Project Title

Examining the feasibility of telewound consultation service in Singapore

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Organisation(s) Involved

Singapore General Hospital, SingHealth Polyclinics

Healthcare Family Group Involved in this Project

Nursing

Project Period

Start date: 12 February 2018

Completed date: 31 December 2020

Aims

To examine the feasibility and the cost-analysis of the first telewound consultation service in Singapore

Background

See poster appended / below

Methods

See poster appended / below

Results

See poster appended / below

Lessons Learnt

See poster appended / below

Conclusion

See poster appended / below

Additional Information

Singapore Healthcare Management (SHM) Conference 2021 – Shortlisted Project (Patient Experience Category)

Project Category

Care & Process Redesign, Access To Care, Value Based Care, Patient Satisfaction, Technology, Digital Health, Telehealth

Keywords

Quasi-Experimental Study, Electric Wound Assessment System Silhouette, Digital Wound Camera, SilhouetteStar, SilhouetteCentral, Wound Teleconsultation

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Singapore Healthcare Management 2021

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Introduction

Telecommunication advancements have redesigned healthcare delivery and increased its accessibility. Particularly, telemedicine is gaining popularity in the wound management arena. Due to the lack of wound care specialists in the primary care settings, acute surgical or complex surgical wounds are usually managed in acute care hospitals. Teleconsultation aims to increase access to wound management for more patients.

Study Aims

This study aims to examine the feasibility and the cost-analysis of the first telewound consultation service in Singapore

Methodology

Study design : pilot quasi-experimental study
Setting : Singapore General Hospital & 5 participating outpatient polyclinics
Study period : 12 February 2018 to 31 December 2020

- Patients were given option to continue their wound care in either SGH wound clinic or one of the five polyclinics that is the closest to their home
- Eligible type of wound : carbuncle wounds (10cm2), simple perianal abscess wounds (> 3cm depth) and surgical abdominal dehiscence wound (> 3cm undermining).
- The polyclinic nurses were trained by the specialist wound nurses on how to perform dressing for eligible wound type.

Data collected :
- Patient's clinic bills and transport costs (each visit in SGD).
- Patient's satisfaction level
- Feedback from wound nurses.

The electronic wound assessment system Silhouette®(ARANZ Medical) was used, which comprised of the digital wound camera, SilhouetteStar™ (Figure 1), and the database for Silhouette data, SilhouetteCentral™ (Figure 2).

Figure 1. SilhouetteStar™ wound camera

Figure 2. SilhouetteCentral ™ database

Results

A total of 18 patients were enrolled, 13 patients received wound dressing and physical consultation, and 5 patients received wound dressing and telewound consultation from one of the participating polyclinics (Table 1).

Variables	All (n=18)	Conventional Care (n=13)	Wound Teleconsultation (n=5)
Age, Mean (SD)	52.2 (13.2)	47.9 (11.5)	63.2 (11.5)
Gender, % (n)			
Male	61.1 (11)	46.2 (6)	100 (5)
Female	38.9 (7)	53.8 (7)	-
Ethnic group, $ (n)			
Chinese	83.3 (15)	84.6 (11)	80 (4)
Malay	11.1 (2)	7.7 (1)	20 (1)
Indian	-	-	-
Others	5.6 (1)	7.7 (1)	-

Table 1. Demographics characteristics of patients

Results

	All (n=18)	Conventional Care (n=13)	Wound Teleconsultation (n=5)	*p*-value
Total no. of wound consultations and dressing, (Median, min-max)	21 (10-57)	16 (10-41)	28 (15-57)	0.05
Clinic bills for consultation & wound dressing (SGD) (Median, min-max)	601.60 (113.63-2277.04)	794.26 (236.10-2277.04)	293.92 (113.63-725.52)	0.03*
Transport cost to & fro clinic (SGD) (Median, min-max)	172.00 (34.60-757.50)	193.00 (40.60-757.50)	139.84 (34.60-230.40)	0.40
Overall satisfaction score (Mean, SD)	90 (10.3)	90.8 (9.5)	88.0 (13.0)	0.72

Note: *p<0.05.

Table 2. Comparison of treatment outcome, cost and satisfaction between conventional care and wound teleconsultation group

The total mean number of wound consultations for the conventional group versus the wound teleconsultation group was 16 and 28 respectively, which was not significantly different.

Patients in the wound teleconsultation group (median: $794.26) spent significantly lesser on wound care than the conventional group (median: $293.92), as shown (*p*=0.03). The transport cost travelling to and from the clinic was not significantly different (conventional group: $193.00 vs teleconsultation group: $139.84).

Both groups of patients rated high satisfaction for the wound services received, but it was not significantly different between both groups. Nurses' feedback reported high level of acceptance towards wound teleconsultation service. Polyclinic nurses cited that wound teleconsultation allowed closer collaboration with the acute care hospital, increasing their capacity, skills and confidence.

Discussion

Wound teleconsultation appears to be a cheaper option for patients than physical wound consultation in the wound clinic at SGH. Teleconsultation was highlighted by the nurses as a time and cost-saving approach for the patients. The findings of the study indicated significant savings in the patients' bill size which was aligned with the findings from other studies which involved teleconsultation approaches.[1,2,3]

As for the transportation cost, the average transport cost (to and from) seems cheaper for those receiving wound care in the polyclinics with teleconsultation than in the SGH wound clinic. This was due to polyclinics being near their home. This finding resonates with other published literature that agreed that telemedicine saves transportation costs.[2,3]

This study did not examine why patients refused teleconsultation wound care when offered. Future studies should examine possible measures to increase uptake of wound teleconsultation among patients. Additionally, future research could also involve more polyclinics, and extend to home care services to allow easy access to wound care specialists in acute or chronic wounds within the community.

Conclusion

Wound teleconsultation service is feasible in Singapore. With the limited number of wound care specialists in the community, the implementation of wound teleconsultation is worth considering. This will allow patients continuity in receiving the necessary high quality and affordable wound care. Wound teleconsultation will also allow role expansion for primary care nurses to handle acute wound cases.

Acknowledgement

This research was supported by the Agency for Science, Technology and Research (A*STAR) under its Industry Alignment Fund—Pre-Positioning Programme (IAF-PP) grant number H17/01/a0/AA9 as part of Wound Care Innovation for the Tropics (WCIT)

References

1. Téot L, Geri C, Lano J, et al. Complex Wound Healing Outcomes for Outpatients Receiving Care via Telemedicine, Home Health, or Wound Clinic: A Randomized Controlled Trial. *The International Journal of Lower Extremity Wounds* 2019; 19: 197-204. DOI: 10.1177/1534734619894485
2. Le Goff-Pronost M, Mourgeon B, Blanchère J-P, et al. Real-world clinical evaluation and cost of telemedicine for chronic wound management. *Int J Technol Assess Health Care* 2018; 34: **567-575**. DOI: 10.1017/S0266462318000685.
3. Lee JY and Lee SWH. Telemedicine Cost–Effectiveness for Diabetes Management: A Systematic Review. *Diabetes Technol Ther* 2018; 20: 492-500. DOI: 10.1089/dia.2018.0098.