

The Factors of Musculoskeletal Pain in Geriatric Patients and the Relationship between Pain and Quality of Life

Esra Cicekci^{1*}, Zuhale Ozisler², Sumru Ozel², Sibel Unsal-Delialioglu², Cem Ozisler³

¹Diyarbakir Gazi Yasargil Education and Research Hospital, PMR Clinics, Ministry of Health, Diyarbakir, Turkey

²Ankara Physical Medicine and Rehabilitation Education and Research Hospital, PMR Clinics, Ankara, Turkey

³Ankara Diskapi Yildirim Beyazit Education and Research Hospital, InternalMedicine-Rheumatology Clinics, Ankara, Turkey

Email: *bilginesra2008@hotmail.com

How to cite this paper: Cicekci, E., Ozisler, Z., Ozel, S., Unsal-Delialioglu, S. and Ozisler, C. (2017) The Factors of Musculoskeletal Pain in Geriatric Patients and the Relationship between Pain and Quality of Life. *International Journal of Clinical Medicine*, 8, 504-513.

<https://doi.org/10.4236/ijcm.2017.88047>

Received: July 14, 2017

Accepted: August 28, 2017

Published: August 31, 2017

Copyright © 2017 by authors and Scientific Research Publishing Inc.

This work is licensed under the Creative

Commons Attribution International

License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Aim: The purpose of the study was to assess the musculoskeletal pain frequency and intensity, to pinpoint the factors affecting the pain and to research their effect on patients' quality of life. **Methods:** 203 patients over 65 who came to our Physical Therapy and Rehabilitation clinic were included in the study. Intensity of comorbid diseases were calculated by using Cumulative Illness Rating Scale (CIRS). Geriatric Pain Measure-24 (GPM) was used to assess the pain intensity, Geriatric Depression Scale-15 (GDS) was used to detect the presence of depression and Short Form-36 (SF-36) was used to determine quality of life. **Results:** The median age of the patients was 72.9 ± 6.36 (65 - 92) years. 97% of patients complained of pain. GPM total value mean of the patients was 61.9 (0 - 99.9). GPM scores were significantly higher in patients who were female ($p < 0.001$), single ($p < 0.015$), lower education, housewife ($p < 0.001$), depressed ($p < 0.001$), and with a preexisting comorbidity. However, in multivariate linear regression analysis, only female sex and depression presence was found out to be the factors that significantly affect the GPM scores ($p < 0.001$). There was a significant positive correlation between GPM and GDS scores ($p = 0.001$, $r = 0.545$). There were significant negative correlations between all subgroup parameters of SF-36 and both GPM and GDS. **Conclusions:** Low education, being single, presence of comorbidities and being a housewife all relates to pain intensity, yet the most important factors are being female and presence of depression. Pain intensity is connected to low quality of life. We think this study will show a path to program geriatric population's healthcare needs.

Keywords

Elderly, Pain, Quality of Life

1. Introduction

Aging is a natural and inevitable process of life that causes structural and functional changes in the person. People over 65 are classified as “elderly” regardless of their health status and functionality [1]. In parallel with the increase in mean life expectancy, the age distribution all over the world is changing towards the elderly population which has great importance on social, demographic and economic levels.

Pain, which is one of the most commonly seen problems in elderly, is also the most frequent cause of medical care. Musculoskeletal pain is the most common type of pain after cancer in geriatric population. There are studies that report different pain prevalence and incidence. The pain prevalence in advanced age changes between 8% and 80%. Coexisting comorbidities, cognitive dysfunction, loss of sensation, depression, social isolation and the differences in pain perception all might cause these different study results of prevalence of pain in geriatric populations [2] [3] [4].

Untreated chronic pain causes loss in functional ability and independence, depression and decrease in quality of life. Chronic pain is the most common cause of long term disability in advanced age and might be the single cause of disability as well [3] [5]. It is important to understand that the chance of having a longer life compared to the past has no meaning without the increase in quality of life. Policies and programs about advanced age are usually focused on increasing the quality of life and general health instead of increasing life expectancy. That’s why World Health Organization (WHO) coined the term “active ageing”. Active ageing can be described as the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age [6]. In a study about the quality of life in advanced age, more than half of the patients who were in a bad medical condition reported that their satisfaction will only increase with the raise of their activity levels [7].

The studies, which research the most frequent diseases in elder population and the effects of those diseases on patient’s daily lives, are necessary. We think defining the variables that affect the population distribution of pain, which is a very common complaint in geriatric patients, as well as pain’s effect on daily life activities will help to establish the basis for developing health, social and care-taking programs.

Our main purpose in this study is to assess the frequency and intensity of pain in geriatric patients and define the factors affecting pain. In addition, we also researched the relationship between pain and depression and its effects on quality of life.

2. Materials and Methods

203 patients over 65 who came to our Physical Therapy and Rehabilitation clinic were included in our study. Patients with aphasia and dementia were excluded. Demographic values (age, sex, education level, profession, marital status) and

coexisting comorbidities were recorded. Intensity of comorbid conditions were calculated by using Cumulative Illness Scale (CIRS). Pain zones of patients with musculoskeletal pain were defined. Geriatric Pain Measure-24 (GPM) was used to assess the pain intensity level and Geriatric Depression Scale-15 (GDS) was used to determine depression in patients. To evaluate the quality of life, Short Form-36 (SF-36) quality of life questionnaire was used [8] [9] [10] [11].

The study was conducted in accordance with the revised Declaration of Helsinki and approved by the Ankara Physical Medicine and Rehabilitation Education and Research Hospital Ethics Committee. Written informed consent was obtained from all participants.

Cumulative Illness Rating Scale

Our patients' comorbid condition rates were calculated using Cumulative Illness Rating Scale (CIRS). CIRS is used by grading the conditions in 13 independent organ systems (cardiac, vascular, respiratory, upper gastrointestinal, lower gastrointestinal, liver, kidney, genitourinary, musculoskeletal/skin, neurological, psychiatric, endocrine/metabolic, eye/ear/nose/throat) from 0 to 4 according to severity. Scoring system goes like this, 0: no disease; 1(mild): disease with no need for medical attention which does not affect daily activities of patients and good prognosis; 2 (moderate): disease which needs medical attention but no expected complications with good prognosis; 3 (severe): disease which needs urgent medical attention with a bad prognosis; 4 (very severe): disease with a death risk. With each system scored accordingly, CIRS total score varies from 0 to 52 [12].

Geriatric Pain Measure-24

GPM is composed of 24 questions in 5 subgroups which are pain intensity, functional loss caused by pain, ambulatory pain, pain following vigorous activities and pain following other daily activities. 22 of questions are 2-option questions (yes/no) with each yes counting as 1 point. Other 2 questions are scored between 0 - 10. Total score varies from 0 - 42 with 42 being the worst pain. Modified Score: Total score x 2.38 gives us a score between 0 - 100. With this result, scores < 30 are considered as mild, 30 - 69 moderate and >70 as severe pain.

Geriatric Depression Scale

Geriatric Depression Scale is also known as Yesavage Depression Scale. Short form consists of 15 questions. 5 questions (1, 5, 7, 11 and 13) are positive questions while the others are negative. Answers are given on the past week's feelings and 1 point is given to each negative answer to positive question and vice versa. Scores 6 and over are considered as significant in depression diagnosis.

Short Form-36

Short Form-36 (SF-36) is a quality of life scale which is composed of 36 questions in 8 health subcategories (physical function, physical limitations, body pain, general health, vitality, social function, emotional role, mental health) and 2 total scores (physical and mental component score). With each subcategory, points are added and a formula of "calculated score—minimum possible score/possible score range x 100" is used to define the changes and grade the

score over 100. Higher points mean better health overall while lower points mean health deterioration.

Statistical Analysis

Statistical Analysis of the data is done using SPSS for Windows 11.5. Shapiro-Wilk test is used to determine the continuous variable's spread to normal spread. Descriptive statistics are shown as "mean \pm standard deviation or median (minimum-maximum)" in continuous variables while categorical variables are shown as number of cases and (%).

The importance of median differences between groups was calculated with Mann-Whitney U Test if 2 independent groups are present and Kruskal-Wallis Test if more than 2 independent groups are compared. Conover's nonparametric multivariate comparison test was used to determine the situations that cause significant differences in Kruskal-Wallis test results. Spearman's correlation test was used to determine if there is a statistically significant correlation between continuous variables.

All risk factors that are thought to affect GPM total scores were reviewed using multivariate linear regression analysis. Each factor's regression coefficient and 95% confidence intervals were calculated. Since GPM total scores did not show a normal distribution, logarithmical transformation was made in regression analysis.

Results are deemed as "statistically significant" in $p < 0.05$.

3. Results

Patients' age mean was 72.9 ± 6.3 (65 - 92). 76.4% of the patients were female and the rest 23.6% were male. **Table 1** shows the demographics of the patients. CIRS mean score in patients was 4 ± 2.3 .

97% of patients had musculoskeletal pain. Distribution of pain zones in patients is shown on **Table 2**. GPM total value mean of the patients was 61.9 (0 - 99.9). According to GPM scoring, 11.8% of patients had mild, 56.7% had moderate and 31.5% had severe musculoskeletal pain.

GPM scores were significantly higher in females in comparison with males ($p < 0.001$). In addition, in housewives, GPM was also higher compared to retirees and working people ($p < 0.001$). Married patients had significantly lower pain scores than unmarried ($p = 0.015$). At the same time, when patients were reviewed according to pain levels, females had significantly quite higher pain levels (**Table 3**).

44.8% of patients had depression according to GDS. GPM scores were detected to be significantly higher in depressed patients ($p < 0.001$). Although no relationship was found between mild pain and depression, the relationship between depression and moderate and severe pain was found to be statistically significant ($p = 0.001$).

Age and GPM score correlation coefficient was not significant, while there was a significant weak negative correlation between education level ($r = -0.326$,

$p < 0.001$) and a positive correlation with CIRS ($r = 0.159$, $p < 0.024$).

When all risk factors that are thought to affect GPM total scores were reviewed using multivariate linear regression analysis, only female sex and depression pres-

Table 1. Demographic characteristics of patients.

	n = 203
Age	72.9 ± 6.3 (65 - 92)
Gender	
Female	155 (%76.4)
Male	48 (%23.6)
Educational Status	
Illiterate	60 (%29.6)
Primary School	99 (%48.8)
Secondary School	16 (%7.9)
High School	16 (%7.9)
University	12 (%5.9)
Marital Status	
Married	113 (%55.7)
Single	3 (%1.5)
Divorced	87 (%42.9)
Occupational Status	
Housewife	141 (%69.5)
Retired	54 (%26.6)
Working	8 (%3.9)
CIRS	4 ± 2.3 (0 - 10)

Table 2. The distribution of patients in terms of painful areas.

	n = 203
Painful Area	
None	6 (%3.0)
One Area	68 (%33.5)
Two Areas	88 (%43.3)
Three Areas	41 (%20.2)
Knee	145 (%71.4)
Back	104 (%51.2)
Neck	49 (%24.1)
Shoulder	36 (%17.7)
Hip	23 (%11.3)
Hand-Foot	7 (%3.4)

Table 3. GPM total score according to gender, marital status, job and GDS.

	GPM Total	p-value
Gender		<0.001
Female	64.3 (0.0 - 99.9)	
Male	38.4 (0.0 - 90.4)	
Marital Status		0.015
Married	59.5 (0.0 - 90.4)	
Single/Divorced	64.3 (0.0 - 99.9)	
Occupational Status		<0.001
Housewife	64.3 (16.7 - 99.9) ^{a,b}	
Retired	44.0 (0.0 - 90.4) ^{a,c}	
Working	32.1 (0.0 - 47.6) ^{b,c}	
GDS Status		<0.001
No Depression	50.0 (0.0 - 92.8)	
Depressed	71.4 (33.2 - 99.9)	

a = The difference between the housewife group and there tired group was statistically significant ($p < 0.001$); b = The difference between the house wife group and the working group was statistically significant ($p < 0.001$); c = The difference between there tired group and the working group was statistically significant ($p = 0.041$).

Table 4. The examination of all possible risk factors effects of GPM total score with the multivariate linear regression analysis.

	Regression Coefficient	%95 Confidence Interval		p-value
		Lower Limit	Upper Limit	
Age	-0.003	-0.019	0.013	0.739
Female Gender	0.657	0.388	0.926	<0.001
Educational Status	-0.022	-0.096	0.052	0.561
Being Married	0.033	-0.076	0.141	0.554
CIRS	0.018	-0.024	0.059	0.409
Depression	0.425	0.222	0.628	<0.001
Not Working	0.226	-0.281	0.733	0.380

ence was found to affect the scores significantly ($p < 0.001$) (**Table 4**).

There was a significant positive correlation between GPM and GDS scores ($p = 0.001$, $r = 0.545$). In addition, statistically significant negative correlations were detected between both in GPM and GDS and all subgroup parameters of SF-36 (**Table 5**).

4. Discussion

Pain is the most common complaint in elderly that needs medical attention. 25% - 70% of the elder population has chronic pain according to previous epidemio-

Table 5. The correlation coefficient and significance level between the SF-36 quality of life subscales and GPM total score/GDS.

	GPM Total		GDS Total	
	r-value	p-value	r-value	p-value
Physical Functioning	-0.696	<0.001	-0.510	<0.001
Role-Physical	-0.635	<0.001	-0.400	<0.001
Bodily Pain	-0.718	<0.001	-0.538	<0.001
General Health	-0.512	<0.001	-0.736	<0.001
Vitality	-0.542	<0.001	-0.780	<0.001
Social Functioning	-0.622	<0.001	-0.584	<0.001
Role Emotional	-0.341	<0.001	-0.482	<0.001
Mental Health	-0.349	<0.001	-0.742	<0.001
Physical Component Summary	-0.710	<0.001	-0.453	<0.001
Mental Component Summary	-0.368	<0.001	-0.741	<0.001

logical studies [3]. In our study, we found the frequency of musculoskeletal pain in geriatric patients as 97%. Different studies in literature about musculoskeletal pain in geriatric populations show pain frequency as 71.2% - 99.7% [5] [13] [14]. Even though our results are in harmony with the literature, pain levels might be elevated in our study since our study population consists of patients that come to physical therapy and rehabilitation clinic.

In elder patients, musculoskeletal pain is often localized in more than one area. In our study, we found out that 63.5% patients had 2 or more localized pain regions and most common localized regions were knees, lower back and neck area. Similar to that, Brattberg *et al.*'s study also showed 2 or more localized pain areas in 47.1% of patients [15].

No significant relationship was found between age and GPM score in our study done on geriatric population. Other studies done on geriatric patients about the presence of pain also reported similar results of no relation between age and pain [4] [7]. In another study done in our country about musculoskeletal pain in elder population showed no difference in pain scores between age groups of 65 - 70 and >70 [5]. Another study done on geriatric patient group also reported that pain frequency does not change but pain intensity increases with age [14]. In contrast, there are studies that report decreasing musculoskeletal pain frequency and intensity with age. Evidence that suggests this change is due to changing psychosocial factors with aging process is deemed as insufficient [16].

We found out in our study that GPM scores were significantly higher in females. There are studies which support the idea that females suffer musculoskeletal pain more than males [4] [5]. This is thought to be a result of lower muscle mass in females which become more evident with age that causes more pain and functional limitation, in addition with hormonal and biological differences be-

tween the sexes. Also, lower education levels and limited social interaction that consists of home and immediate surroundings can cause the perception difference of health problems in our female population, making them suffer more from musculoskeletal pain.

We detected a seriously significant increase in pain frequency in illiterate and homemaker patient groups. Higher education levels increase the odds of dealing with illnesses. Pain perception is also altered by education levels, income levels and lower socioeconomic status as well [4] [5] [17].

We also detected higher and more severe GPM total scores in unmarried patients. Married patients have the opportunity of spousal support which is considered an important factor in life satisfaction [5]. Insufficient family support makes the person feel weaker and causes the person to have doubts about the future.

85.7% of our patients had at least one chronic disease. This is similar to the result of another study conducted in Turkey (80.8%) [17]. Also, we found a weak relation between pain score and comorbid illnesses. There are studies which show the relationship between pain and coexisting comorbidities in geriatric patients [4] [5] [7]. In addition, there are also studies that show the effect of chronic comorbid illnesses on early disability, depression presence& intensity and quality of life [17] [18].

We diagnosed depression in 44.8% of our patients and it is connected to moderate-severe pain levels. There is existing data in literature that shows depressive symptoms of pain intensity and pain's relationship with depression levels. Increasing pain levels, frequent painful episodes, widespread and treatment-resistant pain are all related to more serious depression attacks and affect quality of life significantly [4] [19] [20] [21]. However, it is also stated that even though chronic pain can increase depression, depression itself might be a risk for pain development [5] [19] [20]. More than 75% of depression patients are prone to somatization of their behavioral disorders and complain from physical symptoms such as headache, digestion problems, lower back and neck pain [20], meaning depression can be both the cause and the result of the pain. In a study conducted on inpatient geriatric population about depression levels, depression rate was 48.5% and risk factors that might cause depression were shown as female sex, lower socioeconomic status, being single, coexisting chronic diseases and lowered daily functioning levels [22]. Those factors that are related with depression are also shown as the factors that cause the increase in pain scores in our study. This further supports the complexity of cause and effect relationship between pain and depression. Yet in our study, the continuous relationship between pain and depression following multivariate regression analysis of all those factors shows the strong bond between them.

Today, the chance of having a longer lifespan compared to the past is not enough on its own to increase the quality of life. Policies and programs about advanced age are usually focused on increasing the quality of life and general health instead of increasing life expectancy. In a study done in Turkey on geria-

tric age group showed a strong connection between age and dependence on daily life activities (DLA) [23]. Furthermore, there are many studies that show the relationship between chronic pain and low quality of life [4] [13] [16]. We also detected a negative correlation between pain and depression scores and all subgroup parameters of quality of life scales.

5. Conclusions

In this study we found out that musculoskeletal pain in elder people are very frequent (97%) and female sex, being single, lower education level, coexisting comorbid conditions and depression presence are all connected strongly with pain intensity in patients. However, multivariate regression analysis results showed that the relationship only lasted in female sex and depression presence. Moreover, we found a positive correlation between GPM and GDS scores and a negative correlation between GPM and quality of life.

Controlling musculoskeletal pain, which is a common complaint in geriatric patients, will increase their quality of life as well as facilitate the integration of elderly people to the society. We think our study will help define the factors of pain which cause not only dependence on daily activities, but also functional and economical losses.

Furthermore, we think that similar epidemiological studies with larger groups of patients will help to pinpoint the needs and goals for developing health, social and economic programs about geriatric patients.

References

- [1] Çakar, E. (2011) Geriatric Rehabilitation. In: Beyazova, M. and Gökçe Kutsal, Y., Eds., *Physical Medicine and Rehabilitation*, Güneş Publishing House, Ankara, 1791-1808.
- [2] Gökçe Kutsal, Y., İrdesel, J. and Ordu Gökçaya, K. (2012) Pain in Elderly. Akademi Publishing House, Ankara, 2-54.
- [3] Barkin, R.L., Barkin, S.J. and Barkin, D.S. (2005) Perception, Assessment, Treatment, and Management of Pain in the Elderly. *Clinics in Geriatric Medicine*, **21**, 465-490. <https://doi.org/10.1016/j.cger.2005.02.006>
- [4] Woo, J., Leung, J. and Lau, E. (2009) Prevalence and Correlates of Musculoskeletal Pain in Chinese Elderly and the Impact on 4-Year Physical Function and Quality of Life. *Public Health*, **123**, 549-556. <https://doi.org/10.1016/j.puhe.2009.07.006>
- [5] Ordu Gökçaya, N.K., et al. (2011) Pain and Quality of Life in Elderly: The Turkish Experience. *Archives of Gerontology and Geriatrics*, **55**, 357-362. <https://doi.org/10.1016/j.archger.2011.10.019>
- [6] Gökçe Kutsal, Y. (2009) Why Geriatric. *Turkish Physical Medicine and Rehabilitation Journal*, **55**, 51-56.
- [7] Xavier, F.M., Ferraz, M.P., Marc, N., Escosteguy, N.U. and Moriguchi, E.H. (2003) Elderly People's Definition of Quality of Life. *Revista Brasileira de Psiquiatria*, **25**, 31-39. <https://doi.org/10.1590/S1516-44462003000100007>
- [8] Blozik, E., Stuck, A.E., Niemann, S., Ferrell, B.A., Harari, D., von Renteln-Kruse, W., Gillmann, G., Beck, J.C. and Clough-Gorr, K.M. (2007) Geriatric Pain Measure Short Form: Development and Initial Evaluation. *Journal of the American*

- Geriatrics Society*, **55**, 2045-2050. <https://doi.org/10.1111/j.1532-5415.2007.01474.x>
- [9] Yesavage, J.A., Brink, T.L., Rose, T.L., et al. (1983) Development and Validation of a Geriatric Depression Screening Scale: A Preliminary Report. *Journal of Psychiatric Research*, **17**, 37-49. [https://doi.org/10.1016/0022-3956\(82\)90033-4](https://doi.org/10.1016/0022-3956(82)90033-4)
- [10] Koçyiğit, H., Aydemir, Ö., Fişek, G., Ölmez, N. and Memiş, A. (1995) Reliability and Validity of Turkish-Version 36-İtem Short form Survey (SF-36). *Medicine and Treatment Journal*, **12**, 102-106.
- [11] McHorney, C.A., Ware, J.E. and Raczek, A.E. (1993) The MOS 36-İtem Short-Form Healthsurvey (SF36): II. Phychometric and Clinical Tests of Validity in Measuring Physical and Mental Health Constructs. *Medical Care*, **31**, 247-263. <https://doi.org/10.1097/00005650-199303000-00006>
- [12] Nóbrega, T.C., Jaluul, O., Machado, A.N., Paschoal, S.M. and Jacob Filho, W. (2009) Quality of Life and Multimorbidity of Elderly Out Patients. *Clinics (Sao Paulo)*, **64**, 45-50. <https://doi.org/10.1590/S1807-59322009000100009>
- [13] Antonopoulou, M.D., Alegakis, A.K., Hadjipavlou, A.G. and Lionis, C.D. (2009) Studying the Association between Musculoskeletal Disorders, Quality of Life and Mental Health. *BMC Musculoskeletal Disorders*, **10**, 143. <https://doi.org/10.1186/1471-2474-10-143>
- [14] Jakobsson, U., Klevgård, R., Westergren, A. and Hallberg, I.R. (2003) Oldpeople in Pain. *Journal of Pain and Symptom Management*, **26**, 625-636.
- [15] Brattberg, G., Parker, M.G. and Thorslund, M. (1996) The Prevalence of Pain amongst the Oldest Old in Sweeden. *Pain*, **67**, 29-34.
- [16] Gibson, S.J. and Helme, R.D. (2001) Age-Related Differences in Pain Perception and Report. *Clinics in Geriatric Medicine*, **17**, 433-456.
- [17] Akyol, Y., Durmuş, D., Doğan, C., Bek, Y. and Cantürk, F. (2010) Quality of Life and Level of Depressive Symptoms in the Geriatric Population. *Turkish Journal of Rheumatology*, **25**, 165-173. <https://doi.org/10.5152/tjr.2010.23>
- [18] Hickey, A., Barker, M., McGee, H. and O'Boyle, C. (2005) Measuring Health-Related Quality of Life in Older Patient Populations. *Pharmacoeconomics*, **23**, 971-993. <https://doi.org/10.2165/00019053-200523100-00002>
- [19] Bair, M.J., Robinson, R.L., Katon, W. and Kroenke, K. (2003) Depression and Pain Comorbidity. *Archives of Internal Medicine*, **63**, 2433-2445.
- [20] Lépine, J.P. and Briley, M. (2004) The Epidemiology of Pain in Depression. *Human Psychopharmacology*, **19**, 3-7. <https://doi.org/10.1002/hup.618>
- [21] Poleshuck, E.L., Bair, M.J., Kroenke, K., Damush, T.M., Krebs, E.E. and Giles, D.E. (2010) Musculoskeletal Pain and Measures of Depression. *General Hospital Psychiatry*, **32**, 114-115.
- [22] Bektaş, H.A. and Şahin, H. (2010) Evaluation of Daily Life Activities and Level of Depression in Bed-Rest Geriatric Patients of İnternal Medicine Clinic. *Geriatrics*, **2**, 155-161.
- [23] Sezer, N., Sütbeyaz-Tomruk, S., Köseoğlu, F., Aras, M. and Kibar, S. (2009) Evaluation of Daily Life Activities and Diagnostic Distribution Patients over 65 Who Came to Physical Therapy and Rehabilitation Clinic. *Physical Medicine and Rehabilitation*, **20**, 89-94.

Submit or recommend next manuscript to SCIRP and we will provide best service for you:

Accepting pre-submission inquiries through Email, Facebook, LinkedIn, Twitter, etc.

A wide selection of journals (inclusive of 9 subjects, more than 200 journals)

Providing 24-hour high-quality service

User-friendly online submission system

Fair and swift peer-review system

Efficient typesetting and proofreading procedure

Display of the result of downloads and visits, as well as the number of cited articles

Maximum dissemination of your research work

Submit your manuscript at: <http://papersubmission.scirp.org/>

Or contact ijcm@scirp.org