

Evaluation of Health-related Quality of Life among Hypertensive Post-menopausal Women Using EQ-5D in India During COVID-19 Pandemic

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ABSTRACT

Background: Hypertension and menopause are interrelated factors to determine the quality of life (QOL) in women. Covid-19 was related to massive public anxiety, it is critical to know the level of influence in such pandemics on QOL. So this present study was aimed to evaluate the variables related with poor HRQOL in hypertensive post-menopausal women during Covid-19 pandemic in India. **Materials and Methods:** Hypertensive post-menopausal women visiting the general medicine department were recruited in this study. Socio-demographics and clinical data were obtained by medical records and oral interview. EQ-5D-3L scale was included to evaluate the HRQOL and multivariate logistic regression model used to analyze the health dimensions. **Results:** The patient was shown the mean EQ-5D-3L index score of 0.409 and the visual analogue scale score of 78.9, respectively. The most commonly reported problem was anxiety/depression (80%) and pain/ discomfort (75.2%). The Logistic regression models analyzed that the severity of anxiety/depression with number of co morbidities (OR=0.487, 95% CI: 0.276-0.854) and fear about to get covid-19 (OR=0.169, 95% CI: 0.051-0.569) increased significantly. **Conclusion:** Our study findings revealed the need of pharmaceutical care intervention programs for improving the mental health status in post-menopausal women during covid-19 pandemic.

Keywords: COVID-19, Hypertension, Post-menopausal women, QOL, EQ-5D, Anxiety.

INTRODUCTION

COVID-19 or Novel Corona Virus is stated as a global pandemic by World Health Organization (WHO) and it caused profound changes across the world. In India, the mortality rate is at less than 3% right now which is better than the ~5.5% mortality rate of world.¹⁻² Covid-19 was related with massive public anxiety and it resulted in huge death rate, anxiety, and stress in the population. So it is critical to know the level of influence in such pandemics on quality of life (QOL).³ Epidemics and measures of relative restraint can have negative consequences for people's mental health. Recent studies showed that it has been linked to a severe deterioration in

the mental health of cardio vascular disease (CVD) patients.⁴⁻⁶

CVD is a foremost origin of mortality; it leads to major health problems in the world.⁷ Annually, > 10.5 million deaths occur in India, and it consists 20.3%, 16.9% of deaths in men and women.⁸ Hypertension is a crucial factor for CVD and it will affect the 22.9%, 23.9% of Indian men and women in 2025.⁹⁻¹¹ The assessment of QOL in hypertensive patients is necessary because it can lower patients' QOL compare than the patients without hypertension.¹²⁻¹³ Blood pressure (BP) is commonly lower in premenopausal women than in men but menopause afterwards, the occurrence of hypertension is higher in women compared

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than men.¹⁴ Menopause is a physiological process of female's life and the menopause-related conditions lead to reduced QOL.¹⁵⁻¹⁶ Vasomotor symptoms in menopause transitional phase may affect their usual activities and reduced estrogen levels is an key factor for CVD.¹⁷ Studies showed that, the higher prevalence of psychological symptoms like depression or anxiety during the menopause period affects the QOL in post-menopausal women.¹⁸⁻²⁰

The occurrence of psychological symptoms is about 1.8 and 2.0 times more in the menopausal phase than in the premenopausal phase respectively and women who have more depressed symptoms are more likely to acquire CVD.²¹⁻²² Social distancing, emotional recovery, psychological distress, lack of physical activity and sudden life style changes due to the Covid-19 pandemic influence the QOL of living in the world.²³⁻²⁴ The epidemic of Covid-19, there has been an increase in the frequency of cases of depression and anxiety in both reproductive and postmenopausal females.²⁵ Apart from menopause related poor mental health; these above covid-19 related factors also may affect the QOL in hypertensive post-menopausal women. The investigation of QOL is an important outcome in hypertensive post-menopausal women for the identification of contributing factors and it is needed to determine targets of future intervention programme for the improving health status. So this study was aimed to assess the HRQOL and to evaluate the variables associated with poor QOL in hypertensive post-menopausal women during Covid-19 pandemic.

MATERIALS AND METHODS

Study Design: A cross sectional prospective observational study. **Study Site:** Department of General Medicine at Karuna Medical College Hospital, Palakkad, Kerala for a period of one year (June 2020 to May 2021). **Inclusion criteria:** Post-menopausal hypertensive women with self reported ceasing of menstruation for >12 succeeding months, Post-menopausal women with HT in stage I/ stage II or with at least one prescribed antihypertensive medication. **Exclusion criteria:** Post-menopausal women who was done hysterectomy, oophorectomy, Women with indeterminate menopausal status, History of Cognitive impairment.

Ethical Approval

The data collection was started after the ethical approval from Institutional Ethics Committee of Karuna Medical College Hospital and Ethical Clearance number was KMC/IHEC/02/2020. The study procedure was clearly

demonstrated to the study population before informed consent process (Malayalam and Tamil language).

Study Procedure

A pre designed data entry form was used for collection of patient's demographic details (age, monthly outcome, education, marital status, employmental status), lab investigations and treatment chart. The other variables like menarche, mode of delivery, age at menopause, duration of hypertension, details about antihypertensive drugs to be treated, type and number of co morbidities, systolic BP, diastolic BP were noted from their case sheets and oral interview. The fear about to get Covid-19 was classified in to five parameters (social activity, diet, sleeping, usual activity and exercise). The 'yes' was considered if Patients answered yes for one or more parameters.

EQ-5D-3L Scale

HRQOL was determined by using EQ-5D-3L (Malayalam and Tamil version) questionnaire, a common tool for the estimation of health-related outcomes. It estimates HRQOL in five dimensions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression) and three stages of severity (no problems (score 1), some or moderate problems (score 2) extreme problems (score 3). Another scale was EQ-VAS (Visual Analogue Scale) and it has two health ranges, the best health (100) and worst health (0). The results EQ-5D was transformed to an index score using United Kingdom Time trade off (TTO) because not availability of standard value set for India. The effect of index score was indicated as the values, ranges from 1.0 (no problem) and -0.594 for (extreme problem).

Data Analysis

Data was analyzed by SPSS version 20.0 and continuous variables, categorical variables were represented in mean and standard deviations (SD), frequencies and percentage. The relationship between variables and the EQ-5D index was calculated by student t-test and analysis of variance. The correlation between the variables and percentage of patients reported problems in all five dimensions was calculated by using χ^2 -test. Logistic regression model was performed to evaluate the independent variables significantly related with the dependent variable of five health dimensions as dependent variables. Statistically significant was considered as 0.05 in two side test.

RESULTS

A total of 250 hypertensive post-menopausal women were included and patient's clinical and demographic

details have showed in Table 1. A total of 38.4% of patients was in the age group of >60 years, 87% patients got married, 82.8% of patients in unemployed status, 62.4% with one co morbidity, 75% patients in primary level education and 76.4% patients had fear about to get Covid-19. The distribution of EQ-5D index and VAS score also calculated for each characteristic of patients. Factors like Unmarried/Widow/Divorced ($p<0.05$), no co morbidity ($p<0.05$), fear about to get COVID-19 ($p<0.05$) had significantly related with lower EQ-5D index.

The percentage wise distribution of reported problem among study population has showed in Table 2. Compared with <55 years of age group, >55-60 years of age group were reported more problem with mobility (58%), self care (50%), usual activities (71%) pain/discomfort (82%) and 51-55 years age group were reported more problem with anxiety/depression (81%). Unmarried/Divorced/Widowed group had reported

more problem in mobility (59%), usual activities (62%), pain/discomfort (82%) and anxiety/depression (85%). Employed patients showed the more problem in mobility (60%), usual activities (55%), pain/discomfort (80%) and anxiety/depression (75%) than unemployed and retired patients. Patients with no comorbidity showed the more problem in self care (49%), usual activities (62%) and problem with anxiety/depression (79%). Patients with worry fear about to get COVID-19 reported the more problem in mobility (51%), pain/discomfort (81%) and problem with anxiety/depression was (98%). The age group 45-50 years age group reported significantly less problem ($p<0.05$) in self care (29%) and 56-60 years age group with higher problem ($p<0.05$) in usual activities (71%). Unmarried/Divorced/Widowed reported more problem ($p<0.05$) in with anxiety/ depression (85%). Unemployed patients reported more problem ($p<0.05$) pain/ discomfort (82%) than employed patients. Patients with one comorbidity reported the less problem ($p<0.05$)

Table 1: Characteristics and EQ-5D Index VAS score among hypertensive post-menopausal women.

SI. No	Parameters	EQ-5D Index Score			VAS Score	
		n (%)	Mean± SD	p value	Mean± SD	p Value
	Total	250	0.409± 0.376		78.94±9.25	
1	Age (Years)					
	45-50	28(11.2)	0.446± 0.359		80.58±8.68	
	51-55	68 (27.2)	0.402±0.378	0.742	79.88±8.04	0.680
	56-60	58 (23.2)	0.381±0.325		78.46±9.7	
	>60	96(38.4)	0.369±0.316		78.94±9.25	
2	Marital Status					
	Married	218 (87.2)	0.435±0.275	0.023*	78.97±9.45	0.0003**
	Unmarried/Divorced/ Widowed	32 (12.8)	0.322±0.151		72.6±8.13	
3	Employment Status					
	Unemployed	207 (82.8)	0.403±0.368		78.69±8.43	
	Employed	23 (9.2)	0.314±0.174	0.294	77.8±8.39	0.162
	Retired	20 (8)	0.309±0.256		82.26±8.88	
4	Co morbidities					
	One co morbidity	156 (62.4)	0.435±0.248		81.50±8.95	
	Two co morbidities	10 (4)	0.355±0.122	0.324	74.9±6.4	0.004**
	No co morbidities	84 (33.6)	0.462±0.192		78.41±7.91	
5	Education Level					
	Primary	188 (75.2)	0.423±0.374		79.02±9.61	
	Higher secondary	25 (10)	0.297±0.356		79.4±7.53	
	Under Graduate	16(6.4)	0.417±0.400	0.228	78.68±7.65	0.482
	Post Graduate	08 (3.2)	0.222±0.431		73.37±8.34	
	Illiterates	13 (5.2)	0.522±0.352		80.76±9.28	
6	Fear about to get COVID-19					
	Yes	191 (76.4)	0.3737±0.376	0.0075**	78±9.17	0.0035**
	No	59 (23.6)	0.523±0.356		82.01±8.9	

Table 2: Distribution of reported problems in EQ-5D scale among hypertensive post-menopausal women.

Sl. No	Parameters	Mobility			Self care			Usual Activities			Pain/Discomfort			Anxiety		
		No Problem	moderate or extreme	P value	No Problem	moderate or extreme	P value	No Problem	moderate or extreme	P value	No Problem	moderate or extreme	P value	No Problem	moderate or extreme	P value
	Total	50.8	49.2		57.6	42.4		40.8	59.2		20	80		24.8	75.2	
1	Age (Years)															
	45-50	57.1	42.8	0.114	71.4	28.5	0.023*	46.4	53.5	0.037*	17.8	82.1	0.60	21.4	78.5	0.09
	51-55	52.9	47.0		57.3	42.6		47.0	52.9		20.5	79.4		19.1	80.8	
	56-60	41.3	58.6		50	50		29.3	70.6		15.5	84.4		32.7	67.2	
	>60	45.8	54.1		58.3	41.6		40.6	59.3		22.9	77.0		23.9	76.0	
2	Marital Status															
	Married	52.3	47.6	0.07	56.4	43.1	0.123	41.2	58.7	0.38	20.3	79.6	0.42	25.9	74.0	0.03*
	Unmarried/ Divorced/ Widowed	41.1	58.8		64.7	35.2		38.2	61.7		17.6	82.3		14.7	85.2	
3	Employment Status															
	Unemployed	51.6	48.3	0.16	58.4	41.5	0.67	39.6	60.3	0.52	18.3	81.6	0.01**	23.6	76.3	0.59
	Employed	40	60		55	45		45	55		20	80		25	75	
	Retired	52.1	47.8		52.1	47.8		48	52.1		34.7	65.2		30.4	69.5	
4	No. of Co morbidities															
	1	51.2	48.7	0.003**	60.8	39.1	0.38	42.9	57.0	0.15	19.2	80.7	0.14	25	75	0.36
	2	30	50		60	40		30	70		30	70		30	70	
	0	50	50		51.1	48.8		38.0	61.9		20.2	79.7		21.4	78.5	
5	Education Level															
	Primary	52.6	47.3	0.30	60.1	39.8	0.001**	39.8	60.1	0.007**	19.1	80.8	0.01	24.4	75.5	0.001**
	Higher second	48	52		56	44		48	52		16	84		20	80	
	Under Graduate	43.7	56.2		62.5	37.5		43.7	56.2		31.2	68.2		25	75	
	Post Graduate	37.5	62.5		50	50		25	75		12.5	87.5		12.5	87.5	
	Illiterates	46.1	53.8		30.7	69.2		46.1	53.8		30.7	69.2		46.1	53.8	
6	Fear about to get Covid -19															
	No	55.9	44.0	0.19	49.1	50.8	0.07	40.6	59.3	0.55	22.0	77.9	0.36	98.3	1.69	0.001**
	Yes	49.2	50.7		60.2	39.7		40.8	59.1		19.3	80.6		2.09	97.9	

in mobility (49%). Patients who were completed under graduate have reported less problem ($p<0.01$) in self care (38%) and pain/discomfort (81%). The Illiterates patients reported less problem ($p<0.01$) in anxiety/depression was (54%). Patients with fear about to get Covid-19 reported more problem ($p<0.01$) in anxiety/depression (98%) dimension. The most frequently reported problems were anxiety/depression (80%) and pain/ discomfort (75.2%) and least frequently reported problem was self-care (38.4%) (Figure 1).

Multivariate Logistic Regression Analysis

EQ-5D was dichotomized with each dimension and include as a dependent variable. Age, number of co morbidities, employment status, and fear about to get Covid-19 used as independent variables and the multivariate logistic regression analysis was conducted in Table 3. Age (OR=0.993, 95% CI: 0.953-1.033), number of co morbidities (OR=0.970, 95% CI: 0.607-1.549) have not showed significant relationship in mobility

dimension; number of co morbidities (OR=0.723, 95% CI: 0.448-1.166), employmental status (OR=0.833, 95% CI: 0.429-1.615) resulted a non significant association in self care; age (OR=1.022, 95% CI: 0.980-1.065), number of co morbidities (OR=0.913, 95% CI: 0.565-1.477), employmental status (OR=1.364, 95% CI: 0.701-2.655), fear about to get Covid-19 (OR=0.986, 95% CI: 0.542-1.793) have showed also.

non significant correlation in usual activities; age (OR=0.992, 95% CI: 0.943-1.043), number of co morbidities (OR=0.941, 95% CI: 0.523-1.694), fear about to get Covid-19 (OR=1.166, 95% CI: 0.571-2.382) showed non significant relationship in pain/discomfort dimension; number of co morbidities (OR=0.487, 95% CI: 0.276-0.854), fear about to get Covid-19 (OR=0.169, 95% CI: 0.051-0.569) resulted a significant correlation in anxiety/depression.

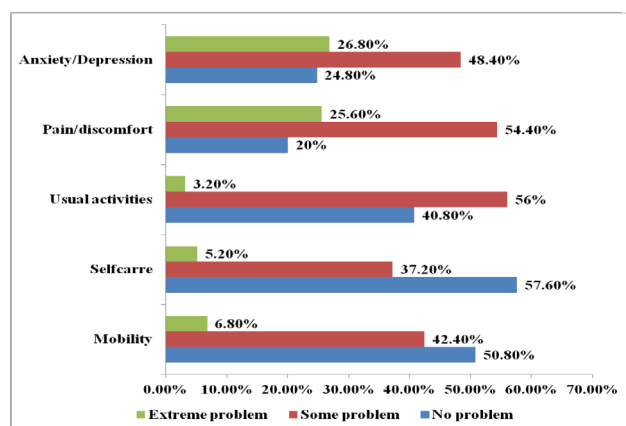


Figure 1: Distribution of frequency of problems in five dimensions EQ-5D scale.

DISCUSSION

HRQOL is a common aspect for measuring the health related outcome and it is used to evaluate the impact of factors affecting the individual's health, includes physical, psychological aspects.²⁶ Post-menopausal women are 10.6, 3.5, 5.7, and 3.2 times greater than other women for having vasomotor, social-psychological, physical, and sexual disorders respectively, which causes to poor QOL of these women.²⁷ Our study resulted that EQ-5D index score reduced but not significantly with rising age (45-50 years with 0.446 ± 0.359 score, >55 years with 0.381 ± 0.385 score and >60 years with 0.369 ± 0.376). The majority of elder hypertensive post-menopausal women were reported more problems in five dimensions than <50 years of age group.

The current study is similar to the Chinese study, where there was no statistically significant differences in distinct dimensions in the groups of different age of hypertensive patients.²⁸ A study from Kathmandu reported positive correlation between the age and score (CI: 52.74e56.50, 48.43e51.25, 40.66e44.68, $p=0.001$).²⁹ The hypertensive post-menopausal women had positive but very weak association between functional capacity and QOL among 45 – 55 years.³⁰ Our study reported, married patients had a greater EQ-5D score than unmarried /divorced/widowed patients ($p<0.05$) and this finding was similar to the study conducted in China.³¹

Our study resulted that number of co morbidities was the most significant variable and EQ-5D index reduced quickly on raising the co morbidities. Previous studies reported that coexisting conditions associated with lower QOL and the number of co-morbidities

Table 3: Relationship between EQ-5D and contributing factors by using Multivariate logistic regression analysis.

Sl. No	EQ-5D health dimensions	Contributing Factors	B	SE	p Value	Odds ratio	95% CI
1	Mobility	Age	-0.007	0.021	$p>0.05$	0.993	0.953-1.033
		Co morbidity	-0.031	0.239	$p>0.05$	0.970	0.607-1.549
2	Self Care	Co morbidity	-0.325	0.244	$p>0.05$	0.723	0.448-1.166
		Employmental status	-0.183	0.338	$p>0.05$	0.833	0.429-1.615
		Age	0.021	0.021	$p>0.05$	1.022	0.980-1.065
3	Usual Activities	Employmental status	0.311	0.340	$p>0.05$	1.364	0.701-2.655
		Co morbidity	-0.091	0.245	$p>0.05$	0.913	0.565-1.477
		Fear about to get covid-19	-0.015	0.305	$p>0.05$	0.986	0.542-1.793
		Age	-0.008	0.026	$p>0.05$	0.992	0.943-1.043
4	Pain/discomfort	Co morbidity	-0.061	0.300	$p>0.05$	0.941	0.523-1.694
		Fear about to get covid-19	0.153	0.365	$p>0.05$	1.166	0.571-2.382
		Age	-0.008	0.026	$p>0.05$	0.992	0.943-1.043
5	Anxiety/depression	Co morbidity	-0.719	0.282	$p<0.05$	0.487	0.276-0.854
		Fear about to get covid-19	-1.747	0.609	$p<0.05$	0.169	0.051-0.569

as an independent determinant of QOL.³²⁻³³ A study conducted from rural Vietnam community reported that presence of co-morbidity were negatively associated with QOL among hypertensive patients.³⁴ In the current study, pain/discomfort was frequently reported problem in post-menopausal women with hypertension. During the post-menopausal period women may have serious musculoskeletal problems and also perceived pain at any of the parts in body mapping that may significantly affects their QOL.³⁵⁻³⁷ Anxiety/depression was other important problem in this study. The recent studies also revealed that post-menopausal women experienced higher stress and depression compared than the premenopausal women and it was affected strongly their QOL.³⁸⁻⁴⁰

Women with poor mental health is a key factor for CVD and conversely it can also increases the occurrence of depression.⁴¹ The decreased QOL in hypertensive patients has a greater extent of anxiety than physical health.⁴² Normally estrogen facilitates the actions of serotonin and norepinephrine, but in post-menopausal women, decreased concentrations of estrogen leads to poor regulation of this neurotransmitters which may be related to anxiety/depressive symptoms.⁴³ Our study showed that there was no significant changes of pain and anxiety according to age. But the previous study reported, prevalence of forgetfulness, muscle and joint pain, low backache were significantly increasing with age among post-menopausal women.⁴⁴

Our findings showed that, age, number of co morbidities, employmental status were not to be found significantly correlated with HRQOL. It showed these above factors were not influenced the QOL in hypertensive post-menopausal women. Number of co morbidities, fear about got Covid-19 had a positive influence on anxiety/depression EQ-5D score. Similar to our findings, the Chinese study have reported, the chronic illness conditions significantly influence on the decreased HRQOL in hypertensive women, particularly those with physical disability and mental problem.⁴⁵ Hypertensive women who were suffering from pain/discomfort and poor mental health had decreased QOL and hypertensive goal achievements. It is needed to pay attention for improving the mental health of post-menopausal hypertensive women in particular with other chronic illness conditions during the covid-19 pandemic.

LIMITATIONS

India is a larger country in population, it has different cultures and varying COVID-19 affected area. So we

need large sample to confirm our results. The study has conducted only hospital based prospective study, community-based studies are warranted to assess the impact of menopause and covid-19 pandemic effects in hypertensive post-menopausal women. In our study not used specific instrument for analyzing psychological status of this patients. In future study, it is must to focus proper instruments for assessing covid-19 related mental health in elder hypertensive women.

CONCLUSION

The current study provides the contributing factors like age, employmental status, number of chronic illness and fear about to get COVID-19 negatively influenced the physical health in hypertensive post-menopausal women. But the number of chronic illness and fear about to get COVID-19 has positively correlated with mental health. These findings showed the importance of pharmaceutical care intervention programs for improving the mental health status in post-menopausal women during the COVID-19 pandemic.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

BP: Blood Pressure; **CVD:** Cardio Vascular Diseases; **HRQOL:** Health Related Quality of Life; **EQ-5D:** European Quality of life five Dimensions; **VAS:** Visual Analogue Scale.

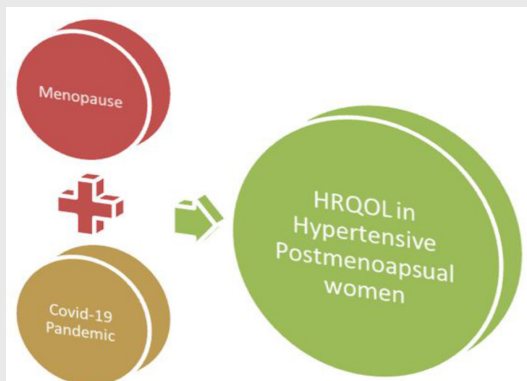
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PICTORIAL ABSTRACT



SUMMARY

COVID-19 or Novel Corona Virus is stated as a global pandemic and it was related with massive public anxiety. It is critical to know the level of influence in such pandemics on quality of life. Cardiovascular disease (CVD) is the foremost cause of mortality and hypertension plays a crucial part for CVD. Hypertension and menopause are interrelated factors to determine the health-related quality of life (HRQOL) in elder women. The number of chronic illness and fear about to get COVID-19 has correlated positively with mental health in hypertensive postmenopausal women. These findings showed the importance of pharmaceutical care intervention programs for improving the mental health status in postmenopausal women during the COVID-19 pandemic.

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