

## Original Research Article

# A study on correlation between depression, fear of fall and quality of life in elderly individuals

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## ABSTRACT

**Background:** Fear of falling in elderly is a major cause of loss of independence, which has an effect on the physical function in elderly individuals. Depression is another important public health problem for older adults, because late life depression might have devastating consequences, such as an increase in mortality. QOL of older adults has become an important issue, because of demographic changes resulting from the ageing of the population. The goal of the study was to assess the depression and fear of fall which will provide further insights into the relationship between QOL, depression and fear of fall among elderly individuals in India.

**Methods:** The sample consisted of 62 elderly people of age between 65 years to 75 years (mean=71.96, SD±5.92) were taken in the study. Depression was assessed using the 30-item geriatric depression scale (GDS), fear of falling was measured using falls efficacy scale (FES), QOL was assessed using the 26-item, World Health Organization Quality of Life, brief version (WHOQOL-BREF).

**Results:** The data was analysed using Pearson co-efficient of correlation to examine the relationship between GDS, FES, and WHOQOL-BREF. The correlation co-efficient between GDS and FES was 0.5257 ( $p<0.05$ ) and correlation coefficient between GDS and WHOQOL was 0.4372 ( $p<0.05$ ).

**Conclusions:** This study concluded that there was a significant association between the depression, fall efficacy, and QOL in the elderly people. This relationship has an important implication for the development of the rehabilitation programs that aim to improve the balance confidence and motivation will diminish its impact on QOL in elderly people.

**Keywords:** Depression, Elderly individual, Fear of fall, QOL

## INTRODUCTION

The number of persons above the age of 60 years is fast growing, especially in India. India as the second most populous country in the world has 76.6 million people at or over the age of 60, constituting above 7.7% of total population. Over the next several decades, the elderly people will represent a large segment of the population.<sup>1</sup> According to WHO, the size of the elderly population in India increased from 20 million in 1951 to 57 million in 1991 and is about 84 million in 2001, and is expected

that about 107 million in 2016, 198 million in 2030 and 326 million in 2050. The rapid increase in the number of old people in the population also raises various social, economic and health issues.<sup>2</sup>

The ageing process has increasingly been the focus of attention and concern due to the physical alterations that occur with age, such as reduced muscle strength balance, as well as aspects related to quality of life. Loss of self-confidence and physical fitness and joint restrictions, muscle weakness, limitation in daily

activities, lack of balance in walking, social isolation, increased reliance on others and fear of falling are among the consequences of falling in this age.<sup>3</sup> Aging and gradual loss of function of various body systems provide many changes in health-related factors and conditions for the falling of elderly.<sup>4,5</sup>

Depression is one of the public health problem for older adults, because late life depression might have devastating consequences, such as an increase in mortality<sup>6</sup> In India, especially in recent years, this rate has been significantly high.<sup>7</sup> In our previous studies, 27% of urban elderly adults (aged $\geq$ 60)<sup>8</sup> and 30.8% of rural elderly adults (aged $\geq$ 65) have reported symptoms of depression.<sup>8,9</sup> More than half of cases of depression in older people represent the first lifetime presentation. The symptoms of depression in an older adult can be subtly different to those in younger people.

The geriatric depression scale (GDS) is a 30-item, self-report instrument used for measuring depression among the elderly, which has excellent validity. The GDS is a useful instrument for screening elderly populations<sup>10</sup> There are no firm conclusions regarding whether depression among the elderly is associated with quality of life. Therefore, one aim of this study was to assess the prevalence of elderly in India and examine possible associations between the depression and quality of life.<sup>11</sup>

Falls in older adults continue to be a major source of disability, mortality, and health care utilization.<sup>1</sup> In the United States, older adult dies after a fall every 29 minutes While falls do occur in young and middle-aged people, their sequelae are most deleterious in older adults.<sup>12-15</sup> Thirty percent of falls in older adults have been reported to result in severe injuries, substantially affecting independence and risk of early death.<sup>5</sup> Balance impairment is a key modifiable risk factor for falls.<sup>16,17</sup> Falls that lead osteoporotic fractures is one of them. For this reason, preventive measures for falls are of critical importance.<sup>18-20</sup>

Falls efficacy scale (FES), developed by Tinetti et al, is an instrument to measure fear of falling based on the operational definition of this fear as "low perceived self-efficacy at avoiding falls during essential, non-hazardous activities of daily living." It is a 10-item questionnaire. The reliability and validity of the FES were assessed in two samples of community-living elderly persons. The FES showed good test-retest reliability (Pearson's correlation 0.71).<sup>21</sup>

The World Health Organization (WHO) has defined QOL as a person's perception of his or her life position in the value system and the culture in which they live, and in addition, it is related to one's life goals, expectations, standards and concerns. QOL of older adults has become an important issue, because of physiological changes resulting from the ageing of the population. Moreover, studies have suggested that QOL

scores of elderly people are different from that of the general population. Furthermore, although the QOL has been a focus of attention for over a decade, there are few recent data available on the QOL of the elderly.

The WHO Quality of Life (WHOQOL) group has developed a brief QOL assessment scale, the World Health Organization Quality of Life, brief version (WHOQOL-BREF), which consists of 26 items representing four domains: physical, psychological, social and environmental.<sup>22</sup> Psychometric studies have indicated that the WHOQOL-BREF has cross-cultural validity as a QOL assessment tool.<sup>23</sup> In India, the psychometric properties of the WHOQOL-BREF have been tested, and good reliability and validity demonstrated for elderly people.<sup>24</sup>

Cumming and colleagues reported that low baseline FES scores in elderly people were associated with greater declines in self-reported ADL performance over a 12-month period.<sup>25</sup> Mendes de Leon and colleagues examined the role of falls-related self-efficacy on changes in physical functioning in elderly people in an effort to determine if self-efficacy would be protective of self-care behaviors.<sup>26</sup> Physical functioning was measured using a self-report of ADL status.<sup>27</sup>

Mental health has been identified as one of the most important factors in QOL.<sup>28</sup> Mental illnesses are known to be increasing, and account for 15% of the total disease burden in developing countries.<sup>29</sup> Depression is considered to be the most common mental health problem among older people. The degree of suffering caused by depression is not easy to assess, although one possible and effective method of assessing the suffering caused by depression is to evaluate its impact on QOL.<sup>30</sup> Recently, limited knowledge has accumulated on the association between the QOL and depression among elderly Indian people. Therefore, investigating QOL and depression among older adults is important.<sup>31</sup>

Ageing is a time of multiple illnesses and poor health is repeatedly cited by the aged as one of their most serious problems. Besides this, health conditions of elderly people living in old age homes in India are still worse. Hence, there is a need to focus more on health and functional abilities rather than on vulnerability, risk and sickness, as a vast majority of elderly people in developed country who enjoy good health function as active members of the community.<sup>32</sup>

### **Significance of the study**

Several studies have been conducted showing relation between balance and fear of fall in elderly population. Some studies show relation between depression and QOL in elderly individual. However, till date less prospective studies are found making the correlation between the depression, fear of fall and QOL in the elderly population. Moreover, a standard protocol for either of

the intervention has not been agreed upon. The result of this study would implicate a better exercise program for the elderly population and can help the older adults to age gracefully and enjoy a fall free good quality of life. The purpose of the study was to assess the prevalence of depression and fear of fall in elderly individual. The specific aim of the programme is to determine the relation between the depression, fear of fall and QOL in elderly individuals.

### **Hypothesis:**

#### **Null hypothesis $H_0$**

There is no relation between depression, fear of fall and QOL in elderly individuals.

#### **Alternative hypothesis $H_1$**

There is relation between depression, fear of fall and QOL in elderly individuals.

## **METHODS**

**Study design:** Experimental study.

**Population:** Elderly individual of 65 to 75 years of age participating in free camp organized by senior citizen organization committee, Surat, Gujarat, India.

**Sampling technique:** Purposive sampling.

**Study duration:** 2 months

**Sample size:** 62

For the study the sample size was calculated in G Power 3.1.9.2 with effect size 0.80 and  $\alpha = 0.05$ . Sample size calculated was 52, with a drop out chances of 20% the total sample size was 62 samples.

**Study setting:** Senior citizen organization committee, Surat, Gujarat, India.

### **Eligibility criteria**

Volunteers were included in the study who were of 65-75 years of age at the time of the study, willingness to do physical exercise with regular attendance, able to do daily activities by themselves, able to walk at least 30 feet with or without an assistive device, History with or without fall. Volunteers were excluded from this study who were having Any known neurological disorder (i.e. Parkinson's disease, multiple sclerosis, head injury, peripheral neuropathy, stroke, vestibular disorder), any known musculoskeletal disorder (i.e. joint replacement, amputation, or physically limiting arthritis) Any known cardiovascular and psychosomatic disorder which limits physical daily activities. Materials and tools used were Clipboard with FES sheet, Clipboard with GDS sheet

Clipboard with WHOQOL-BREF, Sphygmomanometer (mercury sphygmomanometer), Stethoscope.

### **Outcome measures**

GDS scale, FES international scale, WHOQOL-BREF Questionnaire.

### **Procedure**

Ethical clearance will be taken from institutional ethical committee. Elderly individuals from senior citizen organization committee will be invited to participate in free camp for trial. However, volunteers who were interested will be evaluated. The purpose of this study will be explained and a written informed consent and demographic details will be obtained from all the subjects. Subjects will be preliminary screened based on the inclusion and exclusion criteria.

After screening the samples, they were asked to fill the following sheets:

The GDS was used to measure the level of depression, FES was used to measure the fear of fall and WHOQOL-BREF was used to assess quality of life.

### **Statistical analyses**

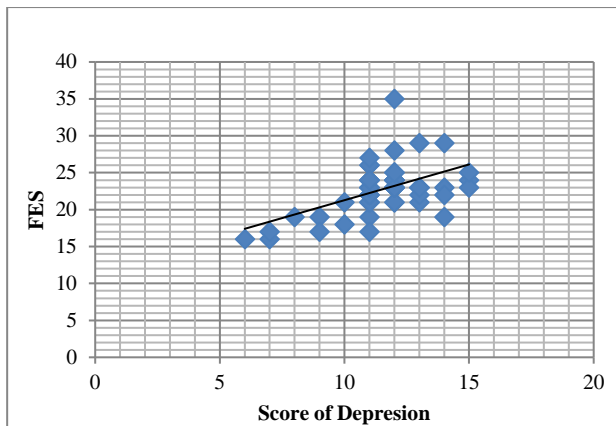
All questionnaires were numbered. A double data entry procedure was conducted by two trained data-entry workers using statistical software (SPSS 16 version). A logistic Pearson coefficient of correlation analysis will allow simultaneous testing of associations between two or more explanatory variables, was conducted to explore relationships between depression, fear of fall and quality of life domains. A two-tailed p-value less than 0.05 ( $p < 0.05$ ) was considered statistically significant in all analyses.

## **RESULTS**

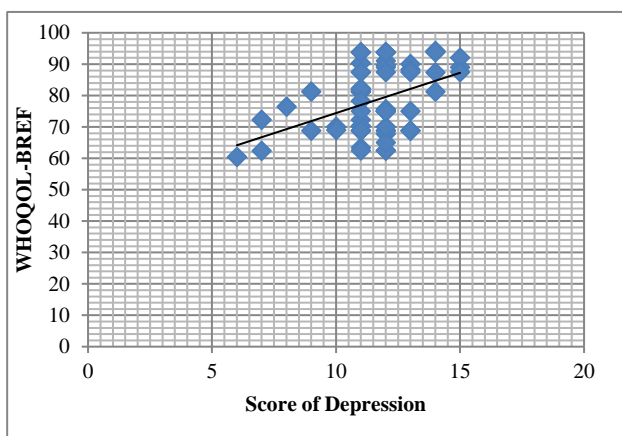
The result of this study shows that if samples are having high risk of fear of fall may suffers from depression.

And due to high score of depression individuals are more prone for low quality of life.

The Pearson coefficient of correlation was used to examine the relationship among the GDS, FES and WHOQOL-BREF Scale scores. The Pearson's correlation coefficient between the WHOQOL-BREF and the GDS were 0.4372 which showed a high correlation between them with the significance of  $p < 0.01$ . The correlation between the falls efficacy scale (FES) and GDS was 0.5257 with the significance of  $p < 0.05$  which also showed a strong correlation between them. Mean test scores ( $\pm$ SD) for the sample were as follows: FES Scale 61.21 $\pm$ 10.42, GDS 46 $\pm$ 4.70, and WHOQOL-BREF 18.43 $\pm$ 3.30.



**Figure 1: FES score of depression.**



**Figure 2: WHOQOL-BREF score of depression.**

## DISCUSSION

The statistical analysis in this study indicated significant associations between age, fear of falling, depression and quality of life. An age-related increase in the prevalence of depression was also found in many research, which was consistent with the current study. Previous studies have indicated a significant effect of education and income levels on the risk for depression. Fear of falling also contributed to explain self-efficacy, indicating that elderly people who report high score of self-efficacy not only have impaired balance, but also are fearful that they are likely to fall due to these balance limitations. This relation between the fear of falling and the balance was in agreement with Maki et al.<sup>23</sup> results which showed that older adults who reported a fear of falling demonstrated larger amplitude of postural sway when blindfolded and poorer scores when timed on a one-leg stance test compared to those who did not report fear of falling.<sup>33</sup> Our findings also support the association between depression and quality of life. Consistent with previous studies, all WHOQOL-BREF domains, with the exception of the social domain were negatively correlated with depression.<sup>11</sup> The mean scores of the participants with depression in all four WHOQOL-BREF domains were lower. One previous study that examined

associations between depression and QOL among Chinese elderly in Hong Kong, reported that scores on all four WHOQOL-BREF domains were significantly associated with depression.<sup>11</sup> Tinetti and Powell described a multifaceted clinical intervention for an elderly man exhibiting avoidance of activity due to a fear of falling after several hospitalizations.<sup>20</sup> This subject returned to his prior level of activity after a prescribed program focused on mobility training, reduction of fall risk, and graded increases in activity level. Randomized controlled trials examining whether falls efficacy can be modified through balance retraining are needed to be studied.<sup>20</sup>

The result of this study showed the association between the fall efficacy, depression and quality of life in the elderly people. This finding suggested that elderly people those who had the fear of falling due to balance deficit may have problem in their lifestyle. It showed the relationship between the fall efficacy (fear of falling) and the quality of life during the functional tasks. Quality of life also contributed to explain self-efficacy, indicating that elderly people who report high score of self-efficacy not only have impaired balance, but also due to the lack of self-confidence. So, for this purpose the present study also assessed the depression level of older people to know its impact on quality of life.

## CONCLUSION

The results of this study suggest that QOL impairments are present in people with fear of falling and depression. This relationship has important implications for the development of rehabilitation programs that aim to improve balance confidence and diminished its impact on function in elderly people. The important impact of falls includes significant morbidity, mortality, functional deterioration, hospitalization and expenditure to health and social services. Better understanding of the risk factors may help to reduce fall risk, reduce physical and social activity restriction, maintain independence and enhance quality of life in older adults and individuals with balance problems. There is a strong emphasis on multidisciplinary working in prevention of falling, reflecting the multi-factorial and complex nature of falls. This is one of the largest studies to investigate associations between QOL and depression. This study provides further insights into associations between QOL and depression among community-based, elderly people. In addition, further studies are needed to refine interventions, improve screening for fear of falling, risk of falls, and to develop approaches in high-risk groups. Future studies should aim at improving our understanding of the interaction between falls efficacy, depression and balance performance.

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