

The Impact of Symptomatic Chronic Venous Insufficiency (CVI) on Health-Related Quality of Life (HR QoL) in A Multi-Ethnics Society in a Developing Nation

Abdul Rahman MNA^a, Periasammy D^b, Nasreen H^c, Elagili F^a, Othman AF^a

^aDepartment of Surgery, Kuliyyah (Faculty) of Medicine, International Islamic University of Malaysia, Malaysia

^bDepartment of General Surgery, Hospital Tengku Ampuan Afzan, Kuantan, Malaysia

^cDepartment of Community Medicine, Kuliyyah (Faculty) of Medicine, International Islamic University of Malaysia, Malaysia

ABSTRACT

INTRODUCTION: Chronic venous insufficiency (CVI) is a common condition especially among those of advance age that is often neglected. As the disease severity progresses, it increases the healthcare cost and resources required, while diminishing the quality of life of the persons. Health-related Quality of Life (HRQoL) among CVI patients begins to decline once the symptom starts to appear, and reduces it further as the symptoms worsens. **MATERIALS AND METHODS:** This is a prospective, multi-centred, cross-sectional study on consenting symptomatic CVI patients who presented to the International Islamic University of Malaysia (IIUM) teaching hospital in Pahang, Malaysia. The diagnosis of CVI was confirmed on duplex imaging. Clinical grading was performed using Clinical Etiologic Anatomic Pathophysiologic (CEAP) classification. Patients completed generic validated Malay language Short Form 36 (SF36) HRQoL instrument. **RESULTS:** One hundred and ten patients (62% male) with a mean age of 57 years, Malays (60%), Chinese (25%) and Indian (15%) were recruited. The most frequent CVD symptoms reported were pain (42%). The clinical, aetiological, anatomical, and pathophysiological (CEAP) classification placed most patients in the C2 class (34%). Apart from partaking in social functions, all other elements of mental and physical health component of SF 36 showed a marked deterioration as the disease progressed. **CONCLUSIONS:** We found a significant decline in the HRQoL among symptomatic CVI patients presenting to IIUM hospital in a multi-ethnic developing country.

Keywords

Chronic Venous Insufficiency, Health-Related Quality of Life, Developing Country, Multi-Ethnic

Corresponding Author

Dr. Mohd Norhisham Azmi Bin Abdul Rahman
Department of Surgery,
Kuliyyah of Medicine
International Islamic University of Malaysia,
Kuantan Campus,
25200 Kuantan,
Pahang, Malaysia
E-mail: hishamazmi@iium.edu.my

Received: 8th January 2024; Accepted: 28th May 2024

Doi: <https://doi.org/10.31436/imjm.v23i03>

INTRODUCTION

Chronic venous insufficiency (CVI) is one of the most common prevalent diseases which has been frequently unrecognized and underestimated. Patients primarily seek medical attention to alleviate symptoms and signs that may substantially impact their health-related quality of life (HRQoL). Their symptoms include lower limb swelling, pain, heaviness and discomfort. Signs maybe noticed by patient include varicose veins (VVs), oedema, skin discolouration, lipodermatosclerosis, and, in its most severe, venous ulceration.

Risk factors that have been consistently shown to be contributing towards the development of CVI were obesity, sedentary life style, advanced age, smoking and family history of CVI.^{1,2} Despite of CVI being common, the awareness of this condition is still poor among healthcare professionals. CVI has been well established to have a deleterious impact on well-being, both physically and psychologically of pateints.^{3,4} The cost associated incurred towards CVI management amounts to 2% of Malaysian national healthcare budget, and estimated to cost USD15 billions annually.^{5,6} One of the treatment aim in managing CVI is to improve the HRQoL. National Health Care (NHS) in the United Kingdom (UK) has suggested to measure HRQoL as a marker for an effective treatment for CVI.³

The aim of our study is to evaluate the impact of symptomatic CVI on HRQoL in a developing country's multi-ethnic society. scores with each CEAP class. A p-value of <0.05 was considered as statistically significant.

MATERIALS AND METHODS

This was a prospective, multi-centred, cross sectional study of patients with CVI. We recruited all patients over the ages of 18 with symptomatic CVI between February 2018 and February 2019. Evidence of saphenofemoral or saphenopopliteal incompetence were assessed using duplex ultrasonography. Those patients with a recurrence of or had a CVI related procedures were excluded from the study.

Clinical Grading

We employed clinical, etiology, anatomy and pathophysiology (CEAP) classification to measure the clinical severity in our study patients. This grading system was originally created to provide uniformity in diagnosing and treating patient with CVI.⁷

Assessment of HRQoL

Validated Malay-language translated SF 36 was used for the purpose HRQoL assessment.⁸ 36-item Short Form Health Survey (SF36) is divided into physical components (physical functioning (PF), role physical (REP), bodily pain (BP), general health (GH)) and mental components (vitality (VT), social functioning (SF), role emotional (REE) and mental health (MH)). The English version of SF 36 has consistently been shown to be a reliable tool to assess HRQoL.⁹⁻¹¹ It has also been frequently used in CVI as well.^{3,12,13}

Statistical Analysis

The data obtained were analysed with IBM SPSS Statistics (Version 24). Descriptive tests were used for categorical data to analyse the demographic data of CVI. One way ANOVA test was used to analyze the mean and standard deviation of the HRQoL data for all 8 components against the severity of the disease according to clinical aspect of CEAP classification. Paired student t-test was used to calculate mean differences between quality of life

RESULTS

In all we recruited 110 patients (62 males) during our study period with a mean age 57 years. Ethnically, Malay forms the majority (60%), Chinese (25%) and Indian (15%). Common comorbidities included diabetes mellitus (33%), hypertension (18%) and hyperlipidaemia (13%). (Table I)

Table I: Patients demographics

Gender (male)	61 (55%)
Age (years) (mean +/- SD)	57 (14)
Ethnicity	
Malay	66 (60%)
Chinese	28 (25%)
Indian	16 (15%)
Comorbidities	
Diabetes mellitus	36 (33%)
Hypertension	20 (18%)
Dyslipidaemia	14 (13%)
Previous history of DVT	2 (1.8%)

Commonest symptoms reported by patients were pain (43%) followed by ulcer (35%). Their dominant clinical presentation was C2 (34%), followed by C5 (25%), C4 (18%), C3 (10%), C6 (9%) and C1 (4%). Anatomically, 76% of these patients were identified to have CVI involving the superficial system, followed by unidentified vein segment (17.2%), perforator (45%) and deep segment (1.8%). (Table II)

Table II: Presenting symptoms, clinical manifestation and anatomy of the incompetence valve

Presenting symptoms	
Pain	47 (43%)
Ulcer	38 (35%)
Bleeding	7 (6%)
Others	18 (16%)
Clinical manifestation (CEAP)	
C1	5 (5%)
C2	38 (35%)
C3	11 (10%)
C4	18 (16%)
C5	28 (25%)
C6	10 (9%)
Anatomy	
Superficial	84 (76%)
Deep	2 (2%)
Perforator	5 (5%)
Unidentified	19 (17%)

Table III describes the full result of HRQoL of our patients. All the 8 aspects of physical and mental health showed a significant worsening of the quality of life as their disease progressed apart from the social functioning. Although social function was not significantly reduced as the clinical classification worsened, the overall mental component (vitality, social functioning, and role

emotional, mental health) showed a marked reduction as the disease progressed.

Table III: Results of HRQoL and statistical analysis. *p – paired student t test

	C1	C2	C3	C4	C5	C6	p value*
PF	30.0 (0.001) 100%	29.92 (0.273) 100%	21.67 (3.89) 80%	20.56 (4.16) 11.1%	16.79 (4.76) 0%	10.0 (0.001) 0%	<0.001
REP	8.00 (0.001) 100%	8.00 (0.001) 100%	8.00 (0.001) 100%	7.33 (1.53) 83.3%	4.29 (1.05) 7.1%	4.00 (0.001) 0%	<0.001
BP	11.6 (0.89) 100%	11.63 (0.63) 100%	9.91 (1.08) 91.7%	9.33 (1.37) 72.2%	7.25 (1.46) 14.3%	6.22 (1.86) 11.1%	0.001
GH	19.2 (0.45) 100%	18.58 (1.39) 97.4%	16.67 (0.89) 75%	16.72 (1.23) 44.4%	14.82 (2.00) 17.9%	14.44 (2.07) 11.1%	0.001
VT	24.0 (0.001) 100%	17.6 (3.072) 91.7%	15.0 (0.74) 71.1%	14.39 (0.92) 30.4%	16.79 (1.79) 27%	16.44 (1.98) 9.3%	<0.001
SF	6.00 (0.001) 100%	5.42 (0.95) 100%	5.67 (0.78) 91.7%	5.72 (0.96) 72.2%	6.00 (1.22) 14.3%	6.00 (1.00) 11.1%	0.058
REE	6.00 (0.001) 100%	6.00 (0.001) 100%	5.25 (1.36) 75%	5.33 (1.28) 77.8%	3.12 (0.57) 3.6%	3.33 (1.00) 11.1%	<0.001
MH	18.2 (0.45) 100%	15.13 (0.58) 92.1%	16.67 (1.07) 83.3%	13.78 (1.52) 29.5%	19.5 (2.66) 14%	20.2 (4.60) 20%	<0.001
PCS	100%	99.4%	86.7%	41.7%	9.83%	5.6%	
MCS	100%	96%	80.3%	52.5%	14.7%	12.9%	

DISCUSSION

Chronic Venous Insufficiency is more commonly reported in many western countries.¹⁴ Risk factors identified there to be responsible for the development of primary CVI include advancing age, positive family history, pregnancy, gender, obesity, smoking, reduced mobility at work, low fibre intake, and constipation.²

Patients with symptomatic CVI has a significantly lower HRQoL score in comparison to their general public counterpart.^{4,15} To the best of our knowledge, there has been no prior study examining the effect of CVI on HRQoL of Malaysia, a multi-ethnic society, even though considerable amount of CVI-related article has been published.¹⁶⁻¹⁸

There are eight subscales in SF 36 which are bundled into two groups: physical and mental health. Functioning ability is being measured by physical health components, whereas the mental health components act as indicators of well-being. As evident from our study, the HRQoL in our studied population was greatly reduced. This extend of the HRQoL deterioration seems to be magnified even more among those with a more severe form of the disease. The physical components seem to be worse affected in comparison to mental components among our patients.

This fact was reported earlier by Kurz et al. in their cross-sectional population-based study of 1054 patients four industrialised nations.¹⁹ Similar findings were found among CVI patients presented for surgical intervention.⁴ The HRQoL in the clinically worst category of CVI (C6) patients was comparable to those with chronic congestive cardiac failure and chronic lung failure.³

Venous disease used to be perceived as an aesthetic problem affecting primarily on appearance, self-esteem, and emotional health. These findings have eliminated any doubts about the worsen effects of venous disease on the functional aspects of quality of life than the emotional components as the disease advances.

Over a 10-year period an uncomplicated CVI patient stands to lose 0.7 quality adjusted life year (QALY) in comparison to a healthy individual if left untreated. This factor increases to 1.0 in those with skin changes and 2.0 when CVI the to complicate with ulcer.²⁰ In the relatively young population of our study, this may also result in a significant loss of income to the patients and productivity to the society.

However, a population-based epidemiology study, the Edinburgh Vein study, found minimal correlation between clinical severity and venous symptoms.²¹ This could be because, the studied population in this epidemiology data was not among CVI patients presented to healthcare facility with symptoms related to CVI.

It is worth to note that the mere presence of CVI with only oedema (C3) did not adversely affected HRQoL significantly. Only after it reaches more advance clinical stage (C4 and above), both components of the HRQoL (physical and mental) deteriorated considerably. This is what was found in other studies as well.^{3,19} This would suggest that not all symptomatic CVI patients would benefit the same way regardless of their presentation. This important message need to be clearly imparted, especially to primary care team that would be the first point of contact. However, the awareness among the primary healthcare regarding CVI is still variable despite of established international guidelines for diagnosis and treatment CVI.²² This is supported by a clinical

epidemiology study done in Luxembourg and Belgium.²³

There is a substantial proportion (34%) of our studied population who presented at clinical stage of C5 (25%) and C6 (9%). A study comparing the open varicose vein surgery and the endovenous laser therapy (EVLIT) in a similar population also showed a similar proportion of advance clinical stage at presentation.¹⁶ This seems to be the trend in developing nation.²⁴ In contrast to developed nations, a study among symptomatic CVI by Carradice et al. showed only 3.3% of the whole studied population were among C5 and C6. A multinational study of high income countries also demonstrated lower proportion of patient with C5 (9.5%) and C6 (2.9%) included in the study.¹⁹ Our patients seem to seek treatment at a later stage and this could be due to cultural differences, religion, darker skin and customs of wearing clothes that cover their legs.

LIMITATION

Despite consistently being shown to be a reliable tool for assessment of HRQoL in CVI patient, generic HRQoL instruments could still be affected by any other coexisting physical and psychological disorders. In addition, patient's own attitudes and expectations would also affect the HRQoL score.

Eliciting a true answer about the symptom's severity from patients can be challenging. They may exaggerate their symptoms and its effect in order to maximize their chances of earning a medical intervention as early as possible for their condition. This effect may not be totally eliminated in our study.

CONCLUSION

This study has demonstrated that the presence of varicose veins significantly affects patients' quality of life as measured by SF 36 and progressively worsen as the disease advances. The physical aspects of quality of life seems to be affected more than the mental aspect. Most of our patients presented at a later stage of the disease in which they may not be able to cope physically with the burden of the disease.

INSTITUTIONAL REVIEW BOARD (ETHIC COMMITTEE)

Ethical approval obtained prior to the commencement of the study.

REFERENCES

1. Brand FN, Dannenberg AL, Abbott RD, Kannel WB. The epidemiology of varicose veins: the Framingham Study. *Am J Prev Med.* 1988;4(2):96-101.
2. Robertson L, Evans C, Fowkes FG. Epidemiology of chronic venous disease. *Phlebology.* 2008;23(3):103-11.
3. Carradice D, Mazari FA, Samuel N, Allgar V, Hatfield J, Chetter IC. Modelling the effect of venous disease on quality of life. *Br J Surg.* 2011;98(8):1089-98.
4. Smith JJ, Garratt AM, Guest M, Greenhalgh RM, Davies AH. Evaluating and improving health-related quality of life in patients with varicose veins. *J Vasc Surg.* 1999;30(4):710-9.
5. Rabe E, Pannier F. Societal costs of chronic venous disease in CEAP C4, C5, C6 disease. *Phlebology.* 2010;25 Suppl 1:64-7.
6. Rice JB, Desai U, Cummings AK, Birnbaum HG, Skornicki M, Parsons N. Burden of venous leg ulcers in the United States. *J Med Econ.* 2014;17(5):347-56.
7. Porter JM, Moneta GL. Reporting standards in venous disease: an update. International Consensus Committee on Chronic Venous Disease. *J Vasc Surg.* 1995;21(4):635-45.
8. Sararaks S, Azman AB, Low LL, Rugayah B, Aziah AM, Hooi LN, et al. Validity and reliability of the SF-36: the Malaysian context. *Med J Malaysia.* 2005;60(2):163-79.
9. Brazier JE, Harper R, Jones NM, O'Cathain A, Thomas KJ, Usherwood T, et al. Validating the SF-36 health survey questionnaire: new outcome measure for primary care. *BMJ.* 1992;305(6846):160-4.
10. Garratt AM, Ruta DA, Abdalla MI, Buckingham JK, Russell IT. The SF36 health survey questionnaire: an outcome measure suitable for routine use within the NHS? *BMJ.* 1993;306(6890):1440-4.
11. McHorney CA, Ware JE, Jr., Raczek AE. The MOS 36-Item Short-Form Health Survey (SF-36): II. Psychometric and clinical tests of validity in

- measuring physical and mental health constructs. *Med Care.* 1993;31(3):247-63.
12. Kaplan RM, Criqui MH, Denenberg JO, Bergan J, Fronek A. Quality of life in patients with chronic venous disease: San Diego population study. *J Vasc Surg.* 2003;37(5):1047-53.
 13. Andreozzi GM, Cordova RM, Scomparin A, Martini R, D'Eri A, Andreozzi F, et al. Quality of life in chronic venous insufficiency. An Italian pilot study of the Triveneto Region. *Int Angiol.* 2005;24(3):272-7.
 14. Beebe-Dimmer JL, Pfeifer JR, Engle JS, Schottenfeld D. The epidemiology of chronic venous insufficiency and varicose veins. *Ann Epidemiol.* 2005;15(3):175-84.
 15. Garratt AM, Macdonald LM, Ruta DA, Russell IT, Buckingham JK, Krukowski ZH. Towards measurement of outcome for patients with varicose veins. *Qual Health Care.* 1993;2(1):5-10.
 16. Lakhwani MN, Dadlani NI, Wong YC. 980-nm laser therapy versus varicose vein surgery in racially diverse Penang, Malaysia. *ANZ J Surg.* 2009;79(5):352-7.
 17. Murli NL, Navin ID. Classical varicose vein surgery in a diverse ethnic community. *Med J Malaysia.* 2008;63(3):193-8.
 18. Murli NL, Lee TC, Beh ML. Holistic management of venous ulcers especially with endovenous laser treatment using 980nm laser in an ethnically diverse society. *Med J Malaysia.* 2013;68(6):453-8.
 19. Kurz X, Lamping DL, Kahn SR, Baccaglini U, Zuccarelli F, Spreafico G, et al. Do varicose veins affect quality of life? Results of an international population-based study. *J Vasc Surg.* 2001;34(4):641-8.
 20. Walters SJ, Brazier JE. Comparison of the minimally important difference for two health state utility measures: EQ-5D and SF-6D. *Qual Life Res.* 2005;14(6):1523-32.
 21. Bradbury A, Evans C, Allan P, Lee A, Ruckley CV, Fowkes FG. What are the symptoms of varicose veins? Edinburgh vein study cross sectional population survey. *BMJ.* 1999;318(7180):353-6.
 22. Lane TR, Sritharan K, Herbert JR, Franklin IJ, Davies AH. Management of chronic venous disease by primary care. *Phlebology.* 2013;28(6):299-304.
 23. Vuylsteke ME, Thomis S, Guillaume G, Modliszewski ML, Weides N, Staelens I. Epidemiological study on chronic venous disease in Belgium and Luxembourg: prevalence, risk factors, and symptomatology. *Eur J Vasc Endovasc Surg.* 2015;49(4):432-9.
 24. Joseph N, B A, Faizan Thouseef M, Devi MU, Abna A, Juneja I. A multicenter review of epidemiology and management of varicose veins for national guidance. *Ann Med Surg (Lond).* 2016;8:21-7.