Ilkogretim Online - Elementary Education Online, Year; Vol 20 (Issue 4): pp. 1330-1343
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2021.04.150

Health Locus of Control, Illness Behavior and Headache Related Quality of Life in Individuals with Migraine

Iram Fatima, PhD, Associate Professor, Institute of Applied Psychology, University of the Punjab
Email: iram.appsy@pu.edu.pk
ShaziaQayyum, PhD (Corresponding Author), Assistant Professor, Institute of Applied Psychology, University of the Punjab
Email: shazia.appsy@pu.edu.pk
Shahnila Tariq, PhD, Assistant Professor, School of Professional Psychology, University of Management and Technology, Lahore
Email:shahnila.tariq@umt.edu.pk
FaizYounas, Lecturer,Institute of Applied Psychology, University of the Punjab, Lahore, Pakistan. Email: faizyounasbutt.appsy@pu.edu.pk
Syed Muhammad Ahmad Hassan Gillani, PhD, Lyallpur Business School (LBS), Government College University, Faisalabad, Pakistan

Abstract- The current study aimed to assess the role of health locus of control and illness behavior in headache-related quality of life in individuals with migraine. It was hypothesized that health locus of control predicts quality of life through illness behavior. The sample comprised of 80 clinically diagnosed and non-hospitalized migraineurs (men=16, women=64). Findings revealed that participants with a higher chance health locus of control engaged in more daily routine activities as well as in practical support seeking behavior. However, Locus of control did not predict any of headache-related quality of life dimensions. Further, Migraine severity was observed to be a consistent predictor of poor health quality of life-controlling for the locus of control and illness behavior.

Keywords: illness behaviour, health locus of control, migraine

INTRODUCTION

Migraine is the third most global prevalent issue (World Health Organization, 2016) and in Pakistan its abundance is 37.5% (Khan et al., 2013). It is identified by pulsating periodic attacks of headache lasting for the duration of 4 to 72 hours. It can also be defined as instability in the brain while dealing with sensory information arrived from the senses (Smith et al., 2015; World Health Organization, 2016). There are mainly two types of migraine; without aura, characterized as reoccurring unilateral location headache disorder lasting for almost 4 to 72 hours, intensity ranging from moderate to severe, and with aura characterized by the occurrence of complex neurogical symptoms before the headache. These symptoms vary i.e., sensory or visual (Kodzhoshalieva, Vrucak&Kulovac, 2017). The fundamental causes of migraine are unidentified, but it is proposed that genetic and environmental factors both play an important role in causing migraine (Piane et al., 2007). Keeping in consideration the prevalence of migraine (Pompili et al., 2010) and so many identified and hidden factors, its negative impact on people's life (Leonardi, Raggi, Bussone & Amico, 2010), the current study was designed to find out the relationship between health locus of control, illness behavior and quality of life in patients with migraine.

Health Locus of control is defined as people's view regarding the responsible factors for their illness (Wallston, Wallston, Kaplan &Maides. 1976; Wallston&Wallston, 1982; Kassianos, Symeou&Ioannou, 2016). These responsible factors affect people's behaviour towards physical illness in many ways.The term health locus of control was coined when the concept of locus of control was used in understanding people's beliefs regarding their health and health behavior. Rotter's concept of locus of control was initially divided into bipolar dimensions named as: Internal Locus of Control (ILOC) and External Locus of Control (ELOC). ELOC is further splitted into two subdivisions, named as powerful others locus of control (PLOC) and chance related locus of control (CLOC) (Rotter, 1966).

Mechanic and Volkart (1960) introduced the term illness behavior to describe the ways people used to experience their illness then perceiving, evaluating, and responding to their own illness. Illness behavior

is further elaborated as everything that people do when they fall ill (Quah, 2014). When a person is fighting the physical symptoms of an illness, he/she is also battling with psychological symptoms. During this struggle, their daily life and quality of life is affected (Guitera, 2002). The person needs to have good quality of life otherwise it will worsen the situation. Quality of life in not about the complete absence of disease. Rather, it is individual's perception of the wellness of their life in accordance to their values, culture, goals and expectations (World Health Organization, 1997).

Tunde and Iyabode (2013) conducted a survey study to evaluate the role of locus of control as a predictor of illness behaviour in undergraduate students and found that people having internal locus of control have more adaptive illness behaviour. Similarly, Janowski, Kurpas, Kusz, Mroczek and Jedynak (2013) examined health related behaviours, health LoC and illness acceptance in individuals having chronic somatic diseases. It was observed that behaviours related to health vary positively with all 3 types of LoC (powerful others, internal and chance related). Some other studies also identified the positive relationship between powerful others locus of control and adaptive illness behaviour (Steptoe & Wardle, 2001; McConnell, Santamore, Larson &Homko, 2010:Khan et al. 2020; Iftikhar, et al. 2020; Ibrahim, et al. 2019; Rashid, et al. 2019; Bhatti et al. 2018; Khan et al. 2015; Qureshi et al. 2014; Rasli et al. 2015).

Locus of control affect quality of life of people with different physical instabilities. A study by Sengul, Kara and Arda (2010) investigated how health locus of control (HLoC) and quality of life are related to each other in patients with chronic low back pain. The sample comprised of 2 groups as per the disability caused by severity of pain. The patients with higher disability scored higher on chance related sub-scale of HLoC(CHLC) as compared to patients with less disability due to pain. CHLC was found negatively related to quality of life for both groups. This study clarifies that chance related HLoC will negatively impact the quality of life of patients.

The concept of life's quality includes many areas of life such as social relationships, health status, mental or psychological well-being etc. When the people have all the supports, comfort and security from these areas, he/she will fight with his/her symptoms more courageously (Harnois& Gabriel, 2000). The severity of symptoms is directly linked to life quality of a person. People who have physical fitness reported healthy quality of life(Gu, Chang, &Solmon, 2016).

In context of current research,quality of life in migraineurs is at more risk due to unidentifiable triggering factors. As, attacks of migraine can be sudden which lasts from hours to days with agonizing symptoms leaving the person exhausted and washed out thus reducing the quality of life of individuals making the sufferers do best in their life areas such as work, school, and home (Migraine.com, 2016). Researchers also revealed that the increase in symptoms of migraine leads to a decrease in quality of life, thus, severe migraine patients have a poor quality of life (Holroyd et al, 2000). Hill and Frost (2020) observed thatillness perception regarding the consequences and identity dimensions had a significant relationship with health-related quality of life. In another study, Guan(2020) found that illness certainty had a significant positive association with the physical and mental well being of the patients. Prudenzano et al. (2000) concluded from a study that individuals with chronic headaches exhibited significant damage in most of their daily life activities. Duration of chronic headache and the marked disability were positively related.

In developing countries like Pakistan, awareness is required regarding migraines which are massively taken as simple headaches, giving rise to the mistreatment of illness and resulting in poor health status. The impact of migraine in terms of reduced productivity and increased expenses are detrimental to the quality of life of patients. The present study will aim to highlight how health behaviors adopted by patients are a precursor of the psychological control elicited either internally, externally or on chance. The locus of control contributes towards determining the type of response regarding the ailment such as inability to communicate feelings, presence of anxiety, tension, reluctance to opt for reassurance, regarded as potential behaviours to carve the quality of life in presence of such an ailment. Therefore, present study will assess the mediating role of illness behaviours in the relationship between health locus of control and headache-related quality of life.

Objectives

Following are the objectives of the current study:

1. To investigate the relationship among illness behavior, health locus of control and headache related quality of life migraine patients.
2. To investigate the mediating role of illness behavior in the relationship between health locus of control and headache related quality of life migraine patients.

Hypotheses

Following are the hypotheses of the study:

1. There is likely to be a relationship among illness behavior, health locus of control and headache related quality of life in migraineurs.
2. Health loci of control and illness behavior are likely to predict the headache-related quality of life in migraineurs.
3. Illness behavior is likely to mediate the relationship between health locus of control and headache-related quality of life in migraineurs.

Method

Sample

The sample comprised of 80 clinically diagnosed non-hospitalized migraineurs (N=80, men=16, women=64). Those with severe pain at the time of study and people with diagnosed dementia were excluded. All the participants were also screened with ID migraine screener Lipton et al. (2003).
The descriptive statistics of the demographic variables are given in the table

Table 1

Descriptive Statistics of the Demographic Variables (N=80).

Characteristics	*f*	*%*
Gender		
Men	16	20
Women	64	80
Marital Status		
Married	26	32.5
Unmarried	54	67.5
Family System		
Joint	33	41.3
Nuclear	45	56.3
Working Status		
Business	7	8.8
Job	20	25.0
Unemployed	12	15.0
Student	35	43.8
Any other physical or psychological disorder		
Yes	13	16.3
No	67	83.8
Any medicine usage for headache?		
Yes	61	76.3
No	18	22.8
	M	*SD*
Age (18-52 years)	27	6.87
Education (1-18 years)	15.18	2.95
No. of Children (0-5)	1	1.21
Working Hours (Daily)	7.16	2.91

Assessment Measures

Personal Information sheet. It was a questionnaire comprised of 10 statements asking migraineurs the basic required information i.e. gender, age, education, marital status, number of offspring, family system, working status, daily approximate working hours, comorbidity of any other physical or psychological problem and medicine intake for headache.
ID migraine screener. Lipton et al. (2003) developed the ID migraine screener which is aself-administered three-item migraine screener used in the primary care setting for validating the diagnosis of migraine headache in the patients with headache complaints. These three items measure disability, nausea, and sensitivity to light in patients with migraine on two points scale "Yes" and "No"; e.g. "you felt nauseated or sick to your stomach when you had a headache?''. This brief screening instrument uses self-report by the patient and has both the sensitivity and specificity that would make it useful in the outpatient primary care setting. Scoring "Yes" on two or more validates the recognition of migraine headache. Test-retest reliability was good, with a kappa of 0.68 (Lipton et al., 2003).

Migraine Disability Assessment Scale. It was developed byStewart, Lipton, Kolodner, Libermanand Sawyer(1999) to assess severity of migraine. MIDAS questionnaire is a short, self-administered questionnaire designed to quantify headache-related disability over a 3-month period e.g. ''How many days in the last 3 months was your productivity at work or school reduced by half or more because of your headaches?''. The MIDAS score is based on five disability questions in three dimensions (school or work, household and social functioning). The MIDAS score is the sum of responses to questions one through five. Minimum score could be 0 and maximum score could be 21 and above. The best way to fill this questionnaire is by counting the numbers of days of your life which are affected by Headaches over the last three months. The test retest reliability ranges from 0.67to 0.73(high) and Cronbach's alpha was 0.83 (Stewart et al., 1999).

Multidimensional headache related locus of control (HLoC). For the current study Wallston, Wallston and DeVellis (1978) multi-dimensional headache related locus of control scale was used to assess people view about the belief of them being ill. Every item was rated on five-point Likert scale (1-5) with 1= extremely disagree and 5= extremely agree. It has three subscales; internal health locus of control (k=6,α=0.68), powerful others health locus of control (k=6,α=0.72) and chance health locus of control (k=6,α=0.66) (Chrobach alpha as reported in Moshki, Ghofranipour, Hajizadeh, &Azadfallah, 2007). Score on all three sub-scales were obtained by taking mean score.

Illness behaviour questionnaire (IBQ). Spence, Moss-Morris and Chalder (2005) behavioral response to illness scale was used to assess people behavior when they fall ill. Every item was rated on five-point Likert scale (1-5) with 1= extremely disagree and 5= extremely agree. It has four subscales; all or nothing behavior (k=7,α=0.82) (e.g. I would overdo things, then need to rest up for a while), limiting behavior (k=6,α=0..81) (e.g. I would avoid exercise), emotional support seeking (k=5,α=0.85) (e.g. I would talk to others about how bad I feel) and practical support seeking (k=4,α=0.87) (e.g. I would try to dined someone help me out). Score on all four sub-scales (all or nothing behavior, limiting behavior, emotional support seeking and practical support seeking) were obtained by taking mean score.

Comprehensive Headache-related Quality of Life Questionnaire (CHQQ). The Comprehensive Headache-related QOL Questionnaire (CHQQ) is a 23-item headache specific quality of life questionnaire developed and validated by Manhalter, Bozsik,Palasti, Csepany and Ertsey (2012) to assess physical, mental and social aspects of life (e.g. how much does your headache interfere with your enjoyment of the good things in life or of life in general?). The questions examine the patients' quality of life in detail, covering the last four weeks on a 5-point Likert scale, ranges from 1=not at all to 5=extremely. Mean scores for all the three subscales; physical, mental and social aspects were obtained for further analyses. Higher score means greater impairment in that specific aspect of quality of life. The questionnaire demonstrated excellent reliability, with Cronbach's alpha being 0.91 (Manhalter et al., 2012). All tools were used in Urdu, national language of Pakistan

Procedure

Data were collected from the patients inside the doctors' offices in the presence of the other patients who were being checked up by the doctors or outside the doctors' offices before their check-up after checking their diagnosis on the prescription slips. Doctors were requested to identify and refer the patients with Migraine to the researcher. After explaining the nature and aim of the research, only those who met the inclusion and exclusion criteria were included in the research and informed consent was taken from them. People who could read and write easily took the questionnaires and fill them up by themselves, however, verbal administration of the questionnaires after brief instructions was also done by the researcher. Researcher read the items to the participants and asked them to respond according to given categories and then noted down their responses on the questionnaires. Most of the questionnaires were administered on face to face manner and all the inquiries regarding questionnaires were catered.

Ethical Considerations

Informed consent was taken from the individual participants after explaining them the aim and nature of research and rights to withdraw from participants and terminate at any time form the research, if they will consider their participation a threat to their stability.The participants were assured that confidentiality and anonymity of the result would be maintained.Data was collected from those participants who were not in the pain at the time of scale administration.

Results

The results of the current research are presented for health locus of control, illness behavior and headache-related quality of life in diagnosed migraine patients. The data wereanalysed in multiple steps. In the first step, descriptive statistics were reported for demographic variables. In the second step,

reliability analysis was conducted for each scale and Cronbach's alpha for the scales were reported. In the third step, Pearson product moment correlation was employed to assess the relationship among the study variables. To assess the hypotheses of prediction multiple hierarchical regression analyses were applied; Reliability coefficients of the scales used in the present study are shown in Table 2.

Table 2

Reliability Analysis of Scales used in the Study (N=80).

Variables	*M*	*SD*	*k*	α	Range	
					Potential	Actual
Migraine Disability Assessment Scale	52.26	56.68	5	.80	0-279	0-279
Headache related locus of control Questionnaire						
Internal HLoC	20.98	3.39	6	.58	6-30	11-28
Powerful Others HLoC	20.21	4.68	6	.79	6-30	12-30
Chance HLoC	19.49	3.48	6	.52	6-30	9-26
Illness Behavior Questionnaire						
All or Nothing Behavior	23.79	5.36	7	.81	7-35	8-35
Limiting Behavior	20.05	4.25	6	.71	6-30	11-30
Emotional Support Seeking	14.68	5.81	5	.90	5-25	5-25
Practical Support Seeking	13.11	4.06	4	.87	4-20	4-20
Comprehensive Headache Related Quality of Life Questionnaire	76.84	18.92	23	.96	23-115	26-113
Physical quality of life	27.13	6.70	8	.88	8-40	9-39
Mental quality of life	33.95	8.64	10	.92	10 – 50	10-50
Social quality of life	15.76	4.59	5	.82	5-25	5-25

Note.k= Number of items, α = Cronbach's alpha, *M*= mean, *SD*= standard deviation.

To assess the relationship between study variables Pearson Product moment correlation was applied as shown in Table 3

Table 3

Pearson Product Moment Correlation among Study Variables (N=80)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1-Age		.66***	-.12	.12	-.05	-.14	.00	-.06	-.22*	.16	-.09	.01	.03	.10	.01	.24*
2-No. of children			-.09	-.03	-.26*	-.01	.04	.22*	-.11	.05	-.13	.05	.20	-.03	-.06	.06
3-Family system				-.40**	-.15	-.06	.07	.15	.11	-.05	-.05	-.25*	-.04	-.10	-.04	-.02
4- work duration					.33*	.05	.04	-.26	-.31*	.23	-.27	-.18	-.27	.07	.13	.11
5-medicine use						-.17	.10	-.34**	-.17	.08	-.29*	-.36**	-.37**	.39***	.40***	.30**
6-Migraine severity							.05	.23*	.25*	.12	-.03	.18	.09	-.34**	-.31**	-.39***
7-Internal HLoC								.32**	-.05	.04	-.06	.17	.06	.03	.05	-.06
8-Powerful HLoC									.26*	-.26*	.17	.37**	.61***	-.29**	-.27*	-.23*
9-Chance HLoC										.16	.17	.31**	.40***	-.20	-.19	-.22*
10-All/nothing beh											.07	.18	.02	-.15	-.14	-.15
11-Limiting beh												.50***	.33**	-.34**	-.46***	-.38***
12-Emotional SS													.69***	-.44***	-.46***	-.45***
13-Practical SS														-.39***	-.34**	-.35**
14-Physical QoL															.87***	.86***
15-Mental QoL																.81***
16-Social QoL																

Note. *p<.05; **p<.01; ***p<.001, Family system (joint=1, nuclear=2), Use of medicine 1 = yes, 2 = no. Internal HLoC= internal health locus of control, Powerful HLoC= powerful others health locus of control, Chance HLoC= chance health locus of control, All/nothing beh= All/nothing behavior, Limiting behavior,

Emotional SS= emotional support seeking, Practical SS= practical support seeking, Physical QoL= Physical quality of life, Mental QoL= Mental quality of life, Social QoL= Social quality of life

Results in Table 3 reveal that there is a positive relationship between age and social health quality of life. Use of medicine showed significant positive relationship with all aspects of migraine related health quality of life. Migraine severity showed significant negative relationship with all aspects of migraine related health quality of life. However, gender, other physical or mental disability and level of education did not show any relationship with any aspect of locus of control, illness behavior and health related quality of life, therefore, these demographic variables were not reported in the correlation table.

Table 3 also reveal that people living in joint family system show emotional support seeking behavior more. It was also observed that with the increase in duration of work, the use of medicine also increases. Age showed negative relationship with powerful others locus of control while duration of work showed negative relationship with chance health locus of control. Similarly, use of medicines showed negative relationship with powerful others locus of control as well as with limiting behavior, emotional support seeking behavior and practical support seeking behavior.

In addition, internal health locus of control did not show significant relationship with any aspect of health related quality of life while chance locus of control showed negative relationship with only social aspect of health quality of life. However, it was observed that powerful others locus of control is negatively related to all aspects of health related quality of life. In addition to this, limiting behavior, emotional support seeking behavior and practical support seeking behavior showed significant negative relationship with all aspects of health related quality of life while one aspect of illness behavior i.e. all or nothing behavior did not show any relationship with any aspect of quality of life.

It was also observed that internal health locus of control did not show any significant relationship with any dimension of illness behavior. On the other hand, powerful others health locus of control showed significant positive relationship with all or nothing behavior, emotional support seeking behavior and practical support seeking behavior while chance health locus of control showed significant positive relationship with only emotional support seeking behavior and practical support seeking behavior.

To test if the sub categories of illness behavior i.e. all or nothing behavior, limiting behavior, emotional support seeking behavior and practical support seeking behavior mediated between different aspects of health locus of control (HLoC) and health related quality of life, two sets of multiple hierarchical regression analyses with enter method were carried out with each dimension of health related quality of life separately. I all analyses age, use of medicine and migraine severity were entered as covariates as they were found to be related to at least one of the headache related quality of life dimensions. First set of analyses was carried out by placing covariates in block 1, independent variables internal HLoC, powerful others HLoC and chance HLoC in block 2, mediators i.e. all or nothing behavior, limiting behavior, emotional support seeking behavior and practical support seeking behavior in block 3 with different dimensions of health promoting lifestyle behaviors separately. In the second series of analyses, linear regression analyses with enter method was carried out separately with each level of illness behavior by placing covariates in block 1, internal HLoC, powerful others HLoC and chance HLoC in block 2.

Table 4

Hierarchical Regression Predicting Physical Health Quality of Life & Illness Behavior

Variables	Physical Health QoL				All or nothing behavior	Limiting behavior	Emotional SS behavior	Practical SS behavior
	Step 1	Step 2	Step 3					
	B	B	B		B	B	B	B
Age	.01	.01	.01					
Medicine use	.68**	.54*	.35					
Migraine severity	-.02*	-.02*	-.02*					
Internal HLoC		.08	.11		.27*	-.09	.29	-.19
Powerful others HLoC		-.17	-.11		-.38**	.08	.28	.74***

Chance HLoC		.11	-.10		.48**	.09	.54	.48**
All/nothing behavior			-.18					
Limiting behavior			-.22					
Emotional SS behavior			-.08					
Practical SS behavior			-.12					
R^2	.24***	.26	.39*		.22	.13	.22**	.48***
ΔR^2	.24***	.03	.13*		.17	.01	.13**	.34***

Note. *p<.05, **p<.01, ***p<.001, B = Un-standardized Co efficient, R^2= R Square, Δ R^2= R Square change, Physical Health QoL= physical health quality of life, Internal HLoC= internal health locus of control, Powerful others HLoC= powerful others health locus of control, Chance HLoC= chance health locus of control, Emotional SS behavior= emotional support seeking behavior, Practical SS behavior= practical support seeking behavior.

Table 4 showed that in the first block, the use of medicine positively predicted physical health quality of life while migraine severity negatively predicted physical health quality of life. In the second block, it was observed that physical health quality of life was not predicted by any dimension of health locus of control i.e. internal health locus of control, powerful others and chance health locus of control after controlling for the covariates. In the third block, after controlling for the covariates and dimensions of locus of control, physical health quality of life was also not predicted by any dimension of illness behavior i.e. all or nothing behavior, limiting behavior, emotional support seeking behavior and practical support seeking behavior.

In the second series of analyses, after controlling for the covariates internal health locus of control positively predicted all or nothing behavior while it did not predict the other three dimensions of illness behavior. Powerful others health locus of control negatively predicted all or nothing behavior while positively predicted practical support seeking behavior. On the other hand, chance health locus of control positively predicted all or nothing behavior as well as practical support seeking behavior.

In nut shell, those with high internal locus of control were more engaged in daily routine activities'behavior while those with high powerful others locus of control were less engaged in daily routine activities and more engaged in practical support seeking behavior. On the other hand, those with higher chance health locus of control engaged in more daily routine activities as well as in practical support seeking behavior. However, neither health locus of control nor illness behavior predicted physical health quality of life.

Table 5
Hierarchical Regression Predicting Mental Health Quality of Life & Illness Behavior)

Variables	Mental Health QoL				All or nothing behavior	Limiting behavior	Emotional SS behavior	Practical SS behavior
	Step 1	Step 2	Step 3					
	B	B	B		B	B	B	B
Age	-.00	-.01	-.00					
Medicine use	.73**	.62*	.35					
Migraine severity	-.02*	-.02*	-.02*					

Internal HLoC		.11	.15		.27*	-.09	.29	-.19
Powerful others HLoC		-.14	-.14		-.38**	.08	.28	.74***
Chance HLoC		-.10	.06		.48**	.09	.54	.48**
All/nothing behavior			-.16					
Limiting behavior			-.41**					
Emotional SS behavior			-.11					
Practical SS behavior			.01					
R^2	.22***	.24	.42**		.22	.13	.22**	.48***
ΔR^2	.22***	.02	.18**		.17	.01	.13**	.34***

Note. *p<.05, **p<.01, ***p<.001, B = Un-standardized Co efficient, R^2= R Square, Δ R^2= R Square change, mental health QoL= mental health quality of life, Internal HLoC= internal health locus of control, Powerful others HLoC= powerful others health locus of control, Chance HLoC= chance health locus of control, Emotional SS behavior= emotional support seeking behavior, Practical SS behavior= practical support seeking behavior.

Table 5 showed that in the first block, the use of medicine positively predicted mental health quality of life while migraine severity negatively predicted mental health quality of life. In the second block, it was observed that mental health quality of life was not predicted by any dimension of health locus of control i.e. internal health locus of control, powerful others and chance health locus of control after controlling for the covariates. In the third block, after controlling for the covariates and dimensions of locus of control, mental health quality of life was negatively predicted by limiting behavior only while other dimensions of illness behavior i.e. all or nothing behavior, emotional support seeking behavior and practical support seeking behavior did not predict mental health quality of life.

In the second series of analyses, after controlling for the covariates internal health locus of control positively predicted all or nothing behavior while it did not predict the other three dimensions of illness behavior. Powerful others health locus of control negatively predicted all or nothing behavior while positively predicted practical support seeking behavior. On the other hand, chance health locus of control positively predicted all or nothing behavior as well as practical support seeking behavior.

To conclusion, those who limited their daily activities had poor mental health, however, none of health locus of control dimensions predicted mental health.

Table 6
Hierarchical Regression Predicting Social Health Quality of Life & Illness Behavior (N=80)

Variables	Social Health QoL				All or nothing behavior	Limiting behavior	Emotional SS behavior	Practical SS behavior
	Step 1	Step 2	Step 3					
	B	B	B		B	B	B	B
Age	.03	.02	.03*					
Medicine use	.56*	.51*	.26					
Migraine severity	-.03**	-.02*	-.03**					

Internal HLoC		-.09	-.08		.27*	-.09	.29	-.19
Powerful others HLoC		-.06	.05		-.38**	.08	.28	.74***
Chance HLoC		-.14	.08		.48**	.09	.54	.48**
All/nothing behavior			-.16					
Limiting behavior			-.33*					
Emotional SS behavior			-.07					
Practical SS behavior			-.17					
R^2	.25***	.26	.42**		.22	.13	.22**	.48***
ΔR^2	.25***	.01	.16**		.17	.01	.13**	.34***

Note. *p<.05, **p<.01, ***p<.001, B = Un-standardized Co efficient, R^2= R Square, Δ R^2= R Square change, social health QoL= social health quality of life, Internal HLoC= internal health locus of control, powerful others HLoC= powerful others health locus of control, chance HLoC= chance health locus of control, Emotional SS behavior= emotional support seeking behavior, Practical SS behavior= practical support seeking behavior.

Table 6 showed that in the first block, the use of medicine positively predicted social health quality of life while migraine severity negatively predicted social health quality of life. In addition to this, age positively predicted social health quality of life in the third block. In the second block, it was observed that social health quality of life was not predicted by any dimension of health locus of control i.e. internal health locus of control, powerful others and chance health locus of control after controlling for the covariates. In the third block, after controlling for the covariates and dimensions of locus of control, social health quality of life was negatively predicted by limiting behavior only while other dimensions of illness behavior i.e. all or nothing behavior, emotional support seeking behavior and practical support seeking behavior did not predict social health quality of life.

In the second series of analysis, after controlling for the covariates internal health locus of control positively predicted all or nothing behavior while it did not predict the other three dimensions of illness behavior. Powerful others health locus of control negatively predicted all or nothing behavior while positively predicted practical support seeking behavior. On the other hand, chance health locus of control positively predicted all or nothing behavior as well as practical support seeking behavior. Over all, those who limited their daily activities had poor social health quality of life.

In nut shell, those with high internal locus of control were more engaged in daily routine activities'behavior while those with high powerful others locus of control were less engaged in daily routine activities and more engaged in practical support seeking behavior. On the other hand, those with higher chance health locus of control engaged in more daily routine activities as well as in practical support seeking behavior..Locus of control did not predict any of quality of life dimension. Limiting behavior was negatively related to mental and social health quality of life.Migraine severity turned out to be consistent predictor of poor health quality of life controlling for locus of control and illness behavior.

Discussion

Migraine not only has psychological causes, but it can also cause psychological problems. It is been found that migraine sufferers not only experienced low quality of life but alsothe increase in migraine severity was also related to lower quality of life (Shaik et al., 2015). Therefore, the current research study investigated the relationship between health locus of control, illness behavior and migraine specific health quality of life.

Various analyses were applied as per different hypotheses to test them. First of all, the relationship of main study variables will be discussed. Correlation among main study variables revealed that chance health locus of control showed significant negative relationship with social health quality of life in migraine patients suggesting that the people who considered their luck to be responsible for their health status tend to have poor social aspect of quality of life and this result is consistent with the result of the study conducted by Préau et al. (2007).

In addition to this, limiting behavior, emotional support seeking behavior and practical support seeking behavior showed significant negative relationship with all aspects of health related quality of life which is also consistent with Canter et al. (2015) which suggests that the people who delay their daily life activitiess, seek emotional support or sympathy from others regarding their illness and who rely on their family and friends to look after them tend to have poorer health specific quality of life. It was also hypothesized that illness behavior would likely to predict health related quality of life and the findings revealed that mental and social health quality of life was negatively predicted by limiting behavior suggesting that the people who put their daily life activities on hold tend to have poor mental and social health quality of life. Findings are somehow inconsistent with the previous studies, which found that illness certainty had significant positive association with physical and mental well-being of the patient (Guan, 2020). Moreover, illness perception regarding the consequences and identity dimensions had significant relationship with health related quality of life (Hill & Frost, 2020).

Findings showed that internal health locus of control positively predicted all or nothing behavior in migraine patients showing that those with high internal locus of control were more engaged in daily routine activities'behavior. According to Spence et al. (2005), all-or-nothing behaviour describes a pattern of alternating extremes of behaviour, characterized by a cyclical response of pushing oneself to keep going until this feels no longer physically possible. So, the people believe themselves to be responsible for their health status engage in more all-or-nothing behaviour and attempt to be more self-reliant when ill rather than impose on others.

Findings also revealed that those with high powerful others locus of control were less engaged in daily routine activities and more engaged in practical support seeking behavior. On the other hand, those with higher chance health locus of control engaged in more daily routine activities as well as in practical support seeking behavior. As, powerful others and chance locus of control comes under the category of external locus of control, that is why those people have greater tendency to rely on others to seek sympathy and practical support regarding their health status.

Similarly, migraine severity showed significant negative relationship with all aspects of migraine related health quality of life as well as it turned out to be consistent predictor of poor health quality of life controlling for locus of control and illness behavior. It can be reasoned due to the fact that migraine is not only a simple painful headache but it comes with so much throbbing pain and aching symptoms of nausea, vomiting, sensitivity to environment, unable to think clearly etc. consequently, washing out the person making him unable to perform his daily functioning properly. When there is any obstacle in person's life which hinders them it will affect the subjective evaluation of his/her life. While studies have also found that migraine affects the person's social, work and household activities mostly by affecting their performance in these areas. Absenteeism is the main problem arises in workplace due to this illness thus, affecting the job performance of the person. Not only has this absenteeism occurred in workplace but also in social activities like the person does not feel and have strength to handle the environment when he/she at the same is handling the battle of migraine symptoms. Hence, they avoid making plans in addition also avoids doing household chores or responsibilities. Not only this, it is also found that they have stressed relationships with others mostly peers and parent-child relationship is affecting thus, affecting their quality of life (Maida et al., 2013). Hence, previous researches are consistent with current finding.

Furthermore, it was expected that illness behavior would likely to mediate the relationship between health locus of control and health specific quality of life, however, it was not observed. Therefore, these variables have direct influence on headache related quality of life.

Conclusion

Migraine is a common disease with about 37.5% of population in Pakistan suffering from this ailment. It has not only affected the person but also his/her life (Khan et al, 2013). The current study found that migraine severity turned out to be consistent predictor of poor health quality of life and dimensions of health locus of control were found to be related with different behavioural responses to illness in migraine patients. In addition, findings also revealed that the behavioural responses to illness are also related to health quality of life.

Limitations & Suggestions

All the assessment instruments employed in this research study were self-reported so subjected to biases.It was a correlation study which limited the study by preventing it from drawing causal inferences. Therefore, longitudinal and experimental studies are also required to examine the causal and directional relationships between the study variables to explore the phenomenon in detail.Future researches should incorporate the qualitative element as well to explore how the study variables impact the health related quality of life in migraine patients.

Implications

The present study is the clarification of interrelationship among the variables that influence the quality of life.It will help the health professional and the psychologist to understand how different behavioural responses associated with illness behavior influence the headache specific quality of life and they can help the patients to change their maladaptive behavioural responses toward illness with more appropriate ones so as to improve their life quality.

References

[1] Bhatti, M. N., Sami, A., & Qureshi, I. (2018). Personality and academic performance among graduate students. *Asia Proceedings of Social Sciences*, *2*(3), 256-259.

[2] Bödecs, T., Horváth, B., Szilágyi, E., Németh, M. D., &Sándor, J. (2011). Association between health beliefs and health behavior in early pregnancy. *Maternal and Child Health Journal*, *15*(8), 1316-1323.

[3] Canter, K. S., Wu, Y. P., Stough, C. O., Parikshak, S., Roberts, M. C., &Amylon, M. D. (2015). The relationship between attitudes toward illness and quality of life for children with cancer and healthy siblings. *Journal of Child and Family Studies*, *24*(9), 2693-2698.

[4] Gu, X., Chang, M., &Solmon, M. A. (2016). Physical activity, physical fitness, and health-related quality of life in school-aged children. *Journal of Teaching in Physical Education*, *35*(2), 117-126. DOI: 10.1123/jtpe.2015-0110

[5] Guan, T., Santacroce, S. J., Chen, D. G., & Song, L. (2020). Illness uncertainty, coping, and quality of life among patients with prostate cancer. *Psycho-oncology*, *29*(6), 1019-1025. https://doi.org/10.1002/pon.5372

[6] Guitera V, Muñoz P, Castillo J, Pascual J. (2002). Quality of life in chronic daily headache: A study in a general population. *Neurology*. *58*(7). 1062-5. doi:10.1212/wnl.58.7.1062

[7] Harnois, G. & Gabriel, P. (2000). *Mental health and work: Impact, issues and good practices*. Mental Health Policy and Service Development Department of Mental Health and Substance Dependence. Word Health Organization.

[8] Hill, E. M., & Frost, A. (2020). Illness perceptions, coping, and health-related quality of life among individuals experiencing chronic Lyme disease. *Chronic Illness*, 1742395320983875.

[9] Holroyd, K. A., Stensland, M., Lipchik, G. L., Hill, K. R., O'Donnell, F. S., &Cordingley, G. (2000). Psychosocial correlates and impact of chronic tension-type headaches. *Headache: The Journal of Head and Face Pain*, *40*(1), 3-16.

[10] Iftikhar, M., Waheed, Z., Yousafzai, S. K., & Qureshi, M. I. (2020). TRADITIONAL BULLYING AND CYBER BULLYING: PREVALENCE, EFFECTS AND WORKPLACE SPIRITUALITY AS AN ANTI-BULLYING POLICY. *International Journal of Management (IJM)*, *11*(11).

[11] Janowski, K., Kurpas, D., Kusz, J., Mroczek, B., &Jedynak, T. (2013). Health-related behavior, profile of health locus of control and acceptance of illness in patients suffering from chronic somatic diseases. *PloS one*, *8*(5), e63920.

[12] Kassianos, A. P., Symeou, M., &Ioannou, M. (2016). The health locus of control concept: Factorial structure, psychometric properties and form equivalence of the multidimensional health locus of control scales. *Health Psychology Open*, *3*(2), 2055102916676211.

[13] Khan, M., Zain, S., Alam, R., Zafar, I., & Ahmed, S. (2013). Comparison of efficacy and safety of topiramate with gabapentin in migraine prophylaxis: Randomized open label control trial. *J Pak Med Assoc*, *63*(1), 3-7.

[14] Khan, N. U., Qureshi, M. I., Rasli, A. M., & Ahmad, A. (2015). The Impact of Multiple Organizational Climates on Performance of Public Sector Organizations: Evidences form Pakistan. *International Journal of Economics and Financial Issues*, *5*.

[15] Khan, N., & Qureshi, M. I. (2020). The Outbreak Of Novel Coronavirus (2019-COVID) Pandemic, Its Impacts On Vaccination Development And Health Care. A Systematic Literature Review Paper. *European Journal of Molecular & Clinical Medicine*, *7*(3), 2845-2870.
[16] Kodzhoshalieva, B., Vrucak, E., &Kulovac, L. (2017). *Causes and treatment of migraine headaches: A literature review* (unpublished bachelor's thesis). Turku University of Applied Sciences, Finland.
[17] Leonardi, M., Raggi, A., Bussone, G., & D'Amico, D. (2010). Health-related quality of life, disability and severity of disease in patients with migraine attending to a specialty headache center. *Headache: The Journal of Head and Face Pain*, *50*(10), 1576-1586.
[18] Lipton, R. B., Dodick, D., Sadovsky, R. E. A. A., Kolodner, K., Endicott, J., Hettiarachchi, J., & Harrison, W. (2003). A self-administered screener for migraine in primary care: The ID Migraine validation study. *Neurology*, *61*(3), 375-382.
[19] Maida, C. A., Marcus, M., Spolsky, V. W., Wang, Y., & Liu, H. (2013). Socio-behavioral predictors of self-reported oral health-related quality of life. *Quality of Life Research*, *22*(3), 559-566.
[20] Manhalter, N., Bozsik, G., Palásti, Á.,Csépány, É., &Ertsey, C. (2012). The validation of a new comprehensive headache-specific quality of life questionnaire. *Cephalalgia*, *32*(9), 668-682.
[21] McConnell, T. R., Santamore, W. P., Larson, S. L., &Homko, C. J. (2010). Rural and urban characteristics impact cardiovascular risk reduction. *Journal of Cardiopulmonary Rehabilitation and Prevention*, *30*(5), 299-308.
[22] Mechanic, D., &Volkart, E. H. (1960). Illness behavior and medical diagnoses. *J Health Hum Behav*, *1*, 86-94.
[23] Migraine.com (2016). *Migraine in America*. Retrieved from https://migraine.com/infographic/migraine-america-2016/
[24] Moshki, M., Ghofranipour, F., Hajizadeh, E., &Azadfallah, P. (2007). Validity and reliability of the multidimensional health locus of control scale for college students. *BMC Public Health*, *7*(1), 295.
[25] Piane, M., Lulli, P., Farinelli, I., Simeoni, S., De Filippis, S., Patacchioli, F. R. &Martelletti, P. (2007). Genetics of migraine and pharmacogenomics: some considerations. *The Journal of Headache and Pain*, *8*(6), 334-9.
[26] Pompili, M., Serafini, G., Di Cosimo, D., Dominici, G., Innamorati, M., Lester, D., ...&Martelletti, P. (2010). Psychiatric comorbidity and suicide risk in patients with chronic migraine. *Neuropsychiatric Disease and Treatment*, *6*, 81.
[27] Préau, M., Apostolidis, T., Francois, C., Raffi, F., & Spire, B. (2007). Time perspective and quality of life among HIV-infected patients in the context of HAART. *AIDS care*, *19*(4), 449-458.
[28] Prudenzano, M. P., Guazzelli, M., Verri, A. P., Misceo, S., Sciruicchio, V., Libro, G., ...&D'amico, D. (2000). Quality of life and illness behaviour in chronic daily headache patients. *The Journal of Headache and Pain*, *1*(1), 61.
[29] Quah, R. S. (2014). Illness behavior. *The Wiley Blackwell Encyclopedia of Health, Illness, Behavior, and Society*, 1209-1214.
[30] Qureshi, M. I., Rasli, A. M., & Zaman, K. (2014). A new trilogy to understand the relationship among organizational climate, workplace bullying and employee health. *Arab Economic and Business Journal*, *9*(2), 133-146.
[31] Rashid, M., Tasmin, R., Qureshi, M. I., & Shafiq, M. (2019). A proposed framework of mediating role of interpersonal employee conflict between the relationship of servant leadership and academicians OCB, using PLS. *International Journal of Engineering and Advanced Technology*, *8*(5), 1369-1374.
[32] Rasli, A. M., Norhalim, N., Kowang, T. O., & Qureshi, M. I. (2015). Applying managerial competencies to overcome business constraints and create values: Evidence from small technology-based firms in Malaysia. *Journal of Management Info*, *2*(2), 22-28.
[33] Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, *80*(1), 1-28.
[34] Sengul, Y., Kara, B., & Arda, M. N. (2010). The relationship between health locus of control and quality of life in patients with chronic low back pain. *Turkish Neurosurgery, 20*(2), 180-185.
[35] Shaik, M. M., Hassan, N. B., Tan, H. L., & Gan, S. H. (2015). Quality of life and migraine disability among female migraine patients in a tertiary hospital in Malaysia. *BioMed Research International*, *2015*.
[36] Smith, G. K., Forty, L., Chan, C., Knott, S., Jones, I., Craddock, N., & Jones, L. A. (2015). Rapid cycling as a feature of bipolar disorder and comorbid migraine. *Journal of Affective Disorders*, *175*, 320-324.
[37] Spence, M., Moss-Morris, R., & Chalder, T. (2005). The behavioural responses to illness questionnaire (BRIQ): A new predictive measure of medically unexplained symptoms following acute infection. *Psychological Medicine*, *35*(4), 583-593.

[38] Steptoe, A., & Wardle, J. (2001). Locus of control and health behaviour revisited: a multivariate analysis of young adults from 18 countries. *British Journal of Psychology*, *92*(4), 659-672.
[39] Stewart, W. F., Lipton, R. B., Kolodner, K., Liberman, J., & Sawyer, J. (1999). Reliability of the migraine disability assessment score in a population-based sample of headache sufferers. *Cephalalgia*, *19*(2), 107-114.
[40] Szramka-Pawlak, B., Dańczak-Pazdrowska, A., Rzepa, T., Szewczyk, A., Sadowska-Przytocka, A., &Żaba, R. (2013). Health-related quality of life, optimism, and coping strategies in persons suffering from localized scleroderma. *Psychology, Health & Medicine*, *18*(6), 654-663.
[41] Tunde, A. O., &Iyabode, A. O. (2013). Influence of locus of control on students' illness behaviour in OgunState, Nigeria. *Journal of Health Science*, *3*(1), 1-4.
[42] Wallston, B. S., Wallston, K. A., Kaplan, G. D., &Maides, S. A. (1976). Development and validation of the health locus of control (HLC) scale. *Journal of Consulting and Clinical Psychology*, *44*(4), 580.
[43] Wallston, K. A., &Wallston, B. S. (1982). *Who is responsible for your health: The construct of health locus of control in social psychology of health and illness*. New Jersey, Lawrence: Erlbaum Hillsdale, NJ.
[44] Wallston, K. A., Wallston, B. S., &DeVellis, R. (1978). Development of the multidimensional health locus of control (MHLC) scales. *Health Education Monographs*, *6*(1), 160-170.
[45] World Health Organization. (1997). WHOQOL: Measuring quality of life. Retrieved from http://www.who.int/mental_health/media/68.pdf
[46] World Health Organization. (2016). *World health statistics 2016: monitoring health for the SDGs sustainable development goals*. World Health Organization.