Report of Research for Mitsui Sumitomo Insurance Welfare Foundation

Title of Research- Use of iPads for Simulated Presence and Other Therapies for the Older Patients in the Isolation and General Wards During the COVID-19 Pandemic

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Use of iPads for Simulated Presence and Other Therapies for the Older Patients in the Isolation and General Wards During the COVID-19 Pandemic

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Summary

The COVID pandemic has caused huge disruptions to people's lives and put tremendous strains on the healthcare systems. The elderly patients in the hospitals, especially the elderly with cognitive problems develop delirium, agitation, loneliness and are at risk of hospital associated problems like falls due to unfamiliar environment and absence of their usual caregivers. The research examined the use of iPads as treatment modalities using simulated presence and various other therapies to manage behavioural symptoms. The patients showed active participation with improvement in patients' mood, sleep, sundown symptoms and reduction in their agitation. The nurses too gained benefit from this form of therapy.

Aims of research:

- Explore iPads as a novel treatment modality in managing behavioural symptoms among the elderly patients in an acute hospital setting.
- Explore effectiveness of simulated presence for the agitated elderly in negative pressure isolation rooms.
- Nurses' satisfaction with using iPads in management of elderly patients with challenging behavioural symptoms.

Introduction

The Novel Corona Virus 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. 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]

The COVID 19 pandemic has put tremendous strain on most people worldwide, with changes in lifestyle, financial losses and having to adopt unconventional lifestyle changes such as social distancing, wearing masks in order to remain safe. The situation got under better control towards the latter half of 2020 in Singapore. However, the emergence of mutant strains caused a second wave in Singapore in May 2021, especially worrying is the more virulent 'Delta' variant.

During the first wave in 2020, there were facilities in Changi General Hospital to isolate fever cases. MOH mandated these patients to be placed in single isolation rooms for 48 hours while awaiting results of their 2 COVID swabs. These isolation rooms have negative pressure and the patients are generally confined to their beds, with no visitors. The nursing and medical staff provide minimal supervision and contact in order to minimise risks of cross infection. For the elderly patients >65, especially the elderly with cognitive issues, the stay in the isolation rooms can potentially cause serious harm like new onset of delirium, incontinence, social isolation, depression and falls albeit for a short 48 hours. During the height of the pandemic in 2020, there were a few falls with major injuries among the elderly in the isolation rooms, due to the lack of supervision. As a result of these serious reported events after the falls, the elderly patients with cognitive issues are generally advised to be put on body restraints to reduce the risk of them getting up or falling from bed.

Falls in the hospitals occur commonly among the elderly patients with multiple comorbidities and delirium. The usage of physical restraints has not been convincingly shown to reduce hospital falls. (4) Therefore, the author was interested to try new innovative ways to keep the patients engaged during their stay in the isolation ward to reduce risk of social isolation, provides cognitive stimulation and improve their overall well-being.

iPads have been used in studies for the older Persons with Dementia (PWD) and have been shown to favourably improve behavioural symptoms and mood, as well as favourable reports by the PWDs' caregivers. However, most of the studies published were in day care or long term care setting, with sparse data on effectiveness in the hospital setting. During the pandemic, iPads have increasingly being used as virtual platform to simulate family and friends get together, especially during the festive seasons. In the hospital setting PWDs with behavioural symptoms are frequently nursed on restraints in the wards due to high fall risk, especially the PWDs with behavioural symptoms. In CGH, iPads are used in the dementia ward as a non-pharmacological strategy in managing the elderly PWD with behavioural symptoms.

Methodology

Mitsui Sumitomo Insurance Welfare Foundation awarded the author the grant to rent iPads for this project. The author managed to rent 25 iPads from a rental company for the elderly patients >80 in CGH from March-May 2021 for this research. At the beginning of the research the isolation ward was closed because cases were at the lowest since COVID cases were contained in the community with less than a handful of cases a day.

In May 2021, due to the emergence of the Delta variant, Singapore went through a second wave, and measures were put in place by the Government to tighten measures (Heightened Alert) in order to reduce community spread. The isolation ward for the elderly reopened with 7 beds. Between March to April, due to the low load of isolation patients, the iPads were also used by the elderly patients in the general Geriatric wards as part of the treatment plans for the elderly.

For the patients in the isolation rooms, the team encouraged the patients to video call their family members to combat loneliness due to social isolation and in doing so, improve their anxiety levels. The alternative to calling is for the family members to record a video which the care staff can play back for the patients during their stay in their isolation rooms. For the rest of the days, the patients in the isolation rooms get to play music, videos and games using the iPads. The therapy chosen were individualized according to the patients' likes/ dislikes, preference and cognitive skills. Data collection forms were filled by the nurse in charge of the patient's care.

Each of the Acute Geriatric wards were loaned 5 iPads for the elderly patients. The nursing staff used the iPads to conduct therapy sessions for the patients on an individual basis. Group engagement has been discontinued since the COVID pandemic, but there are many occasions when the music playing from the iPads benefit more than one patient. The therapy sessions were individualized according to the patients' preference and cognitive abilities. The music and video playlists were individually chosen. The patients chosen for these therapy sessions were elderly patients >80 with cognitive problems which were either delirium or dementia or both. The patients in the study had behavioural symptoms like restlessness, wandering, disruptive behavior and poor sleep.

This research therefore examined the usefulness of iPads for the elderly patients in the isolation rooms as well as the general wards. Therapies chosen included simulated presence to reduce loneliness due to social isolation, improve mood and overall well-being. The second part of the study examined the effectiveness of using iPads as a novel treatment modality in managing the challenging behavioural symptoms exhibited by the elderly with cognitive problems.

Results:

A total of 73 data sheets were filled in and collected. There were 15 patients from isolation rooms, while the remaining 58 patients were in the general wards. Video conference calls were made for 12 patients, while the remaining patients used the iPads to listen to music videos, watched shows, movies, drama series and playing games. The iPads were also used to record family member's messages for the patients to play back and listen to. These recordings were destroyed prior to patients leaving their isolation ward. The patients and families were asked for consent to participate in this project. There were not under duress to consent.

Simulated presence therapy using facetime (66.7%) and audio recording (33.3%) was conducted on elderly patients with cognitive impairment during the 48-hour isolation. Most sessions were conducted in the afternoon. The staff managed to engage the patient for at least 15 minutes and 22 % managed to engage the patients with their families for 90-120 minutes. In most sessions, 55.6% of the patients were actively engaged, 44.4 % showed neutral response. Mood, agitation scores, sleep pattern and sundown behaviour were monitored during their stay in an isolation ward, before and after therapy session.

The nursing staff felt that the session benefited 78% of the patients with improvement of mood (33.3%) and the patients were able to have a meaningful conversation with family and staff (22.2%). Few patients were noted to be less agitated and restlessness after the session. The sundown symptoms also improved after the therapy sessions.

Overall, the nurses felt that stimulated presence presented an opportunity for an enriched and meaningful communication between the staff and patient (33.3%). Simulated presence therapy provided a short and much needed respite for all the nurses, such that they had some time saving to allow them to focus on the more urgent nursing work.

The therapy sessions in the general wards lasted for an average of 15-45 minutes, with some patients enjoying their shows for up to 6 hours a day. The patients' mood before and after therapy sessions were recorded and shown on (table I). Patients' mood was assessed by nurses according to a state of being apathetic/ neutral where the patients did not show any interest in the happenings surrounding

them. The patients were also assessed for being sad/ restless or refusing care prior to and after therapy.

Patients' behavioural symptoms were recorded before and after therapy sessions with iPads. The behavioural symptoms of interest to the team were levels of agitation, which was classified by the nurses according to severity. Results were shown in Table 2.

The presence or absence of sundown symptoms were observed for patients before and after therapy with iPads. The results were as shown in Table 3.

The nurses were also asked to observe the patients' engagement during the therapy sessions with iPads. The results were as shown in Table 4.

Two weeks after termination of the grant, the authors decided to do another survey for the nurses in the wards who were privileged to have the iPads in their wards. The nurses were asked about the effects of iPads on the patients' as well as their own well-being. The results were shown in Table 5.

Discussion

The COVID pandemic had caused huge disruptions in people's lives worldwide with millions of deaths reported. Many countries are experiencing another round of new cases due to mutations of the COVID virus. Although the death rates in Singapore has not been high, the pandemic nevertheless, has put tremendous strain on the healthcare system.

The elderly are an unique group of patients who are more vulnerable during this pandemic due to their reduced physiological reserves. (5) Currently, MOH mandates that all patients admitted with fever and respiratory tract symptoms need to be housed in isolation rooms while awaiting two sets of COVID swab results to be negative before they are allowed to be managed in the general wards. While the patients are being isolated in their individual isolation rooms, no visitors or accompanying caregivers are allowed. In order to minimize the risk of infections, the care teams are mandated to don on full Personal Protective Equipment (PPE) before attending to the patients. The isolation rooms are built with negative pressure set up which means there are 2 doors to each room. The outer door has to close fully before the inner door opens and there is a delay between the closing and opening of these two doors. This mandatory time lag causes a delay for the care staff to attend to the patients which may cause accidents in the room, if the nurses can't get in on time to prevent the falls. Due to this delay, the elderly patients with cognitive issues who are unable to consistently follow instructions are nursed on a body vest as a physical restraint while they stay in the isolation rooms as a temporary

attempt to reduce fall risk. Due to the restriction in autonomy of movement, the patients are at risk of developing immobility related problems, delirium and depression.

The first part of this research was to evaluate the effectiveness of simulated presence as a treatment strategy to reduce anxiety among the patients while they are confined in their individual isolation rooms. The iPads were equipped with apps which allowed the patients to have video calls with their family members. The alternative is for the family members to do a sound or video recordings of a message for the patients which can be played back repeatedly.

The sample size for simulated presence, was smaller than predicted due to various difficulties encountered despite the benefits observed among the patients who were able to call their loved ones. The nurses had to stay in the room to assist the patients during the call since the elderly had difficulties negotiating the technology. The iPads had Facetime installed for video calls, but families which do not use the Apple products, limited their participation. Some of the patients in isolation rooms had advanced dementia which rendered them uncommunicative, which also limited their participation. A few elderly patients had relatives who could not participate with video calls during the day time due to their various work commitment.

Video recordings of the patients' loved ones as alternative, were suggested to some of the patients' families if they were unable to do video calls, this too had limitations. The families were not allowed to accompany the patients to the isolation ward at admission, so the patients arrived alone. The families can send their recordings separately if they were able to. For the families who were able to do so, the team obtained verbal consent in advance and the video recordings were destroyed prior to the patient leaving the isolation ward.

The results were favourable for the patients who were able to video call their families with overall observed improvement in mood and agitation scores. The patients who had difficulties sleeping and the elderly exhibiting sundown symptoms too, responded favourably after engaging their loved ones in conversations. Simulated presence using recordings and play back have been tried in institution settings compared to conventional therapies as a management strategy for BPSD. Simulated presence is thought to be able to calm an agitated person with dementia since they have an opportunity to hear or see a familiar face and having the presence of their loved ones in their company, albeit a virtual one, may be reassuring. However, most research had small sample size and the overall results were inconclusive. (6-8)

The rest of the iPads were used in the acute Geriatric wards for patients with cognitive issues (delirium/ dementia or both) with behavioural symptoms. The confused patients with challenging behavioural symptoms are difficult to look after in the general wards as the care team are busy and were not formally trained in mental health. The agitated patients with cognitive problems are unable to consistently follow instructions which increase their fall risk. The nurses may resort to physical restraints if they are unable to manage the agitation and restlessness, for the fear of fall. Person centred care (PCC) and finding creative ways to keep the patients meaningfully occupied are the main strategies proven to manage behavioural symptoms non-pharmacologically. (9,10)

Pharmacological management of behavioural symptoms are to be discouraged as the psychoactive medications are shown to increase sedation and fall risk. Antipsychotic medications are also associated with increased cardiovascular and stroke risks and hence, carry a FDA black box warning. The data showed that personalized care plans, choosing therapies based on the patients' preference, likes and dislikes on the iPads improved the behavioural symptoms, mood and sundown symptoms. The patients were able to actively engage with the therapies, despite their cognitive deficits.

More importantly, the research examined the benefits of using iPads on the nursing staff. The iPads had strict rules and protocol in place to ensure they are not lost or damaged. The maintenance and charging of iPads were nurses' responsibilities. Despite the extra work imposed by the iPads, most of the nurses surveyed felt the iPads benefited their patients by providing social and cognitive stimulation. Since the patients could engage and benefit from the therapies, their stress levels while at work improved and job satisfaction increased.

Conclusion and Going Forward

iPads proved to be a useful treatment strategy for management of behavioural symptoms in an acute hospital setting. Even though the sample is small, the benefits to the patients and nurses are impressive. In the current hospital setting where there is increasing number of elderly patients compounded with tight manpower, the patients are often restrained if the staff are unable to manage their behavioural symptoms. The elderly with cognitive symptoms are at risk of delirium, depression, falls during hospital stay. Once they develop these symptoms, their length of stay will likely increase with longer term complications like nursing home placement and dementia.

Future research is required to examine the effects of iPads in reducing incident delirium and examine the effectiveness of using iPads as adjunctive modality for depression in the hospital.

	Apathy/ Neutral	Refusing care/ sad/ restless	Happy	Not observed
Before Therapy	54 (74%)	10 (14%)	7 (9%)	2 (3%)
After Therapy	27 (37%)	1 (1%)	42 (58%)	3 (4%)

Table 1. Patients' mood before and after therapy with iPad.

	Calm	Mildly agitated	Moderate-severely agitated	Not Observed
Before Therapy	44 (60%)	24 (33%)	2 (3%)	3 (4%)
After Therapy	68 (93%)	2 (3%)	0	3 (4%)

Table 2. Patients' agitation score before and after therapy with iPad.

	No sundown symptoms	Sundown symptoms	Not observed
Before Therapy	38 (52%)	25 (34%)	10 (14%)
After Therapy	47 (64%)	10 (10%)	16 (22%)

Table 3. Patients exhibiting sundown symptoms before and after therapy with iPad.

	Actively engaging	Neutral	Poorly engaging	Not observed
During Therapy	46 (63%)	24 (33%)	2 (3%)	1 (1%)

Table 4. Patients' motivation to participate in therapy with iPads.

	Agree/ strongly agree	Disagree/ strongly disagree
Patients benefited from therapy	134 (94%)	8 (5.6%)
Therapy provided cognitive stimulation for patients	125 (88%)	17 (12%)
Patients were more cheerful, less agitated and were able to engage socially with other patients.	128 (90%)	14(10%)
Use of iPads improved nurses' job satisfaction and reduce their work related stress levels.	117 (82%)	25 (18%)
Recommend use of iPads for the elderly patients, especially the elderly patients with cognitive issues.	129 (91%)	13 (9%)

Table 5. Nurses' feedback on the use of iPads as a treatment modality for the elderly patients with dementia.

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Announcement of Research Results:

The authors aim to publish the results in 3 separate papers in International journals. Oral presentation of the result, part 1 will be taking place on 17th September at the SingHealth-Dukes NUS Memory and Cognitive Disorder Annual Conference. We also have plans to show the results at various International Conferences 2021/2022.

Internally, the results have been sent to Senior Management Office for further actions.

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