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# The Application of Tele-Monitoring in the Caribbean for Home Health Care Management

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## Introduction

Home health care management is a viable aid to public health care for the Caribbean especially in the midst of high health cost and dwindling resources in these economies. Managing personal health vitals data from the comfort of the home using technology is a growing approach worldwide and suitable for those who are convalescing, recovering from stroke, surgery, general ailments and for persons just wishing to monitor their health vitals. Sensitization of the public to the advantages of a Telehealth Home Health Care System in realizing hospital avoidance for some illnesses may promote the desire for it. (Ledwin KM, Lorenz R, 2021). This in no way however removes the need for input from the nurse or clinician delivery since the lack of this may increase patient anxiety and satisfaction with the system. (Jolly K, 2018).

The use of electronic digitization to monitor and navigate bank accounts, spending habits, market share, communication and travel have become a trusted model worldwide. In the same way a personal Telehealth system installed at home will allow logging, measuring and retrieving of personal health data which is much like working from home. The COVID 19 experience demonstrates the necessity for remote home health care monitoring and management. The advantages of such a system include: reducing contact with hospital patients being around familiar faces when at home with no restrictions on visits and familiar room environment with all personal conveniences and the quick sharing of clinical records between patients and clinicians to improve quality and reduce clinical errors. (Sukumar R, Natarajan RR, 2015).

## Literature Review

A meta-analysis of 26 studies done by Yin Lam Lee, A et., al. (2022) for telerehabilitation programs for chronic care delivery showed statistically significant improvements in patient quality of life over face to face service. The model consisted of patient self -management, nurse- patient communication and regular follow ups. The telerehabilitation model had some drawbacks between studies in not being homogenous and there was agreement that further research was needed to integrate the chronic care to optimize the community applications.

Health care for most persons end on leaving the doctor's office with the doctor uninformed after the visit of whether instructions are being followed. While the goal of health care is for fast and accurate recovery, attention must be paid to the positives of continuous health care during the healing process. For those undergoing convalescent and palliative care or inflicted with neurological and physical disability, the complexities of pathological difficulties include: difficulty in moving, swallowing, breathing and speech, memory among others. As such, finding facilities that deliver patient comfort, personal needs and self-independence under these conditions can be a challenge.

One use of Telehealth is in providing remote monitoring and logging of patient vitals. This is useful in the need for quick decision making for hospitalization, ambulatory service, a simple medication or doctor's visit. Fast communication of information to a medical practitioner is desirable and can be learnt through training of communities in the use of personal health monitoring management. (Rodriguez, 2022). Training was found to of importance for the implementation of the system by Ding, H (2020) and there was concern of patient inability to use monitoring equipment and hence the reason for non-compliance self - monitoring.

## Methodology

As a pilot study for the implementation of a home Telehealth care system in the Caribbean a 58-year old patient recovering from prostate laser surgery was allowed to use the system. The patient was discharged after surgery with instructions to avoid stair climbing, driving, and heavy lifting. He was also asked to monitor fever, constipation, incontinence and to learn bladder control using the Kegel and pelvic floor exercise. (Giuseppe, C, Heymen, S and Whitehead, W, 2006, pp 7069-7072).

Post-surgery information reported by the patient was as follows: able to pass urine but painful and not in full control of flow, constipation or possibly some slow transition due to anaesthesia and pain killers, though not bad but with slight discomfort and delay. A simple breathing exercise for constipation/delay relief was given to him by this author named R7 - R10 as a relaxing exercise for the anal sphincter muscle. For this he was asked to inhale and exhale quickly through the mouth for 7 to 10 breaths without straining then relax for 10 seconds. Repeat five times and wait for changes in bowel signs. If necessary, repeat the process. The Telehealth-OximeterPlus unit was used to measure and record stomach circumference during the breathing, abdominal force, stool frequency, urine frequency, body temperature, blood pressure, oxygen level and the number of times the fast breaths were taken before the bowel - movement sensation was felt. The data were logged onto the web for download and biofeedback information for decision making as to the best behavioral training for bowel movement.

***Figure 1:*** Telehealth-OximeterPlus: Source (Rodriguez, 2022).

The patient's vitals were recorded daily using the Telehealth-OximeterPlus unit, figure 1. This was attached to a Convenience-BedRack unit, figure 2, that housed all of the items such as ac, t.v remote, cell phone, water bottle, medication, computer, lights, fan and exercise equipment, around his bed for his comfort and self-preservation. The OximeterPlus unit logged the patient's complaints, concerns, comfort ratings, mind-set, convenience, content, recovery time experience and recommendations via its built-in questionnaire software.

***Figure 2:*** Convenience-BedRack. Source (Rodriguez, 2022).

The BedRack unit, figure 2, assisted in patient comfort and convenience as he could have easily and safely access all the needs of his environment without assistance or the need for nursing home care. (Mercy, L, et al., 2008).

## Patient feedback

The patient reported good bowel movement using the R7 -R10 exercise for the entire duration of recovery. The exercise was simple yet very effective he indicated. There was better bladder control after repeatedly using the Kegel exercises recommended by the physician. The incontinence was considerably reduced and almost unnoticeable except for a few intermittent urine leaks. The home remote monitoring and logging telehealth experience was very good as not much movement off the bed was required which aided in faster recovery. The system provided the patient with easy access to medication, comfort, independence, doctor's input, vitals monitoring and computer use for his daily work and information gathering.

The patient's experience of involuntary control to urinate and unable to stop the urine once the thought about urinating, was startling and sometime embarrassing when caught off guard as occurred once while shopping.

Interestingly, the patient insisted that God had an input in his 10-week recovery and while the doctors did their part using the medical treatment at their disposal, the healing was so fast and uncompromised, that there must have been some spiritual input. Such statements of divine intervention are not uncommon and the notion of health as being of sound mind, physical and spiritual wellness may encourage medical practitioners to be cognizant of such patient feedback for recovery advice.

## Conclusion

Remote patient monitoring applications empower patients to take control of their health and enable health care providers to take a proactive approach to ensure interventions are carried out before symptoms worsen. Although the analysis done by Lam Lee, et al., (2022) showed no advantage of tele applications over face to face health care, the Caribbean region can take note of such a system as ease of access to health care facilities is quite difficult for persons living in remotes areas. (Sukumar R, 2015).

The current paper uses one subject and does not apply statistical analysis to support the outcome and feedback. The feedback however gives fuel for further research on home monitoring in the areas of palliative care, cancer and more serious illnesses with larger samples using the instrument in this paper. Of importance is the significance in the differences in conventional health care and telehealth approach as far as recovery rate, patient acceptance, anxiety and suitability as a viable option of health care for the Caribbean are concerned.

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