



# The Impact of Circuit Breaker (COVID-19) on the Older Adults and Their Caregivers

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## Abstract

The Novel Coronavirus 19 has caused a global pandemic in 2020 with millions of people affected worldwide with hundreds of thousands of deaths reported thus far. In Singapore, even though the death rate has been under control the measures taken by the government to control the spread of COVID-19 had some impact on our elderly, especially the elderly living with dementia. This study showed that our caregivers for the older persons with dementia seemed to have coped well and some have even reported positive impact of COVID 19 on their PWD and themselves.

**Keywords:** COVID-19; Dementia; BPSD; Caregiver stress

## Introduction

The Novel Coronavirus 2019 (COVID-19) was first reported from Wuhan, China in December 2019. The virus causes respiratory tract infection which ranges from a mild flu-like upper respiratory infection to a severe lower respiratory infection with a high mortality. The symptoms include generalized myalgia, headache, conjunctivitis, sore throat, diarrhea, loss of taste/smell, and rash which may progress to shortness of breath, chest pain, pneumonia, respiratory failure and death. COVID-19 is diagnosed based on detection of SARS-CoV-2 by PCR testing of a nasopharyngeal swab [1,2].

The first case of COVID-19 infection in Singapore was confirmed towards the end of January 2020 and the cases were initially imported from travelers from overseas. Local transmission began in February 2020 and by early April 2020, the Singapore government announced a series of measures in order to contain the spread of COVID-19 cases in the community. These measures were termed Circuit Breaker (CB) and we are currently in the Phase 2 of the CB [3].

During the phase 1 of CB, the public was advised to stay at home to decrease the risk of exposure to coronavirus. Other countries around the world imposed various measures to impose a lockdown of sorts to ensure the safety of their citizens. The public were strongly advised to stay in their own homes, work from homes with closure of schools, businesses and offices. Only the essential services were still operational, and even then, their staffs are advised to work from home, have staggered work hours and various measures at the offices to minimize contact. Schools, religious functions, malls, entertainment outlets were all closed to minimize spread of the deadly virus, as there is currently no available vaccine or readily available treatment options known.

In addition, social distancing was imposed to minimize risk of droplet transmission from close physical contact. To facilitate contact tracing, all the schools, hospitals, nursing homes, sports facilities and malls required all visitors to check in and check out. Visitors visiting the hospitals and nursing homes were prohibited at beginning of CB but gradually eased at Phase 2 as the local infection was kept under control. Social gathering and visitors to relatives' or friends' houses were initially prohibited in Phase 1 of CB, but gradually eased during Phase 2 of CB. During CB, all the community services like home help, meals on wheels, home nursing, home medical, home rehab services were ceased in order to minimize contact. These measures imposed isolation at people's own homes and for the elderly who regularly attend or require community services, this period during CB was difficult for many vulnerable elderly. In addition, studies have shown that social isolation in elderly has significant association with acceleration of disease progression and premature death [4].

The COVID-19 pandemic has put tremendous strain on most people worldwide, with recent changes in lifestyle, financial losses and having to adopt new ways such as wearing masks in order

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**Table 1:** Frequency and percentage of responses on the survey of the effect of circuit breaker among elderly and their care givers.

	Frequency	
	Yes	No
Lived-in care givers	51 (80%)	13 (20%)
Patients diagnosed With Dementia	49 (77%)	15 (23%)
Patients with BPSD	39 (62%)	25 (38%)
CB impact on patients who attend day activity centres (i.e. day rehabilitation, day care centre)	50 (78%)	14 (22%)
CB impact on daily routines	42 (66%)	22 (34%)
CB impact on behaviour	39 (62%)	24 (38%)
CB impact on function	46 (71.8%)	18 (28%)
CB impact on sleep	18 (28%)	46 (72%)
CB impact on worsening of memory	18 (28.2%)	46 (72%)
Caregivers difficulty with asking patients to wear a mask	18 (28%)	46 (72%)
CB impact on caregiver's personal time to recharge	21 (33%)	43 (67%)
CB impact on caregiver's financial situation	2 (3%)	62 (97%)
CB impact on caregiver burn out	12 (19%)	52 (81%)
Caregivers reported positive impact of CB on PWD	28 (45%)	36 (55%)
Caregivers of PWD with BPSD reported negative impact	24 (62%)	15 (38%)

to remain safe. The authors set out to investigate the effects of the circuit breaker and how the pandemic affected the older adults and their caregivers in the community.

## Methodology

A telephone survey was conducted with the caregivers of the older patients living in the community during the early Phase 2 of the Circuit Breaker. The patients were on routine clinic follow up with one of the department's senior consultants. There were a total of 136 patients in the 3 months' clinic visit list. The authors' team successfully enrolled 64 patients. Language barrier was the main reason for drop out, as most of the caregivers were not able to converse in English, while a few refused to participate. Verbal consent was taken from all the caregivers prior to answering the questions on the survey. The intent and purpose of the survey were discussed with the caregivers as part of the consent. If the caregivers were not keen to participate in the survey, they were not under duress to do so. The telephone call was a once off, and there were no patients' identifiers on the survey forms. The study was approved by the hospital's ethics committee.

Variables were expressed in percentage and compared with Chi-square test if expected count in if expected count in each category was at least 5. For other categories with expected counts less than 5, Fisher's exact test was used. A p-value of <0.05 is considered the significant threshold.

## Results

Of the 64 respondents, 51 (80%) were lived-in caregivers and 49 (77%) of the patients were Patients living with dementia (PWD) of which 62% have behavioral and Psychological Symptoms of dementia (BPSD).

The circuit breaker did not have significant impact on the caregivers. The lived-in caregivers as well as the non-lived-in caregivers did not seem to notice major changes in their lives due to the circuit breaker with equal responders responded to yes and no (P value =0.5615). Majority of the patients, 50 (78%) were attending day activity centers before the circuit breaker started. Comparing caregivers among PWD who attended community day services with

non-attendees, there was no difference in the reporting of negative impact of CB on the caregivers (P=0.50).

Circuit breaker affected 42 (66%) PWD's daily routines especially outdoor activities like walking in the neighborhood and dining out (P= <0.0001). Unfortunately, 39 (62%) of the respondents felt that their loved ones' behavioral symptoms and function, 72%, had worsened during the circuit breaker (P= <0.0001, P=0.0259 respectively). The caregivers thought that the circuit breaker did not significantly affect the sleeping pattern (P=0.05) nor the memory of these patients, (P=0.7137) although the results did not reach statistical significance.

Contrary to the authors' expectation, 46 (72%) patients' caregivers did not express difficulties getting their loved ones to wear masks while they are out of the house.

Surprisingly, circuit breaker did not have major negative impact on our caregivers for PWD as expected, with 43 (67%) reported that circuit breaker has not affected them in their caregiver role while allowing them to maintain their usual social contacts or spending quiet personal time to recharge (P=0.0002).

The team enquired if the circuit breaker had any impact on their current financial situation and 62 (97%) felt there was no impact on their financial status (P=0.49). Much to the contrary, 81% of the caregivers did not show signs of burn out like answering negatively to feeling trapped, suffocated or exhausted during the CB period (P=0.0069).

To the team's pleasant surprise, 28 caregivers (45%) actually reported a positive impact of the CB on their PWD. The caregivers reported that their relationship with their PWD has improved, since they got to spend more quality time at home with their PWD. For the whole cohort of patients in the study, 39 (62%) were PWD with behavioral symptoms. Among the caregivers of PWD with behavioral symptoms, 24 (61.5%) reported negative impact of CB (p<0.005). The result of the survey is summarized in Table 1.

## Discussion

COVID-19 has affected thirty-nine million with more than

one million deaths worldwide, at the time of writing. In addition to the human lives lost, COVID-19 has serious implications on the world's economy with the travel industry suffering the most losses. In Singapore, the total number of patients who screened positive for COVID-19 was 57,904 with a total of 28 deaths reported [5].

The implementation of circuit breaker in Singapore the spread of the COVID-19. Reports of COVID-19 related deaths are higher among the elderly population, especially among the elderly residents in institution care who have compromised immunity [6-8]. Patients aged 65 and older have more than five times higher risk of hospitalization and more than ninety times higher risk of death from COVID-19 infection according to Centers for Disease Control and Prevention [9].

The elderly are more prone to acquiring infection due to substantial changes in the ageing immune system, co-morbid conditions and frailty [10-12]. The elderly with cognitive deficits poses an additional risk as it makes it difficult for them to understand and retain information regarding the pandemic and consistently follow precautionary measures such as frequent hand hygiene, wearing masks and social distancing. The Korean Brain Research Institute discovered a higher expression of Ace 2 genes among the elderly with Alzheimer's Disease which increases the risk of penetration of SARS-COVID-2 into the human cells which may partly explain the higher mortality among the vulnerable elderly residing in nursing homes [13,14].

Isolating the elderly to their own company in order to reduce contact and possible transmission, may have significant psychosocial impact. According to Holt-Lunstad et al. [15] social isolation and loneliness have been significantly linked with an increased prevalence of cardiovascular, neurological diseases and premature death. Isolation also increases risk of cognitive impairment, which eventually, increases the risk of Alzheimer's disease and hastens disease progression of comorbid conditions [16]. Social disconnection puts the elderly at increased risk of developing anxiety and depression [17]. Emotional stress and anxiety for being alone is the new norm until there is availability of an effective vaccine for the novel coronavirus, even though the restrictions are slowly lifting as spread of infection eases. The new norm still causes emotional stress and anxiety during the pandemic, and only time will tell if the new lifestyle causes an increase risk of premature death which is especially detrimental in elderly patients [18,19].

The symptoms of dementia include the emergence of neuropsychiatric symptoms or Behavior and Psychological Symptoms of Dementia (BPSD). Over the course of illness, about 90 percent of patients with dementia suffer from BPSD [20]. BPSD is associated with high levels of stress both in the PWD and their caregivers. Caring for a person with dementia can cause emotional, psychological and physical problems.

In this study, the elderly patients and their caregivers seemed to cope with the effects of the circuit breaker especially with handling the PWD. There were no reports of significant worsening of BPSD. The circuit breaker prevented the PWD from going out and doing their routines but the families and caregivers were able to make appropriate adjustments and take care of their loved ones, despite limitations the pandemics imposed on their own personal lives. The authors expected the cognitive, behavioral symptoms and physical functions to decline due to the various new changes imposed by

the pandemic. The lack of social contact, disruptions in their usual day to day routines or attendance at day centers were expected to cause worsening of behavioral symptoms and caregiver stress. The caregivers too have changes imposed by the CB on their personal lives such as the closure of schools and working from home due to the closure of non-essential industries. These changes cause crowding at home with children running around, virtual classes and adults having to cope with pressure from work in their home environment. However, for most of our caregivers, they seemed to have taken the situation into their stride and managed the new norm as best they can with minimal disruptions to their usual routines. This may be explained by adequate education and counseling for the caregivers during their previous clinic visits and the assurance that they can call in to clinic for help. During the circuit breaker, the geriatrician still offered to continue with their pre-arranged clinic consultations, unless the caregivers felt that they are confident to postpone their clinic visits to a later date. The hospital offers a free medication delivery service for the patients who needed to top-up their prescription medications, if they chose to postpone their appointment to a later date.

For the older PWD who attended day care services as part of their daily routines, CB seemed to have an impact as reported by 78% of the caregivers compared to those not attending day care services. It is likely that the PWD who attended day care services had behavioral symptoms and day care acted as a short respite for the caregivers. With closure of the community services, the PWD were stuck at home. This coupled with the new norms of school closure and work from home policies may have added another layer of stress for the PWD and their caregivers.

The PWD are at a higher risk of infection, if they have difficulties remembering the precautionary measures like putting on face masks, maintaining a safe social distance and frequent hand washing. The authors were concerned about the patients' lack of compliance with wearing masks as they have difficulties retaining information, especially if there is a change to their usual routine. Wearing a mask is not considered a routine for most people, under normal circumstances. However, in this survey, the caregivers did not report undue stress due to difficulties persuading their loved ones to keep their face masks on.

Caregivers were advised to have plenty of rest and stay fit and healthy to prevent exhaustion and burnout. Caregiver burn out is common among caregivers for PWD [21]. The risks for burn out include poor sleep, behavioral symptoms, falls, incontinence, long hours of caregiving, female, poor social support [22,23]. During the pandemic, the public learn to utilize the digital service to facilitate communication and stay in touch with their friends and colleagues. Life in 2020 has taken on a new normal, with classes, religious activities, family get-togethers, celebrating festivals online. Learning to use the technology for communication is one of the new norms, and the elderly especially the ones with cognitive impairment may be left behind in terms of learning to use the technology, which further increases risks of social isolation and loneliness. Perhaps the new digital age and advancement may continue to serve as a bridge for the older adults living alone to stay in touch with their families and their communities. Some of the memory clinics are examining the feasibility and reliability of using telecommunication and videos as means of assessment for the future [24,25].

Much to the authors' surprise, the CB had a positive impact on the caregivers. In the face of adversity where the pandemic has caused

loss of lives, income and imposed severe restrictions on people's lives, there were glimpses of positive outcomes from the survey. Perhaps spending more quality time at home and creating meaningful activities for the PWD had improved relationships between the PWD and their caregivers. This also provided opportunities for the caregivers and their PWD to get to know each other better, despite the losses caused by dementia and the pandemic.

## Conclusion

Lessons learnt from earlier pandemic like SARS, have provided the healthcare sector a guide to fight the infection and allocate resources to the critically needed areas in order to cope with surge in patient load. Steps taken to contain the spread of infection caused social isolation and loneliness among the elderly with interruptions in their routine activities. However, the authors were assured to learn that their caregivers seemed to have taken the changes and challenges in their strides and managed to cope with their care.

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