoing national programs with an emphasis on early screening and robust follow ups. An integration of NCD control programs and National Mental Health Program, with added components to cope with emotional distress would aid in developing a strong methodological setting to improve HRQoL in chronically affected individuals.

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