

## Psychological and Mental Health of the Elderly during COVID-19 Pandemic

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### Abstract

**Introduction:** COVID-19 pandemic has substantially changed our lives. The negative effects of misinformation and isolation have caused panic among people. The worst hit are the elderly who are not very resilient, both physically and mentally. COVID-19 has caused a profound negative effect on the well-being of the elderly population affecting individuals and the society. This study enrolled 107 elderly patients and assessed their mental status by using 4 questionnaires, namely, General Health Questionnaire (GHQ) comprising of 12 items, Patient Health Questionnaire - 9 (PHQ-9), 15-item Geriatric Depression Scale (GDS) and Structured Clinical Interview for Depression (SCID).

**Methods:** This study is a cross-sectional quantitative study in which the General Health Questionnaire (GHQ) comprising 12 items, Patient Health Questionnaire-9 (PHQ-9), 15-item Geriatric Depression Scale (GDS) and Structured Clinical Interview for Depression (SCID) were used for assessing mental distress and determining the psychometric characteristics, respectively. The study was conducted between July 2020 and September 2020. The study included 107 patients whose ages ranged between 65 years and 75 years. Housing complexes were surveyed after taking permission from the authorized persons. List of the elderly individuals of the respective housing societies was prepared and they were contacted on phone with a request to fill up the questionnaires for research purposes. The 4 questionnaires were dropped into their houses in an envelope. After they had completed the forms they were supposed to drop the questionnaires in a sealed box kept in the society's office.

**Results:** This study has summarised the results in a table for each of the questionnaires used in this study. Results of the GHQ-12 questionnaire revealed that 71.96% of the total patients had Major Depression, PHQ-9 questionnaire revealed that 83.17% of the total patients had Major Depression, GDS questionnaire revealed 87.84% of the study participants had depression while 91.58% were found to have Major Depression by the SCID questionnaire.

**Conclusion:** The study concluded that the elderly population is vulnerable to developing major depression during a pandemic.

**Keywords:** elderly population, COVID-19, mental health, anxiety, depression, questionnaire

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## Introduction

The COVID-19 pandemic has brought extraordinary changes in the lives of people. The social system has become disrupted and people are affected both physically and mentally. Apart from the high number of deaths from COVID-19, people are also affected by anxiety and depression due to the negative effects of the pandemic situation [1].

In the first few weeks of 2020, the coronavirus disease also known as COVID-19 had spread to 20 countries from the city of Wuhan, Republic of China (ROC). It also spread to other cities in China and had a high mortality rate. The death toll of COVID-19 spiraled high and developing countries like India were one of the worst hit. On 30th January 2020, the Director General of the World Health Organization (WHO) declared that the pandemic constitutes a public health concern internationally [2]. The outbreak of COVID-19 caused panic in the public, affecting their mental health and causing significant depression. The pandemic witnessed a continuous increase in the number of cases and also in the number of deaths. This increased anxiety and depression among the people [3]. The medical health care workers were themselves at risk of getting infected due to the high infectivity of the virus. Studies have shown that health workers also had increased anxiety especially in unfavourable working conditions [4]. Moreover, continuous news and information about mortality in the population and deaths due to COVID-19 among relatives led to an increase of depression, especially among the elderly. In addition to the generalized affection of mood of the entire population, the elderly population was further affected by the social isolation caused by the country-wide lockdown [5-8]. A study confirmed that loneliness and social isolation impacted the lives of the elderly population resulting in depression, poor cognition and disruption in the sleep cycle [9]. The challenges faced

by the elderly population resulted in mental health disorders like anxiety, stress disorders, and depression that have long term and deep impact on their lives [5]. Because of the pandemic, the international community is formulating effective interventions including vaccination, drug development and formulating guidelines with existing interventions. The Research and Development wing of the World Health Organization (WHO) blueprint is a plan that has a global strategy, it allows the execution of the guidelines of WHO during epidemics. The main objective of this is to check out the availability of effective tests, drugs and vaccines that are significantly effective in different demography [10].

A cross-sectional study was conducted in the period between 28 February 2020 to March 11 2020, to know the risk factors and the prevalence of the disease in the general population in China. Anxiety disorder, patient health questionnaire, stress disorder scale were used to assess the prevalence of anxiety and depression among the general population in China. The results of this study indicate that mental health symptoms were common during the COVID-19 pandemic among the general population in China, especially among infected individuals, those with suspected infection, and those who had contact with patients infected with COVID-19 [11]. Quarantine and work from home were also found to be associated with mental health symptoms. Findings from the study identified populations at risk for mental health problems during COVID-19 pandemic and may also help in implementing intervention policies for mental health [11].

Another study has confirmed that the long term duration of the COVID-19 pandemic has imposed a profound negative effect on the well-being of the elderly. The main concern of the study is the impact of isolation due to social distancing on the mental health of the elderly [12]. Within

the first 6 weeks of lockdown, a study was conducted on the elderly people in London to assess the impact of isolation on the mental health of the elderly. A total number of 7127 people including both males and females participated in the baseline study conducted from May 2020 to July 2020 [12]. The results of isolation on the social and mental well-being of the elderly have a significant impact on public health which worsened during the COVID-19 pandemic. Previous studies have reported that social isolation puts the elderly at great risk of anxiety and depression [12]. The United Kingdom had announced a lockdown on 23 March 2020 which resulted in close-down of offices, shops, public places, travel, and also the isolation of infected people. These measures put many people under complete isolation. Long periods of isolation have a great negative impact on the mental health of individuals causing depression, stress, anxiety and insomnia and it may also worsen health inequalities [13].

Many studies were conducted on the health impact on the general population but studies on the geriatric population were unrepresented. The key factors that keep the mental health of the elderly should be properly identified then it will not be difficult to plan appropriate strategies to control the declining mental well-being of the elderly population [14-16]. The effects of isolation on the elderly like the changes in levels of depression and anxiety are reported in London through an online survey. Loneliness, a reduced connection between people, health variables are identified as risk factors for change in the levels of anxiety and depression [9,14-15]. Cognitive Health in Ageing Register for Interventional and Observation Trials or CHARIOT COVID-19 rapid response study was conducted to investigate the impact of COVID-19 on the mental and social health of the elderly population. The study population was nearly 40000 above 50 years of age and without known

dementia. For this study, data was collected based on the symptoms of the participants, their lifestyle, their physical and mental health by asking six weekly questions on the online surveys. In this study, the hospital anxiety and depression scale (HADS) was used to assess the levels of anxiety and depression, the scale consists of 14 questions related to anxiety and depression [17].

This present study dealt with 107 patients and assessed their mental status by employing 4 questionnaires, namely, General Health Questionnaire (GHQ) comprising of 12 items, Patient Health Questionnaire-9 (PHQ-9), 15-item Geriatric Depression Scale (GDS) and Structured Clinical Interview for Depression (SCID).

### Literature Review

The new coronavirus infection “invaded” the world in December 2019. In the year 2020, the World Health Organization (WHO) declared it a pandemic. About 2-3% of the mortality rate was found in adults and children but the mortality rate increased in the elderly because the viral condition can negatively impact patients with the clinical features of pre-existing medical conditions which are likely to be present in the older population [18]. The pandemic has affected individuals and society by affecting the whole population, leading to depression, anxiety, and stress. Moreover, isolation, closure of all the entertainment places, educational institutions, workplaces and overall disruption of social setup had impacted the mental status of the older population. Along with the existing physical problems, older people were the worst hit. Lockdown made people stay at home, as it helps in breaking the chain of transmission of the virus. But these measures have affected the mental and social health of the individuals [19]. It is mandatory to isolate the patients and enforce quarantine as there is no preventive or palliative treatment, but these measures have brought a huge change in

the daily routine of the people. Hence the waves of insecurity and anxiety affected the elderly, making them more susceptible to the onset or aggravation of the disorders during this pandemic [20]. More than 20% of the population in the world above the age of 60 years live with some or the other neurological problems like dementia, anxiety, and MDD (Major Depressive Disorder) [21]. Researchers stated that the absence of awareness and impairment of cognition associated with mental stress are the factors that make the older population susceptible to infection. It is a worrying fact that older people getting infected by the coronavirus who already are vulnerable to mental health will suffer the most due to poor mental health status [22-23].

Although social distancing is an effective measure in preventing the spread of the virus, it results in loneliness that increases mental vulnerability in individuals who already have psychiatric disorders especially the geriatric population [23]. Dementia, major depressive disorder, age are the risk factors associated with suicide. Hence monitoring of this group of people is necessary because the virus in combination with the stressors can increase the symptoms that are associated with age [24]. In December 2019 the very first case of coronavirus was recorded in Wuhan, China. Coronavirus is associated with severe acute respiratory syndrome (SARS) in animals. In humans, the infection is present in the alveolar cells [25]. The virus replicates in the upper respiratory system by using Angiotensin-Converting Enzyme 2 (ACE-2) and also facilitates the transmission of the virus. It can also affect the other organs of the body in addition to viral pneumonia [26]. The major complications found in the people infected with coronavirus are shock, pathological changes in the myocardium, development of arrhythmias, especially in the geriatric population. The risk of death due to the virus increases in elderly individuals in addition to affecting the main

functions of an organ. There is an increase in the mortality rate in the elderly especially associated with pulmonary disorders, diabetes, hypertension, and heart disease [27-28]. The main cause of death in patients infected with coronavirus is due to the inflammation of the alveolar tissue. It gets more severe with the onset of a physiological event called the cytokine storm. It causes an increase in the accumulation of the cytokines which causes inflammation of tissues in multiple areas. This may lead to the death of the patient due to multiple organ failure [29]. Viral SARS-CoV infection forms a type of cell death program by pyroptosis linked with the virus. The inflammatory response of the patients helps in alleviating the viral load and aids in the resolution of the infection [25, 30]. In some patients, the cytokine storm turns into a vicious cycle that increases the release of various types of cytokines like the interleukins and also tumour necrosis factor. The SARS-CoV-2 virus can utilize this inflammatory process to its advantage by antagonizing the interferons and markedly increasing the viral replication [29]. The infection becomes more severe when there is a rise in inflammation. Immunosenescence is found in aged people and is related to the low-grade state of inflammation. It is most common in elderly in combination with other diseases [29]. Anxiety and major depressive disorders are most common in individuals above the age of 60 years. Some of the studies have stated that anxiety associated with other diseases increases the risk of mortality in individuals above the age of 75 years [31]. Without the specific treatment or the use of vaccines, isolation has become the most effective measure of prevention against SARS-CoV-2. But due to prolonged periods of isolation, there is an increase in the risk of the mental breakdown of individuals [32]. Many researchers have shown that major depressive disorder is related to many other diseases, especially in the elderly

population. Anxiety and major depressive disorder are most often associated with cerebrovascular diseases, diabetes and cardiovascular diseases [33].

The stressors in the normal physiological process cause alteration in the mechanisms of homeostasis leading to inflammation, oxidative stress and metabolic disorders. This causes an increase in the allostatic load which is an inherent property of psychiatric disorders that is most frequent with other diseases in the geriatric population [34]. Other neurodegenerative and psychiatric disorders show an increase in the severity of COVID-19. A study confirmed that 11.9% of the total patients with COVID-19 died due to dementia in Italy. Dementia was in association with other diseases in these patients [35]. Social isolation became a single risk factor that is found to have played a role in cognitive impairment and increasing the risk of developing Alzheimer's disease. Post-traumatic stress disorder (PTSD) and such diseases present the deregulation of the cytokines that aggravate the infection [36]. In some studies, the researchers observed that the older patients who presented with a history of neuropsychiatric disorders had delirium, which is a severe manifestation of the infection. In addition, these older patients showed changes in the motor and cognitive areas like alogia, agitation, abulia and rigidity, and the patient also showed an increase in C-reactive protein, hence the patient should be monitored to promote good health [37]. Before the outbreak of COVID-19, some people live with the same psychiatric disorders, some conditions reduce the life expectancy somewhere between 13 and 30 years due to the neurological and inflammatory complications that are associated with the disease [22]. The inflammation of the nerve is the pathology of major depressive disorder and is also an aggravating factor of Covid-19. IL-1 beta is the pro-inflammatory mediator, it changes

according to the severity of the symptoms of depression and anxiety. It is also associated with the pathway of inflammation that is induced by activation of caspases during the infection of COVID-19 [38]. According to the findings of some researches, the increase in the level of cytokines may worsen the symptoms of COVID-19 [38].

The first sign of psychological shock has been reported in older adults by considering the consequences of pandemic. The situation of the patient worsens when they hear that some of the relatives are infected. Those patients already with pre-existing mental health conditions are more prone to stress and worsening of the health conditions [39]. Mehra et al. reported a case of an elderly individual who has been in depression for more than fifty years, was very anxious about COVID-19 for about 3 weeks. On examination, it was found that there were abnormalities, hence it became necessary to increase the psychotherapy sessions and the dose of antidepressants to bring the manifestations of the disease under control [40].

According to the statistics of October 16, 2020, there are approximately 1,090,586 deaths due to COVID-19 and about 39,023,292 confirmed cases worldwide. 80 per cent of the deaths due to COVID-19 were found in the elderly population of age greater than 65 years according to the report given by the US Centres of Disease Control and Prevention. It indicates that the geriatric population is more vulnerable to the virus [41]. China has reported that the increase in the severity of infections and the mortality rate depends on age. The geriatric population has reduced immunity so they are more vulnerable to death and serious infections. Senility also contributes to the increased risk of getting infected [42]. In Korea 75.7 years is the average age of death. The reports have shown that the fatality rate due to COVID-19 has increased with the age of the patients. 50 to

70% of the Koreans have an underlying medical condition like COPD (Chronic Obstructive Pulmonary Disorder), diabetes, high blood pressure and cancer. These groups are at high risk and are more vulnerable to COVID-19. Hence quarantine, intervention and health care are necessary for the elderly [43]. The impact of COVID-19 on the mental health of elderly patients have to be paid special attention to as they are mentally and physically more vulnerable than the other age group people. Thus, the elderly population is a high-risk group not only for COVID-19 but also for psychiatric complications due to the whole pandemic situation [44]. The pandemic situation seems to be prolonged. Some social measures have been implemented like social distancing, isolation and quarantine which has contributed to the prevention of the disease but has affected the mental health of the elderly population [45]. The mental panic caused by COVID-19 has spread more rapidly. If the coronavirus penetrates the body and affects the lungs, fear invades the brain. The fear of the virus has spread to the entire population which

has also caused discrimination of the infected patients and some specific groups like the elderly as they are more vulnerable to infection [46].

At this time there is a need for proper intervention, political measures and strategies to maintain positive and healthy conditions and the elderly should have adequate communication. The efforts that are taken to maintain mental health are equally important in maintaining physical health. Several interventions have been considered to improve mental and psychological health [47]. The COVID-19 induced stress is the main cause for the negative impact on the mental health of the elderly, so to intervene in coping with this stress is essential [48]. The ego-integrity is another factor that includes the self-esteem of a person and the feeling of self-worth. The behaviours like giving up treatment mid way have always been a problem as the elderly are at increased risk of getting infected, interventions are needed urgently based on ego-integrity [48]. The psychological considerations in an elderly person can be summarised as given below [49-51].

**Table 1: List of psychological concepts with corresponding influences**

Psychological Concepts	Psychological and Mental Influences
Stress	Stress not only causes psychological and mental distress and aggravates psychiatric symptoms, but may also lead to suicide in severe cases, according to recent studies conducted during the COVID-19 outbreak.
Ego-integrity	Constant exposure to high stress levels, such as those caused by COVID-19 among the elderly decreases expectations toward the self, damages positive self-perception, and can lead to loss of self-worth and depression; further contributing to or even causing other mental health problems.
Self-efficacy	Self-efficacy is a major variable that predicts adaptation and plays an important role in behavioral change, physical health, mental problems, and psychological adaptation. This may affect the degree to which the elderly can control and cope with events in stressful situations caused by COVID-19.
Resilience	High resilience among the elderly predicts variables such as high coping skills, long lifespan, low depression, a positive mind, strong social support networks, and dynamic physical activity; thus, resiliency is particularly important among the elderly where psychological, social, physical, and socio-economic stresses are highest among all age groups, especially during COVID-19.

## Materials and Methods

This study is a cross-sectional quantitative study in which the most frequent General Health Questionnaire (GHQ) comprising of 12 items, Patient Health Questionnaire-9 (PHQ-9), 15-item Geriatric Depression Scale (GDS) and Structured Clinical Interview for Depression (SCID) were used for assessing mental distress and determining the psychometric characteristics, respectively. The study was conducted between July 2020 to September 2020. The study included 107 patients whose ages range between 65 and 75 years old. The participants were selected based on the inclusion and exclusion criteria. The inclusion criteria included the age of the patients (between 65 and 75 years old), patients who had contact with a patient of COVID-19 or experienced COVID-19 closely, patients who had no psychological disturbances before suffering from COVID-19, patients who were willing to participate in this study and patients who had no other chronic diseases. The patients who did not have any interest in the process of participation and who discontinued during the study were excluded. The study mainly examined the psychological and mental status of the elderly population during the COVID-19 pandemic.

The questionnaires of GHQ-12, Patient Health Questionnaire-9 (PHQ-9), 15-item Geriatric Depression Scale (GDS) and Structured Clinical Interview for Depression (SCID) were distributed manually in printed format and distributed in housing societies after making a list of elderly individuals residing in the societies. The data were derived from the submissions and was arranged methodically. Although the questionnaire included different socio-demographic parameters, the study considered only age to correlate the scores of GHQ-12.

### *Validation of each study*

General Health Questionnaire (GHQ-12) has obtained an acceptable Cronbach's alpha (.76) [52] with oblique rotation and maximum likelihood procedure. GHQ-12 was used in other several studies and can be well considered to be used in this present study [53-55].

In 1978, David Goldberg designed General Health Questionnaire-12 (GHQ-12) which is used in this study. Although the GHQ-12 questionnaire included different socio-demographic parameters, the study considered only age to correlate the scores of GHQ-12. These 12 questions are used to determine psychiatric morbidity. The questionnaire focussed on the ability to concentrate, insomnia, the status of depression, presence of anhedonia, ability to make the decision, feeling of worthlessness, loss of self-confidence. In this study, the scoring was done on the bimodal scale, ranging from 0 to 12 where a score more than equal to 3 indicates the presence of psychological stress [52,56]. Patient Health Questionnaire - 9 is a questionnaire of 9 items specifically asking about the status of depression. The questions are open-ended type and were developed as a self-report version of Primary Care Evaluation of Mental Disorders (PRIME-MD). It is efficient in older adult persons and also significantly shorter than other screening measures. It has been found that PHQ-9 has greater reliability and responsiveness and it is efficient in determining significant changes in the mental status of an adult person [57-61]. This study also considered the Geriatric Depression Scale (GDS) which is significantly effective in screening depression, with a sensitivity of 100% and specificity of 84%. This scale of measurement employs questions in an objective format which is easier for the patients [62].

The study also employed the Structured Clinical Interview for Depression (SCID). This questionnaire is effective for the

geriatric population and it is considered as standard for DSM-IV depression diagnosis in clinical research [63-65].

**Result**

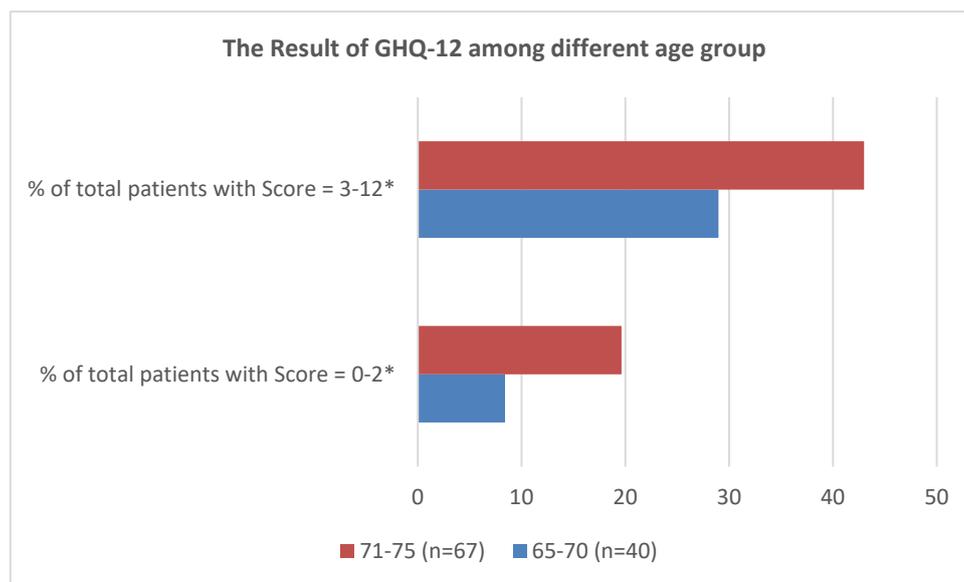
The GHQ-12 questionnaire revealed 28.97% of the total patients to have major depression in the age group of 65-70 years while 42.99% of the total patients were

shown to have major depression in the age group of 71-75 years old. The GHQ-12 scores (ranging from 0 to 12) had shown that 71.96% of all patients had depression during the pandemic situation of COVID-19. The summarised table and corresponding graph has been shown below (Table 2 and Figure 1).

**Table 2: The result of GHQ-12 showing the number of patients in each group of scores and corresponding percentage, in different age groups**

Age (in years old)	Number of patients with Score = 0-2	% of total patients	Number of patients with Score = 3-12*	% of total patients
65-70 (n=40)	9	8.41	31	28.97
71-75 (n=67)	21	19.62	46	42.99

\* Score more than equal to 3 concludes major depression



**Figure 1: The figure showing the percentage of patients with each score group**

The results of the other three questionnaires, namely, PHQ-9, GDS, SCID, were also determined. The result of PHQ-9 has shown that 83.17% of the total patients had major depression which includes 28.97% of the patients in the 65-70 years age group and 54.20% of patients in the 71-75 years age group. The result of the GDS questionnaire has shown 87.84% of the total patients had a score more than or equal to 5, which concludes 87.84% of

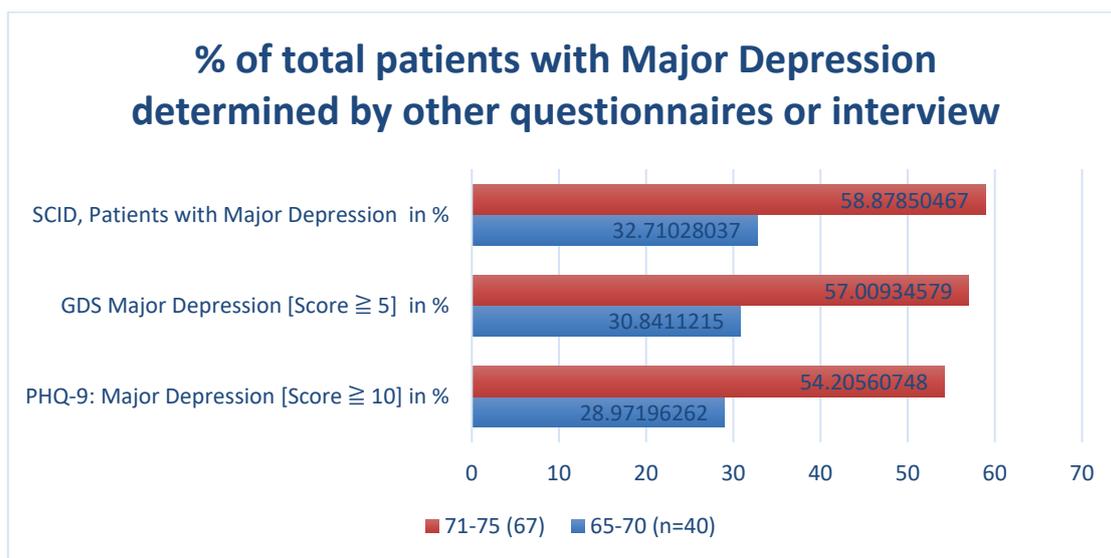
the total patients had major depression. This includes 30.84% of the total patients and 57% of the total patients from the 65-70 years age group and 71-75 years age group, respectively. Again, SCID had remarkably revealed 91.58% of the total patients to be considered as having major depression. The summarised tables and figures are presented below (Table 3, Table 4 and Figure 2).

**Table 3: The number of patients having major depression in each questionnaire or interview**

Age (in years old)	PHQ-9: Depression [Score $\geq 10$ ]	Major GDS Major Depression [Score $\geq 5$ ]	SCID, Patients with Major Depression
65-70 years old	31	33	35
71-75 years old	58	61	63

**Table 4: The percentage of patients having major depression in each questionnaire or interview**

Age (in years old)	PHQ-9: Depression in %	Major GDS Major Depression [Score $\geq 5$ ] in %	SCID, Patients with Major Depression in %
65-70 years old	28.97	30.84	32.71
71-75 years old	54.20	57.00	58.87



**Figure 2: The percentages of total patients with Major Depression in SCID, GDS and PHQ-9**

**Discussion**

In this study, the GHQ-12 questionnaire had shown that 71.96% of the total patients had Major Depression, PHQ-9 questionnaire had shown that 83.17% of the total patients with Major Depression, GDS questionnaire revealed 87.84% of the study participants had depression while 91.58% had shown to have major depression by SCID. So 4 questionnaires

that were employed in this study, proved that the majority of the elderly patients who participated in this study had depression during the COVID-19 pandemic.

**Conclusion**

The study concluded that the elderly population is vulnerable to developing psychiatric problems more easily during the pandemic. There is a significant

percentage of the elderly population between 65 years old and 75 years old, who are suffering from anxiety and depression. This is well supported by the results of the 4 questionnaires used in this study. This study also suggests developing psychological support services that can effectively prevent suicidal events or the increase of psychiatric disorders during the pandemic. This will enable governments, healthcare system, communities to plan strategies to prevent and manage psychological problems in the elderly population during a pandemic.

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