Pakistan Journal of Social and Clinical Psychology
2019, Vol. 17, No.2, 19-26

Biopsychosocial Determinants of Quality of Life among Elderly in Pakistan

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The purpose of the present study was to assess the predictive relationship of biopsychosocial factors (viz., health and lifestyle, self-esteem, self-efficacy, and social support) and quality of life among the elderly in Pakistan. The sample size for the study included 557 participants of age 60 year and above and was selected by using a convenient sampling. Data were collected through WHOQoL-Brief, Health and Lifestyle Questionnaire, General Self-Efficacy Scale, Rosenberg Self-Esteem Scale, and Berlin Social Support Scale. The results indicated that there were significant positive correlations among the biopsychosocial factors and quality of life. In addition, hierarchical regression analysis assessed the predictive relationship between the biopsychosocial factors and quality of life after controlling demographic variables (viz., age, income, gender, living place, children, disease and marital status) that accounted for 27 percent variance in the quality of life of elderly in Pakistan. Implications of the study are discussed.
Keywords: health, lifestyle, self-esteem, self-efficacy, social support, quality of life

Successful aging has been of great interest for geriatric care and health. The questions concerning human wellbeing especially, for the elderly are being debated among social scientists (Cise, Cise, Lindquist, & Cameron, 2018), and research has shown that advancements in the domain of medical sciences have contributed towards longevity, which in turn has resulted in an increase of the elderly population (Calasanti, 2015). As the population across the globe is increasing in age, a core challenge is to enhance their wellbeing and quality of life (QoL). Many nations are working on responding to this challenge through the development and implementation of policies and legislation aimed at promoting the processes of healthy aging (De Frias, Cindy, & Whyne, 2015). This necessitates a focus on the issue of developing criteria for what constitutes old age or the elderly and to assess wellbeing in the aged. Most developed countries have shown an acceptance of the chronological age of 65 years and above as the core definition for an elderly or older person. It is also referred to as the age where a person becomes eligible to receive pension benefits. The common method used for measuring age is the calendar age and does not necessarily take into consideration the biological age of an individual (Orimo et al., 2006).

In studies, where panel data have been used, the core concern was to document the directionality of effects of the biopsychosocial (BPS) determinants upon QoL (Fayers & Machin, 2013; Skevington et al., 2004). Most of the studies examining wellbeing of the elderly privilege from a focus on the role of immediate factors despite of the higher likelihood that long term influences might have a greater influence on QoL. However, a dominant approach is to assess the role of both immediate and long term factors and determinants that influence QoL (Fayers et al., 2013).

This Quality of life is a dynamic construct that changes with time and is mediated by a wide range of factors including social support, presence or absence of chronic diseases, financial security, functional independence, self-efficacy and other factors (Satorres et al., 2018). One approach to assess QoL is to compare personal expectations with life experiences, and see if they are in accordance with these experiences; QoL is low if personal experiences are discordant with life expectations. However, there are other approaches in assessing QoL (Trombetti et al., 2016) like; clinical end points, quantitative and subjective measures. With clinical end points, one focuses improvements in overall living conditions, better physical and psychological health, remission of disease, , disease recurrence etc. in the aged. Long term outcomes, on the other hand, focus on measuring patients' opinions and reviews about different aspects of their day-to-day functioning including social, psychological and emotional functioning and how these all influence their life as a whole (Fletcher et al., 1988). Whereas, other measures of QoL focus on different forms of variables including presence or absence of diseases, perceptions about their living conditions etc. (Terwee, Dekker, Wiersinga, Prummel, & Bossuyt, 2003). In contrast, subjective measures, provide more open ended opportunities for participants to express their opinions and experiences, knowledge, attitudes and moods in relation to their life.

In industrialized countries, by the turn of the twentieth century, aging population increased because of declining fertility levels and higher span of life expectancies, largely due to advancements in medical sciences. Integration of life course principles and perspectives by using BPS determinants of QoL is an innovative and recent approach (Whisler, Waldorf, Mulligan, & Plane, 2008). This approach deals with the dynamics of biological, psychological and social orientations that play an important role in the aged personal behaviors and agents of health and socialization which include schools, family, labor market, media and governmental bodies.

Research has shown that elderly have to deal with a number of issues such as poor financial conditions, disruptive cultural and social interactions, impoverished health conditions and limited chances for bettering their education that result in poor QoL (Briggs et al., 2016). The financial and economic factor plays an important role in QoL (Satorres et al., 2018), where the traditional economic measurements have focused on the GDP per capita as a measurement of human welfare. However, research has shown otherwise and indicates other indicators between developed and developing regions play their roles for example, in developed regions, elderly express better QoL when health conditions work in conjunction with their financial securities, and not in elderly in the developing regions (Guaraldi, Milic, & Wu, 2019).

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Health is a major issue for the elderly, which can lead to reduction in mental and physical functions (Keyes et al., 2016) compounded with loneliness, impaired physical functioning, chronic debilitating metabolic conditions, emotional disturbances and psychological issues are widely reported across this population. Chronic diseases such as arthritis, diabetes, heart diseases, cerebrovascular conditions and other conditions are common across elderly population (Matthew-Maich et al., 2016), which cause medical, social, emotional and psychological problems decreasing physical functions. Aged populations also report declines in their community services and overall social interactions which can further lead to deterioration in physical, social and psychological domains and induce poverty, lack of social emotional support etc.

BPS model is of considerable utility for those studying health and illness in the aged because this multipronged approach can address problems for the elderly at many fronts. Engel (1980) argued that a number of bodily diseases are multi-determined and often have biological, psychological and social facets, with varying interactions affecting the individual (Engel, 1980). Engel (1980) did not provide definition of the BPS model, but shared his gross research insights and empirical findings for the model, though criticized (Garcia-Toro & Aguirre, 2007), many others have acknowledged the use of the model affecting health with some defining it later on (Lent et al., 2005).

Social domain of the BPS model is focused on explaining the role of social factors for example; socioeconomic status/poverty, cultural forces, religion and technology that can have an impact on the health of individuals. In relevance to this dimension, the role of social support has been researched in various contexts for example, infertility (Martins et al., 2011), chronic illnesses (Gallant, 2003), marital quality (Cutrona, 1996) and aging (Curry & Abrams, 2015).

Talking about psychological facets of BPS model, Brown et al. (2012) reported that self-esteem and self-efficacy had a profound impact on the QoL and wellbeing of elderly, specifically higher scores on self-esteem and self-efficacy lead to better scores on QoL and wellbeing. In addition, elderly who had an orientation of providing volunteering services for different social causes were able to show more self-efficacy and self-esteem (McAuley et al., 2005), and had more social connectedness when compared to those who did not volunteer and had higher scores on social isolation. The findings indicated that self-esteem, self-efficacy and social connectedness are mediated between volunteering and QoL in the aged (Brown et al., 2012). Cramm and Nieboer (2015) studied the role of self-efficacy in disease management in old age and showed that elderly who had a broad span of self-management abilities and had a positive orientation towards self-efficacy, experienced improvements in their QoL.

The above review of literature has briefly shown that biological, social and psychological factors interplay a complex role in determining QoL in old age. Where biological conditions that entail chronic disease and multi-morbid conditions have a negative impact on QoL. Similarly, other psychosocial research has shown poor financial conditions, locality, quality healthcare, knowledge and awareness of physical, psychological and social needs, social support, self-esteem and self-efficacy as important determinants of QoL in old age. Clearly, QoL can be different across cultures and nations (Feldman, 2011) and one way to assess QoL globally would be to use BPS model (Aw et al., 2019) to equate cultures and nations. To do that, we have taken very preliminary steps in designing a study that may align with other studies providing a general understanding of QoL in the elderly worldwide.

Based on 2017 census, population of Pakistan increased to 212,742,631 individuals, and the number of elderly has increased (Kedir, Schmidt, & Wagas, 2016) and individuals 65 years and above account for 4.48 percent (9.53 million) of the total population (Basit, Sajjad, Khan, Ali, & Kurshid, 2018). The trajectory of this increase can be gauged from 1998 census report, where elderly aged 60 years and above were 7.34 million compared to estimates of 2.92 million in 1961. Projected reports suggest that this number is going to increase to 23.76 million by 2030 (as cited in Ashiq & Asad, 2017). The retirement age is 60 years due to which the estimates of the elderly living in Pakistan are higher to about 5.1 percent and the dependency ratio is about 7.4 percent, which was previously estimated to be about 4.2 in the 1998 census. The average life expectancy in Pakistan is about 62 years, another indication of an increase in the geriatric population. There are specific reasons of which the expectancy of increasing number of elderly in Pakistan. The reasons are demographic transitions, change in socio-economic order, physical health of older generation, social, moral and family support (Ashiq & Asad, 2017; Calasanti, 2015). In addition, on average, women live longer than men, and overall elderly ratio is higher in Pakistan (World Health Ranking, 2018). The current study aimed to investigate the BPS determinants of QoL and their relative predictive strengths in elderly folks in Pakistan.

Hypotheses

H_1: We expect significant positive relationships among BPS variables, in particular health and lifestyle, self-efficacy, self-esteem and social support, and QoL in the elderly.

H_2: We expect that BPS variables above would significantly predict the QoL in elderly after controlling for age, income, gender, living place, children, and disease.

Method

Sample

In the present study, a final sample of 333 male and 224 female elderly participants (age 60 and above) were used, 93 (out of 650) participants did not complete study instruments and were excluded. Participants were recruited from cities and suburbs of all provinces of Pakistan, where the inclusion criteria entailed matriculation from high school or the ability to read and understand Urdu. Table 1 shows the demographics of the sample; most participants were undergraduate, married, living with their spouses and children. Individuals who had histories of psychiatric illnesses were excluded.

Table 1
Demographic Variables of the Participants (N=557)

Variables	N	Percentage
Age		
60-70 years	467	83.8
71-80 years	90	16.2
Gender		
Men	333	59.8
Women	224	40.2
Education		
Under Graduation	432	77.56
Graduate and above	125	22.44

Marital Status		
Single	28	5.00
Married	434	77.90
Divorced	17	3.10
Widow	78	14.0
Children		
Yes	521	93.5
No	36	6.50
Living Place		
Rural	268	48.10
Urban	289	51.90
Family system		
Living alone	25	4.50
With spouse only	170	30.50
With children and spouse	338	60.70
Others	24	4.30
Disease		
Yes	286	51.30
No	271	48.70

Measures

World Health Organization Quality of Life-Brief (WHOQoL-BREF). World Health Organization's Quality of Life (WHOQoL-BREF) is a valid and standardized measure of QoL (WHO, 1996), and is used in a variety of cultural settings, including India (Gupta, Mohan, Tiwari, Singh, & Singh 2014; Panday, Kiran, Srivastava, & Kumar, 2015) and can also be used in social or medical research and policy making (Preedy & Watson, 2010). In addition, this measure is standardized in Urdu (Lodhi et al., 2017).

The WHOQoL-BREF (WHO, 1996) consists of 26 questions, one of which is concerned with questions about general QoL, the other one with the level of satisfaction with health and the remaining questions dealing with the four core dimensions i.e., physical, psychological, social and environmental. The physical domain consists of 7 questions (α = .56), the psychological domain consists of 6 question (α = .83), the social domain consists of 3 questions (α = .64) and the environmental domain consists of 8 question (α = .79). Each question is measured on a Likert-type scale ranging from 1 to 5, where 1 = *not at all*, 2 = *a little*, 3 = *moderately*, 4 = *mostly* and 5 = *completely* (WHO, 1996). High composite score indicates high QoL. The present study also reports acceptable psychometric properties i.e., α = .88 for total QoL. In addition, the Urdu version of WHOQoL-BREF validated well for Pakistani sample (Lodhi et al., 2017).

Health and Lifestyle Questionnaire. For the measurement of biological conditions and life style of elderly, items were constructed by following Tartaglia (2012) and experts' input. This questionnaire comprised of 7-items measured on a 5-point Likert scale (1 = *not at all*, 2 = *a little*, 3 = *moderately*, 4 = *mostly* and 5 = *completely*). All items of the scale are positively phrased and participant's responses were added to obtain a total score. Higher the score better is respondents' health and lifestyle. The health and life style questionnaire was utilized in Urdu language, and it has acceptable psychometric properties α = .58, recommended as acceptable value by George and Mallery (2006).

General Self-Efficacy Scale (GSES). The psychological component of the BPS model was measured by GSES. This scale comprised of 10 items, measured on a 4-point Likert scale (1 = *not at all true*, 2 = *hardly true*, 3 = *moderately true*, 4 = *exactly true*). All items of the scale are positively phrased and responses are added to obtain a total score. Higher score expressed higher self-efficacy (Schwarzer & Jerusalem, 1995). The Urdu version of the scale was used, and had acceptable psychometric properties α = .89 (as recommended by George & Mallery, 2006).

Rosenberg Self-Esteem Scale (RSES). Additional psychological components of the BPS model were measured using Rosenberg Self-Esteem Scale (RSES), where the scale comprised of 10 items measure on a 4-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly agree*). Item numbers 2, 5, 6, 8 and 9 were reverse scored and participants' responses were added to obtain a total score. Higher score, indicates greater self-esteem (Rosenberg, 1965). The Urdu version of the scale was used, and it has acceptable psychometric properties α = .72 (as recommended by George & Mallery, 2006).

Berlin Social Support Scale (BSSS). The social component of the BPS model was measured via Berlin Social Support Scale (BSSS, Schulz & Schwarzer, 2003). The multidimensional approach of measuring social support is a unique feature that distinguishes this inventory from other questionnaires. The scale has six subscales divided as perceived, actually provided and received support, need for support, support seeking protective buffering) measure both cognitive and behavioral aspects of social support. For the current study, the researcher used only one subscale i.e., Perceived Social Support with 8 items. The participants rate their agreement with the statements on a 4-point scale with possible endorsements that ranged from (1= *strongly disagree*, 2= *somewhat disagree*, 3= *somewhat agree*, 4 = *strongly agree*). Scale scores are obtained by adding up item responses. The Urdu version of the scale was used, and it has acceptable psychometric properties α = .84 (as recommended by George & Mallery, 2006).

Procedure

After the approval from the university Advanced Studies and Research Board, formal permissions were sought from authors of instruments used in this study. Participants were contacted and were briefed about the purpose of the study and relevant instructions regarding the response format and completion of questionnaires. Participants were told that they could withdraw at any stage of the research if they wanted to. It took a total of 6 months to complete data collection. Each participant took an average of 25 to 30 minutes to complete all questionnaires.

Results

Table 2
Psychometric Properties of the Study Scales (N= 557)

Scale	*k*	*M*(*SD*)	α	Range	
				Potential	Actual
Health and Lifestyle Questionnaire	7	20.73 (4.80)	.58	7-35	7-32
General Self-Efficacy	10	27.46 (6.40)	.89	10-40	10-40
Self-Esteem	10	29.10 (4.89)	.72	10-40	14-40
Perceived Social Support	8	24.94 (4.46)	.84	8-32	8-32
QoL	24	80.09 (13.48)	.88	24-120	30-107

Physical Domain	7	23.38 (5.24)	.83	7-35	8-35
Psychological Domain	6	19.75 (3.68)	.56	6-30	7-30
Social Domain	3	10.50 (2.42)	.64	3-15	3-15
Environmental Domain	8	26.45 (5.46)	.79	8-40	8-39

Note. *k* = no. of items. *α = Cronbach's alpha.*

Table 2 shows the mean, standard deviation, Cronbach's alpha, and response range. It was found that overall Cronbach's alpha values for the scales were acceptable ranging from .56 to .89.

Table 3
Correlations between BPS Variables Demographic Variables and QoL among Elderly(N= 557)

Variable	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Age	-.01	-.06	.02	-.04	.09*	-.03	.02	.03	.01	.01	-.04	.01	-.02	.05
2. Income	---	-.01	.04	.00	-.04	.03	.02	-.01	-.01	.04	.02	.05	.04	.03
3. Children		---	.09*	.06	-.18**	.06	.08	.03	-.02	.14**	.12**	.13**	.05	.10**
4. LivPlace			---	.13**	.01	.21**	.13**	.06	-.01	.20**	.16**	.13**	.12**	.20**
5. NoDisease				---	-.09*	.13**	.14**	.12**	.06	.25**	.32**	.20**	.09*	.13**
6. MaritalStat					---	-.15	-.10	.02	-.15	-.16	-.12	-.13	-.07	-.15
7. HLS						---	.38***	.30**	.15**	.37**	.30**	.30**	.18**	.35**
8. Self-Eff							---	.43**	.42**	.42**	.36**	.44**	.22**	.31**
9. Self-Est								---	.42**	.49**	.43**	.47**	.23**	.37**
10. PSS									---	.38**	.28**	.41**	.24	.27**
11. QoLT										---	.83**	.80**	.60**	.84**
12. PhyDom											---	.56**	.41**	.52**
13. PsyDom												---	.43**	.56**
14. SocDom													---	.45**
15. EnvDom														---

Note. LivPlace = Living Place, MaritalStat = Marital Status, HLS = Health and Lifestyle, Self-Eff = Self-Efficacy Self-Est = Self-Esteem, PSS = Perceived Social Support, QoLT = Quality of Life Total, PhyDom = Physical Domain, PsyDom = Psychological Domain, SocDom = Social Domain, EnvDom = Environmental Domain.
All correlation coefficients are significant at $^{**}p < .001$, $^{*}p < .05$

Pearson product moment correlations were calculated to determine relationship between inherent BPS variables and QoL. Table 3 shows that health and life style scores significantly correlate with self-efficacy ($r = .38$, $p < .001$), self-esteem ($r = .30$, $p < .001$), social support ($r = .15$, $p <. 001$). Similarly, self-efficacy scores significantly correlate with self-esteem ($r = .43$, $p < .001$), and social support ($r = .42$, $p < .001$); and self-esteem significantly with social support ($r = .42$, $p <. 001$).

In the same way, correlations among inherent domains of QoL scores were carried out. Table 3 demonstrates that composite scores of QoL (QoLT) were significantly and positively correlate with its subscale scores, e.g. physical domain ($r = .83$, $p < .001$), psychological domain ($r = .80$, $p <.001$), social domain ($r = .60$, $p < .001$), and environmental domain ($r = .84$, $p < .001$). The physical domain correlates with psychological domain ($r = .56$, $p < .001$), social domain ($r = .41$, $p < .001$), and environmental domain ($r = .52$, $p < .001$). The psychological domain correlates with social domain ($r = .43$, $p < .001$), and environmental domain ($r = .56$, $p < .001$); and lastly social domain correlates with environmental domain ($r = .45$, $p < .001$).

Of key interest in this set of correlations was to observe, if measures of BPS variables correlated with QoL variables that depicted similar domains, and indeed they did; health and life style scores significantly positively correlate ($r = .30$, $p < .001$) with physical domain measure of QoL, and self-esteem ($r = .44$, $p < .001$) and self-efficacy ($r = .47$, $p < .001$) measures positively correlate with psychological domain respectively and finally perceived social support correlate ($r = .60$, $p < .001$) significantly with social domain of BPS. These positive correlations naturally lead to other positive correlations between BPS variables and total scores of QoL, and in order as Table 3 illustrates health and life style correlates ($r = .37$, $p < .001$) with QoLT; self-efficacy correlates ($r = .42$, $p < .001$) with QoLT; self-esteem correlates ($r = .49$, $p < .001$) with QoLT; and lastly perceived social support correlates ($r = .38$, $p < .001$) with QoLT.

BPS variables like health and lifestyle correlate positively with demographic variables of living place ($r = .21$, $p < .001$) and no disease ($r = .13$, $p < .001$), but not with age, income, children or marital status ($p > .05$). Likewise, self-efficacy correlate positively with living place ($r = .13$, $p < .001$) and no disease ($r = .14$, $p < .001$) but not age, income, children or marital status ($p > .05$). Self-esteem correlate positively with no disease ($r = .12$, $p < .001$) but not with age, income, children living place or marital status ($p > .05$). And finally perceived social support does not correlate with age, income, children living place, no disease or marital status ($p > .05$).

QoL subscales/domains like physical domain correlate positively with children ($r = .12$, $p < .001$), living place ($r = .16$, $p < .001$), no disease ($r = .32$, $p < .001$), but not with age, income or marital status ($p < .05$). Psychological domain correlate positively with children ($r = .13$, $p < .001$), living place ($r = .13$, $p < .001$), no disease ($r = .20$, $p < .001$), but not with age, income or marital status ($p < .05$). Social domain correlate positively with living place ($r = .12$, $p < .001$), no disease ($r = .09$, $p < .05$), but not with age, income, children, living place or marital status ($p < .05$). And finally environmental domain correlate positively with children ($r = .10$, $p < .05$), living place ($r = .20$, $p < .001$), no disease ($r = .13$, $p < .001$), but not with age, income or marital status ($p < .05$). Correlations of subscales were reflected in composite QoL scores thus QoLT correlate positively with children ($r = .14$, $p < .001$), living place ($r = .20$, $p < .001$), no disease ($r = .25$, $p < .001$), but not with age, income or marital status ($p < .05$).

A hierarchical regression analysis was carried out to find the significant predictive relationship of biopsychosocial variables with

QoL after controlling for age, gender, income, children, living place, disease and marital status in elderly in Pakistan.

Table 4

Hierarchical Regression for Demographics and BPS Variables in Predicting QoL (N=557)

Predictors	ΔR^2	β
Step 1	.14**	
Age		.02
Income		.04
Gender(Men/Women)		-.14**
Children (No/Yes)		-.12**
Living Place (rural/urban)		.17**
Disease (Yes = 0, No = 1)		.22**
Marital Status		-.08
Step 2	.27**	
Age		.01
Income		.04
Gender		-.07*
Children		-.10**
Living Place		.11**
Disease (Yes = 0, No = 1)		.15**
Marital Status		-.06
Health and Lifestyle		.17**
Self-Efficacy		.11*
Self-Esteem		.28**
Perceived Social Support		.19**
Total ΔR^2	.41	

Note. Control variables included age, gender, education, income, children, living place, and disease.

*p < .05, **p < .01.

Table 4 shows that in Step 1, the demographics and in step 2 BPS variables (health and lifestyle, self-efficacy, self-esteem, and social support) were entered. It is found the final model is significant, $F(10, 518) = 35.12$, $p < .001$. For model 1, ΔR^2 was 14%. For model 2, the ΔR^2 was 27%. The present study findings suggest that health and lifestyle ($\beta = .17$, $p < .001$), self-efficacy ($\beta = .11$, $p < .05$), self-esteem ($\beta = .28$, $p < .001$) and social support ($\beta = .19$, $p < .001$) all significantly predicted total QoL, after controlling for the demographic variables. The final model explained 41% of total variance.

Discussion

Results of the study showed that QoL was associated positively and significantly with health and lifestyle, self-efficacy, self-esteem, and social support; and with demographic variables like number of children, living place, and disease status (see Table 3).

Health and Life-Style: Biological Variables

Biological facets of health significantly associated with QoL is in line with (Freeman et al., 2016) and it is proclaimed that any improvements in health leads to improvements in QoL (McAuley et al., 2005), and are important predictors of QoL among the elderly (Megari, 2013; Yumin et al., 2011). When elderlies are restricted and become physically dependent on others, QoL decreases for example, Kostka and Jachimowicz (2010) noted that QoL decreased with a growing level of dependence and institutionalization in the elderly or when elderly patients suffered from end-stage renal diseases (Devins et al., 1984). It reflects importance of patients' perceptions of intrusiveness and control. Experiencing health problems not only adversely influence QoL, but reduce self-esteem and self-efficacy (Arslantas et al., 2015). Paredes-López et al. (2010) argue that improvements in human health lead to better psychological outcomes in the aging populations.

Unhealthy lifestyles and diseases have a negative impact on QoL (Kvamme et al., 2011; Vagetti et al., 2014) and bring about impairments in physical functioning and their associated states. Such life styles signify unhealthy diet, overeating, lack of exercise, no management of stress, lack of social support ultimately contribute toward poor health and in worst cases lead toward severe physical disabilities or death (WHO, 2019). Specific studies have shown that protracted smoking which causes Chronic Obstructive Pulmonary Disease (COPD) adversely affects QoL in elderly patients (Peruzza et al., 2003).

Self-efficacy and Self-esteem: Psychological Variables

Significance of self-efficacy and self-esteem in predicting QoL (see Table 4) is consistent with the previous work, e.g., Kirchengast and Haslinger (2008), who found that health related locus of control, life orientation and self-efficacy were significant predictors of QoL among the elderly. In addition, the risk factors (e.g., age and diseases) resulting in low self-esteem, poor perceptions about QoL and an overall negative evaluation about one's health (Chiang et al., 2008). Weeks (2002) similarly pointed out that self-esteem and psychological well-being influenced QoL among the elderly. Other studies similarly argue that self-efficacy and self-esteem increase health outcomes (Elavsky et al., 2005) and QoL (Peters et al., 2019). It is suggested that good health leads to positive self-assessment, which contributes toward better health outcomes (Reitzes & Mutran, 2006), which are a source of improved QoL in the elderly (Low & Molzahn, 2007).

Perceived Social Support: Social Variable

Social support also appeared as a significant predictor of QoL (see Table 4). Bayliss et al. (2007) claimed that there were a number of barriers to self-management for elderly and low social support is leading cause among them. It is through the removal of such barriers that QoL in the elderly can be improved. Gierveld and Dykstra (2008) highlighted the role of social support from familial and societal sources in minimizing loneliness in old age. Gerontologists are of the view that elderly should not only the receivers of social support but these are important for other individuals as well, so positive social relations improve QoL (Fuller-Iglesias et al., 2008). Kostka and Jachimowicz (2010) and McAuley et al. (2005) emphasized the need of psychological and social support services to be given to the veteran elderly home residents to improve low QoL in comparison to other groups.

Table 4 shows that after controlling demographic variables, the BPS determinants (behavior and life style, self-efficacy, self-esteem and social support) accounted for a significant amount of variance. In terms of the biological factors, studies have found that unhealthy lifestyle and diseases have a negative impact on QoL (Kvamme et al., 2011; Vagetti et al., 2014).

Implications

The core purpose of this study was not only to vouch BPS model for QoL but to suggest determinants that could be translated to supportive factors like effective healthcare, reduction in homelessness, improvement in social participation, and family attention (Schrder-butterfill & Marianti, 2007). If such support is truly realized, QoL would improve in the elderly. A second purpose of this study was to provide a view of the BPS model that can triangulate QoL in aged population comprehensively. In fact,

WHOQoL-BREF (WHO, 1996) is inherently divided into these domains and more (environmental domain). Measuring QoL on these measures thus are not only comprehensive but exhaustive and cover a complete picture of wellbeing in the elderly or for that matter any age group.

Limitations and Recommendations

This study is correlational in nature therefore causal relationships between BPS variables and QoL cannot be established, however this limitation would continue in future studies because BPS variables will always be self-reported organismic variables that would difficult to manipulate. One way to get around this problem could be to carry out in-depth qualitative studies that would provide better indices of biological, psychological and social determinants in establishing QoL. Another ancillary approach that could offer assurance in the influence of these determinants would be to carry out longitudinal studies on the elderly providing a timeline picture of QoL. Certainly this sample is not exhaustive in its extent, and cannot be generalized to many other elderly folks in Pakistan, so other aging groups should be sampled for better understanding of QoL in this population in Pakistan.

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Received: December 21st, 2019
Revisions received: February 23th, 2020