



Research Focus Areas

▶ Nursing Care Outcomes (page 2-4)

nursing sensitive indicators such as pressure injuries, falls, phlebitis and use of physical restraints

▶ Nursing Workforce (page 5)

workforce sustainability, well-being and resilience of nurses

▶ Care Transformation (page 6-7)

physical caregiving environment and nursing care processes

▶ Caregiver well-being, education & coping (page 7-8)

education and support for caregivers

▶ Evidence-Based Nursing (page 8-9)

▶ Publications (page 10-16)

ACHIEVEMENTS

Awards

SingHealth Publish! Award 2019

- 1) Aloweni FAB. A prediction tool for hospital-acquired pressure ulcers among surgical patients: surgical pressure ulcer risk score.

Best Poster @ 4th Regional Oncology Nursing Conference (RONC) 2019

- 2) Lim SH. A qualitative evaluation of the stoma psychosocial intervention programme for colorectal cancer patients with STOMA.
- 3) Yong PLT. Examining the knowledge, information and support needs of first degree relatives of breast cancer patients.

Best Poster & Young Investigator Award (Nursing) @ SGH 23rd Annual Scientific Meeting 2019

- 4) Tan HL. A before and after study to evaluate the feasibility of a nurse led feeding protocol to improve ICU nutrition.
- 5) Lim SH. Pilot Trial Of A Stoma Psychosocial Intervention Programme For Colorectal Cancer Patients With Stomas.

Merit Award (Patient Experience Category) @ Singapore Healthcare Management 2019

- 6) Aloweni FAB. The impact of a Mindfulness-Based Programme on Stress and Anxiety of Family Caregivers of Adult Patients on Peritoneal Dialysis in Singapore.

Grants

A*STAR, Industry Alignment Fund (pre-positioning) (IAF-PP)

- 1) Understanding and improving venous leg ulcer outcomes of patients on compression therapy in the tropics (amount: S\$188,760)

Academic Medicine (AM) Research Grant

- 2) Comparative Effectiveness of a novel crusting method versus standard barrier cream in the treatment of incontinence-associated dermatitis among adult patients in an acute care setting - A randomised controlled trial (amount: S\$50,000)
- 3) Screening for Frailty in Hospitalized Older Adults: Comparative analysis of the Validity, Reliability and Feasibility of three screening tools (amount: S\$50,000)

Clinical Innovation Support Programme Grant

- 4) A purpose-designed mobile application with gamification approach for patient empowerment (amount: S\$45,000)

Mitsui Sumitomo Insurance Welfare Foundation Research Grant

- 5) Redefining frailty with resilience and self-efficacy in older adults and caregivers in acute care context (amount: S\$10,000)

Nursing Research in the News

SGH nursing research has spearheaded several innovation projects aimed at improving work and learning for staff, and aid in patient recovery. This includes the development of a [3D simulation blood transfusion game online](#) to assess nurses' competency in the administration of blood and blood products, and the creation of a [bedside interactive rehabilitation device](#) to promote physical activities among inpatients.



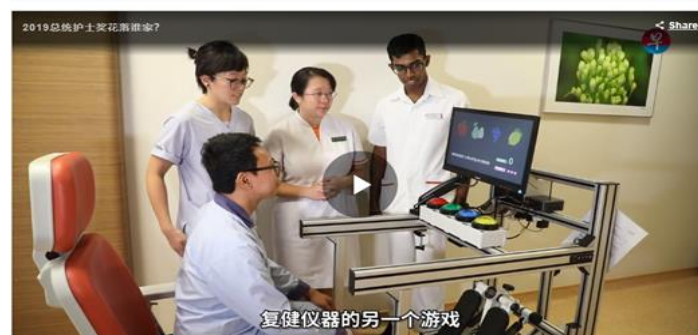
中央医院今年2月推出线上输血游戏，至今已有超过2200名护士通过游戏完成定期能力评估。（吴伟国摄）

中央医院研发线上游戏
培训护士应对输血突发状况

视频 | 新闻

新加坡中央医院病房出现了一台“老虎机”？

文：杨俊鑫 剪辑：陈志勇 摄影：谢智扬 编导：杨俊鑫
发布 / 2019年7月24日 7:00 PM



复健仪器的另一个游戏

(Far left) 3D simulation blood transfusion game & (left) bedside interactive rehabilitation device (featured in Lianhe Zaobao on 27/10/2019 and Zaobao online on 24/07/2019).



Nursing Care Outcomes

STUDY STATUS: IN PROGRESS

Key Project: Screening for Frailty in Hospitalized Older Adults: Comparative analysis of the Validity, Reliability and Feasibility of three screening tools

Aims: (1) Assess the discriminative ability, based on comparison of the area under the curve (AUC), of 3 frailty screening tools – FAM, Frail-PPS, and ISAR-HP – for identifying hospitalized older adults at risk of a composite adverse health outcome within 3 months of discharge from the hospital (comprising functional decline, admission to nursing home, requiring a full-time caregiver and mortality); (2) determine the inter-rater reliability of the 3 frailty screening tools (FAM, Frail-PPS, ISAR-HP); and (3) evaluate the efficiency of the 3 frailty screening tools (FAM, Frail-PPS, ISAR-HP) in terms of time required of administration.

Methods: A cross-sectional study is being conducted with older adult patients aged 65 years and older, admitted to the acute tertiary hospital over a one-year period.

Comparison of discrimination ability in identifying older patients at risk for functional decline (based on Katz index of independence score, generated from demographic and clinical data, rating patients' activities of daily living status two weeks before admission and at 3 months post discharge), admission to nursing home, requiring a full-time caregiver and mortality, will be conducted based on Area Under Curve (AUC). A total of 369 patients will be recruited within 24 hours of admission in the inpatient ward.

Inter-rater reliability between different grade of nurses and average time needed for administration of the three measures: the FAM, Frail-PPS, and Identification of seniors at risk hospitalized patients (ISAR-HP), will be conducted with a sample of 50 patients. Efficiency of the different screening tools will be determined by recording the time required to administer the ISAR-HP, FAM and Frail-PPS in a target sample of 50 patients.

Study significance: This study will identify a valid, reliable and efficient frailty screening tool, which will enable early identification of frailty among hospitalized elderly, allowing for implementation of early interventions to mitigate functional decline and optimize overall patient outcomes.

Project team members: Dr Lim Siew Hoon (Nursing Division), A/Prof Rahul Malhotra (Duke-NUS), Prof Truls Ostbye (Duke-NUS), Dr Orlanda Goh (MOHH), Ms Ang Shin Yuh (Nursing Division), Ms Fazila Aloweni (Nursing Division), Ms Yumi Teo Jing Xuan (Nursing Division), Ms Clara Lee Sze Chung (Nursing Division), Ms Cherry Pincel Bacani (Nursing Division), Ms Siti Nadiah Binte Yahya (Nursing Division), Ms Daphne Gay (Division of Medicine), Ms Siti Khadijah Bte Zainuddin (Nursing Division), Ms Ng Xin Ping (Nursing Division), Ms Nur Liyana Bte Agus (Nursing Division).

Key Project: Comparative effectiveness of a novel crusting method versus standard barrier cream in the treatment of incontinence-associated dermatitis among adult patients in an acute care setting – a randomised controlled trial

Aims: To determine the prevalence rate of patients with incontinence-associated dermatitis (IAD) and evaluate the effectiveness of crusting method in treating IAD compared to standard care.

Method: Patients diagnosed with IAD by specialty wound nurses in SGH will be randomly allocated to either the crusting method or control group. Patients in crusting method group will receive gentle cleansing of the affected skin area with mild cleanser, application of absorbable powder protective film barrier and Cavilon barrier film spray. Patients in the control group will receive gentle cleansing of the affected skin area with mild cleanser and application of 30% zinc-oxide barrier cream.

Study significance: The findings of the study will allow us to change practices and standardize our IAD care protocol in SGH and local healthcare institutions. Furthermore, it will hasten the healing process and patient will experience less IAD-related complications, as well as pain during IAD treatment.

Project team members: Ms Nanthakumahrie D/O Gunasegaran (Nursing Division), Prof Upton Zee (Agency for Science Technology & Research), Mrs Sri Sukarti Bte Mostafa Bin Abdollah (Nursing Division), Ms Fazila Aloweni (Nursing Division), Ms Ang Shin Yuh (Nursing Division), Ms Chang Yee Yee (Nursing Division), Ms Liew Yi Jia Angela (Nursing Division), Ms Tan wei Xian (Nursing Division), Dr Ng Yi Zhen (Skin Research Institute of Singapore), Ms Nurliyana Binte Agus (Nursing Division), Ms Saliza Binte Mohamed Said (Nursing Division), Ms Lai Yean Ling (Nursing Division), Ms Leni Guanzon Fernandez (Nursing Division), Ms Lee Chee Woei (Nursing Division).

Key Project: A Prospective Comparative Study on the Effectiveness of Two Different Non-Adherent Polyurethane Dressings on Split-Thickness Skin Graft Donor Sites

Aims: To analyze differences in exudate absorbency, ease and pain on dressing removal and epithelization between Allevyn and Betaplast.

Methods: Patients in the general ward undergoing Split Skin Graft (SSG) have been recruited. Allevyn and Betaplast are applied on the same donor site after SSG harvesting. Dressings are secured using OPSITE film and bandage. Absorptive capacity is assessed daily using an absorbency grading chart. Dressing change is done on post-operative day (POD) 5. Ease of dressing removal will be assessed with a visual chart, and pain score using the Wong-Baker Pain Scale. The percentage of full re-epithelization in terms of surface area for each dressing is assessed.

Preliminary results: The exudate absorption of Allevyn and Betaplast comparing between POD 1 and POD 5 was significant ($P < 0.05$), indicating that both dressings continued to absorb exudate from POD 1 to POD 5. When comparing absorption from one POD to the subsequent POD, absorption for Allevyn was significant ($P < 0.05$) only from POD 1 till POD 4, while absorption for Betaplast remained significant ($P < 0.05$) from POD 1 until POD 5. There was no significant difference between Betaplast and Allevyn for the pain score, ease of removal and re-epithelization. Descriptive statistics indicated higher mean percentage for Betaplast (mean= 65.28%) compared to Allevyn (mean= 55.56%), with 7 out of the 11 patients having better re-epithelization with Betaplast.

Project team members: Ms Darshini Devi Rajasegeran (Nursing Division), Ms Fazila Aloweni (Nursing Division), Dr Chong Si Jack (Department of Plastic, Reconstructive & Aesthetic Surgery, Medicine), Ms Lim Xinyi (Nursing Division), Ms Saranya Chandra Sekaran (Nursing Division), Ms Zhang Lei (Nursing Division), Ms Lim Li Pin Brenda (Nursing Division), Dr Kok Yee Onn (Department of Plastic, Reconstructive & Aesthetic Surgery, Medicine).

STUDY STATUS: COMPLETED

Key Project: Evaluation of infrared technology to detect category I and suspected deep tissue injury in hospitalized patients

Aims: To evaluate the use of an infrared thermography device in assessing skin temperature among category I pressure ulcer (PU) and/or suspected deep tissue injuries (SDTI) with intact skin.

Methods: An observational cross-sectional study design was used. Adult inpatients (cases) who had a category I PU or suspected deep tissue injury (skin intact) on the sacral or heel during the study period (March to April 2018) were recruited. Patients without a PU were also recruited to act as control. Thermal images of the patient's PU site and non-PU site were taken within 24 hours of PU occurrence. Thermal images of the control patients (no PU) were also taken. Each PU case was matched to three control patients in terms of age, gender, race and anatomical sites. All thermal images were taken using a portable CAT S60 Thermal Imaging Rugged Smartphone (Caterpillar Inc., US) that provided readings of the skin temperature in degrees Celsius.

Results: A total of 17 cases and 51 controls were recruited. Among the cases, the mean difference in skin temperature between the PU site (mean: 31.14°C ; standard deviation [SD]: 1.54) and control site within the cases (mean: 28.93°C ; SD: 3.47) was significant (difference: $2.21 \pm 3.66^{\circ}\text{C}$; $p = 0.024$). When comparing between all cases and controls, the mean temperature difference was non-significant. When comparing between the category I PU and suspected deep pressure injury cases, the mean difference was also non-significant.

Project team members: Ms Fazila Aloweni (Nursing Division), Ms Ang Shin Yuh (Nursing Division), Ms Chang Yee Yee (Nursing Division), Ms Ng Xin Ping (Nursing Division), Ms Teo Kai Yunn (Nursing Division), Ms Andrea Choh Chau Lin (Nursing Division), Ms Ivy Goh Hui Qi (Nursing Division), Dr Lim Siew Hoon (Nursing Division).

Key Project: Outcomes of Patients with Venous Leg Ulcer treated with compression Bandaging – Experience of a Medical Centre in Singapore

Aims: To compare the healing outcome between the three different types of compression therapy (four-layer bandage (4LB), low compression bandage and compression stockings) and to identify predictors of healing of venous leg ulcer (VLU).

Methods: A retrospective medical records review of patients diagnosed with VLU between 2011 – 2016 in Singapore was conducted. Univariate and multivariate analyses were done between healed and unhealed VLU patients at 3- and 6- months, based on a list of potential factors, ranging from demographic profile, existing co-morbidities, to treatment-related variables.

Results: Data from 377 patients' medical records were analyzed. Healing rate of the three different types of compression system, namely 4LB, low compression bandage and compression stockings, was 22.3%, 34.9% and 8.7% at 3-months; at 6-months, it was 44.2%, 41.9%, and 34.8% respectively. Patients in the stockings group reported significantly the lowest proportion of VLU healed at 3-months (8.7%), compared to 22.3% in 4LB and 34.9% in low compression group ($p=0.003$). However, the healing rate at 6-months was not significantly different between the three types of therapy. Duration of compression therapy emerged as an independent predictor of healing ($p < 0.001$) at both 3- and 6-months.

Project team members: Ms Fazila Aloweni (Nursing Division), Ms Ang Shin Yuh (Nursing Division), Ms Chew Suet Mei (Nursing Division), Ms Nicole Lee (Nursing Division), Ms Tan Wei Xian (Nursing Division), Dr Sivagame D/O Maniya (Nursing Division).

Key Project: Risk factors for unplanned hospital readmissions within 30 days of discharge among medical oncology patients: A retrospective medical record review

Aim: To identify risk factors for unplanned hospital readmissions (UHR) within 30 days of discharge among medical oncology patients at a tertiary hospital in Singapore.

Methods: This study was a retrospective, case-control medical record review. Between 1 June and 31 October 2017, there were 1,559 adult patients discharged alive from a medical oncology ward. Of this, 359 patients had experienced at least one UHR within 30 days of discharge. After matching for primary reason for index admission and discharge date, 312 medical records were reviewed (cases with UHR: 156; controls without UHR: 156). Demographic data, hospitalization data involving clinical characteristics, functional status and fall risk, and data related to discharge planning were analyzed.

Results: The UHR within 30 days of discharge was 23% ($n=359$). A total of 46.2% ($n=72$) were readmitted within the first 10 days. The most common reasons were non-neutropenic infections ($n=41$) and pain ($n=23$). Multivariate analyses identified three independent risk factors: (1) single marital status, (2) increased episodes of emergency department visit(s) in the past six months, and (3) recent decline in ability to perform activities of daily living.

Project team members: Ms Xu Yi (Medical Board), Ms Alicia See Min Ting (Nursing Division), Ms Fazila Aloweni (Nursing Division), Ms Ang Shin Yuh (Nursing Division), A/Prof Chris Toye (Curtin University - School of Nursing, Midwifery and Paramedicine).



Nursing Workforce

STUDY STATUS: IN PROGRESS

Key Project: Association between influenza vaccination and work absenteeism among nurses

Aims: To investigate the effectiveness of influenza vaccination in reducing influenza like symptoms and related work absenteeism in nurses working in the acute care setting.

Methods: A retrospective study has been conducted to review the vaccination uptake and work absenteeism in nurses during the period of April to September 2018. The following data will be collected: (i) influenza vaccines and vaccine non-recipient; (ii) nurses who attended the staff clinic with signs and symptoms of influenza and given leave of absence; and (iii) all leave of absence requested by nurses with presentation of influenza-like symptoms and certification of sick leave by medical practitioner. The 3 data sets will be sent for de-identification of names and any relevant identifying information to maintain anonymity of participants. After which, the merged and de-identified data sets will be analyzed.

Study significance: A better understanding on the influenza vaccination uptake and impact on nurses' work absenteeism would serve to inform decision-making in the implementation of new policy and interventions to promote vaccination uptake.

Project team members: Dr Lim Siew Hoon (Nursing Division), Prof Ostbye Truls (Duke-NUS), Dr Gan Wee Hoe (Division of Medicine), Ms Fazila Aloweni (Nursing Division), Ms Ang Shin Yuh (Nursing Division).

Key Project: Evaluation of nurses' experience on using serious game as part of Nursing Competency

Aims: To understand the experience of the nurses who played the blood transfusion serious game and to gather feedback from the nurses on ways to improve their learning experience.

Methods: This is an exploratory qualitative study. Nurses who completed competency on the blood transfusion game will be invited to participate in an interview conducted by a nurse researcher. Interviews will be recorded and transcribed. A thematic analysis approach, using deliberate practice will guide the initial codes and themes.

Study significance: The findings of this study will improve the learning outcomes of the serious games and inform the design of future serious game in nursing education.

Project team members: Ms Fazila Aloweni (Nursing Division), Ms Ng Xin Ping (Nursing Division), Ms Alicia See Min Ting (Nursing Division), Ms Ang Shin Yuh (Nursing Division).

Key Project: The Impact of Rostering Changes on Absenteeism

Aim: To find out the impact of change in shift patterns on absenteeism among nurses.

Method: A retrospective study has been carried out among wards that first implemented Work Force Optimizer for rostering purposes. Sick leave data pre and post implementation of Work Force Optimizer have been collected for these wards. These data will be used to compare if the change in rostering practice had an impact on absenteeism.

Study significance: Rostering can have an impact on the individual's health, social life and job satisfaction and these can directly or indirectly affect absenteeism. It is important therefore to study the impact on the workforce before and after a change in roster design to ascertain if the change is beneficial to both the employees and the organization.

Project team members: Ms Fan Peijin Esther Monica (Nursing Division), Ms Woh Chai Yuen Kelly (Nursing Division), Ms Voon Shi Tian (Nursing Division), Ms Ang Shin Yuh (Nursing Division).



Care Transformation

STUDY STATUS: IN PROGRESS

Key Project: **The Effects of Human-centric lighting on Patients and Nurses**

Aims: To explore the impacts of lighting on biological response, functional capabilities, and subjective emotional perceptions among patients and nurses.

Methods: A quasi-experimental design will be adopted. Data will be collected from nurses and patients in the experimental ward (with the human-centric lighting) and a control ward (with standard lighting).

Study significance: If this study finds the human-centric lighting beneficial, patients will experience a positive impact on their health, recovery and general satisfaction of their hospital stay. For nurses, it could improve work performance and efficiency, while reducing errors and improving the overall well-being of the nurse. This could lead to improved patient safety and staff retention rates. Furthermore, results of this study will guide plans for the new SGH building and may potentially be used to inform the formulation of best practice guidelines for lighting in the healthcare industry.

Project team members: Ms Fan Peijin Esther Monica (Nursing Division), Ms Fazila Aloweni (Nursing Division), Prof Chien Szu-Cheng (Engineering, Singapore Institute of Technology), Dr Yeh I-Ling (Health and Social Sciences, Singapore Institute of Technology), Dr Leow Leong Chai (Division of Medicine), Dr Phua Ghee Chee (Division of Medicine), Ms Ang Shin Yuh (Nursing Division).

Key Project: **Evaluating the Effect of a Bedside Rehabilitation Chair on Functional Decline in Hospitalized Older Adults**

Aims: To create and evaluate the effect of an interactive bedside rehabilitation chair on functional decline among elderly inpatients.

Methods: A randomized controlled trial will be adopted. Participants will be assigned to either an intervention or control group. Additional to standard care (may or may not include physiotherapy interventions); the intervention group will receive a rehabilitation chair by their bedside and be taught to operate it whereas the controlled group will only receive standard care.

Preliminary results: No significant difference seen in KIADL scores for both groups on admission, $p=0.83$. However, there was a significant difference in KIADL scores on discharge with better KIADL scores among participants in the intervention group, $p=0.004$. As for TUG timings, there was a significant reduction in the timings (seconds) for TUG on admission and TUG on discharge within the intervention group ($p=0.01$) as compared to control group. With regards to the rehab chair, majority of the intervention group agreed that the games programmed into the chair and mechanism were easy to use; felt safe and motivated to increase activity levels while hospitalized. However, about half of the participants felt that the size of the rehab chair was inappropriate (too big).

Project team members: Ms Ang Shin Yuh (Nursing Division), A/Prof Kannusamy Premarani (National University of Singapore - Alice Lee Centre for Nursing Studies), Ms Lim Xin Yi Cindy (Nursing Division), Mr Seow Jason Phil (Nursing Division), Ms Fazila Aloweni (Nursing Division), Ms Juweita Binte Arba'in (Nursing Division), A/Prof Ong Hwee Kuan (AHD), Ms Shamala D/O Thilarajah (AHD), A/Prof Tan U-Xuan (Singapore University of Technology and Design - SUTD), A/Prof Yuen Chau (SUTD), Mr Louis Joshua (National University of Singapore - Alice Lee Centre for Nursing Studies).

STUDY STATUS: COMPLETED

Key Project: Effectiveness of Bed-exit Alarm Systems in Reducing Inpatient Bedside - Fall Incidences within an Acute Care Setting

Aim: To investigate the effectiveness of bed-exit alarm systems in reducing inpatient bedside-fall incidences.

Methods: A retrospective before-and-after design was conducted. The study period spanned from October 2015 to June 2017. The intervention (bed-exit alarms) was introduced in July 2016; pre- and post-implementation phases were 9 (October 2015 to June 2016) and 12 (July 2016 to June 2017) months, respectively. Data was extracted from the hospital's Electronic Health Intelligence System for analysis. Incidences of inpatient bedside fall events were identified from the hospital's Risk Managing System (RMS), a database where healthcare professionals document details of adverse events including falls.

Results: The use of a bed-exit alarm system was associated with an improvement (reduction) in bedside fall incidences.

Project team members: Mr Seow Jason Phil (Nursing Division), Ms Ang Shin Yuh (Nursing Division), Ms Fazila Aloweni (Nursing Division), Ms Chua Tse Lert (Organisation Planning & Performance), Ms Lim Shu Hui (Nursing Division).

Key Project: Effectiveness of En-suite Bathrooms in Reducing Inpatient Falls in an Adult Acute Care Setting

Aim: To assess the effectiveness of having en-suite bathrooms in reducing inpatient falls.

Methods: The decantment journey of a 100-bedded medical ward was reviewed retrospectively over the span of 27 months (November 2015 to January 2018). The decantment journey was divided into three phases: (P1) Pre-decantment (November 2015 to July 2016), (P2) En-suite (August 2016 to April 2017) and (P3) Post-decantment (May 2017 to January 2018). (P1) and (P3) do not include en-suite facilities. Fall incidences across the three phases were retrieved from the hospital's Risk Managing System (RMS) database for analysis.

Results: Availability of En-suite bathrooms did not reduce fall incidences. There was no significant change in incidence of falls right after en-suite bathrooms were introduced but the rate of monthly falls increased to 2.96 times higher right at the start of post-decantment compared to decantment. Overall, a trend of decreasing fall rates was seen over the three phases.

Project team members: Mr Seow Jason Phil (Nursing Division), Ms Ang Shin Yuh (Nursing Division), Ms Fazila Aloweni (Nursing Division), Ms Teo Kai Yunn (Nursing Division), Ms Andrea Choh (Nursing Division), Ms Lim Shu Hui (Nursing Division), Ms Stephanie Fook-Chong (Research office).



Caregiver Well-being, Education & Coping

STUDY STATUS: COMPLETED

Key Project: Discharge planning: A descriptive study of reasons for referrals to the Patient Navigators and for prolonged hospitalization of patients

Aims: To examine the reasons for referrals of patients to the Patient Navigators (PNs) and reasons for patients being hospitalized for more than 14 days.

Methods: We conducted a retrospective cross-sectional study by reviewing de-identified data from the SingHealth Electronic Medical Records (The Citrix Systems) during a 6-month period from July 2018 to December 2018. We examined the reasons of referrals to the PNs in two different groups of patients. First group comprised patients from the e-referral list whose referral being initiated by doctors or ward nurses; second group comprised patients who stayed more than 14 days in the hospital. The latter group of patients were referred to as “long-stayers”. Data extracted included demographic data, availability of caregiver, reasons for referrals, reasons for long stay and length of hospital stay.

Results: A total of 302 records of patients on e-referral list and 298 records of long-stayer patients were reviewed. The majority (n=403, 67.2%) of patients seen by PNs aged above 65 years old and was Chinese (n=455, 75.8%). In the group on e-referral list, the majority (n=278, 92%) was not fully independent while only less than half (n=127, 42.1%) had a dedicated caregiver. The most common reason of referral was placement arrangement issue (n=147, 48.7%), followed by potential discharge issue (n=84, 27.8%). In the group of long-stayer patients, average length of stay was 29.34 ± 23.44 days. The majority (n=26, 79.2%) overstayed as they were medically unfit. The remaining of 20.8% (n=62) patients overstayed despite being deemed already medically fit for discharge, with the main reason being the waiting for a placement in the community hospital (n=31, 50.0%).

Project team members: Mrs Mohammed Hussain Zunaitha Begum (Medical Board), Dr Rachel Marie Towle (Nursing Division), Ms Fazila Aloweni (Nursing Division), Ms Ng Xin Ping (Nursing Division), Ms Chew Suet Mei (Nursing Division).



STUDY STATUS: COMPLETED

Key Project: Acceptability and effectiveness of virtual reality in improving outcomes of patients in the acute care settings: an integrative review

Aims: To systematically summarize and analyze the acceptability and impact of virtual reality on the outcomes of adult patients in the acute-care settings.

Methods: A systemic search was conducted to identify relevant studies published between 2009 and 2019. An integrative review methodology was adopted which incorporated 5 key phases including formulation of key issue, conducting of literature search, data evaluation, analysis, and presentation of findings.

Results: The use of guided imagery therapy and interactive imagery therapy was reported in twelve reviewed papers. Two studies discussed the acceptability of VR therapy which depends on the age and knowledge level of patients, as well as level of comfort during use.

The papers reported on the impact of VR therapy on: (i) clinical outcomes including use of analgesics, vital signs, regain of functional capacity and length of hospital stay; (ii) reported outcomes measures including pain and anxiety level; and (iii) reported experience outcome including satisfaction level. Positive results of VR therapy was reported with reduced use of analgesics, lowered patients' heart rate, respiratory rate and incidence of apnoea. Patients exposed to VR environment demonstrated enhanced functional ability and had shorter length of hospital stay with increased satisfaction.

Project team members: Ms Wang Shuli (Division of Surgery & Surgical Oncology), Ms Fazila Aloweni (Nursing Division), Dr Lim Siew Hoon (Nursing Division).

Clinical Query 1: How to maintain patency of central venous catheter (CVC) lines?

P –Patients with CVC lines

I – Methods of flushing/ Flush/ lock frequency and solution

O – Patency of CVC lines

Highlights of review results:

Methods of flushing

- 1) Use a syringe with internal diameter of 10ml syringe or larger to avoid excessive pressure and catheter rupture.
- 2) Flush in a positive pressure technique (maintain pressure on syringe plunger whilst disconnecting syringe from needleless injection cap. Do not clamp catheter until after syringe has been disconnected and pulsatile (push-pause or start-stop-start) action (injecting 1ml at a time to create turbulent flow).

Maintaining catheter patency/ flushing guidance

- 1) Flushing CVCs with normal saline results in significant increase in line occlusions rate when compared to flushing with heparin (for centrally inserted catheters and peripherally inserted central catheters, excluding implanted ports).

Troubleshooting

- 1) If any device becomes sluggish or there are problems when using the sodium chloride 0.9%:
 - change to heparinised saline 0.9% after each use or instil urokinase overnight
 - ask patient to take deep breaths and try different positions. Flush briskly using 10ml saline. If this fails, change to urokinase

Strategies to prevent occlusion

- 1) Correct use of flushing solutions and frequency and not allowing infusions to 'run dry'
- 2) Only 10ml syringes or larger should be used
- 3) Flush with at least twice the volume of the catheter
- 4) Never use small syringes (under 10ml) as this causes damage to catheter e.g. splitting

Publications (names of SGH nurses are in bold)

Aloweni FAB, Ang SY, Chang YY, Ng XP, Teo KY, Choh ACL, Goh IHQ, Lim SH (2019). Evaluation of infrared technology to detect category I and suspected deep tissue injury in hospitalised patients. *Journal of Wound Care*. 28(12): pp. 9-16.

Aims: To evaluate the use of an infrared thermography device in assessing skin temperature among category I pressure ulcer (PU) and/or suspected deep tissue injuries (SDTI) with intact skin.

Methods: An observational cross-sectional study design was used. Adult inpatients (cases) who had a category I PU or suspected deep tissue injury (skin intact) on the sacral or heel during the study period (March to April 2018) were recruited. Patients without a PU were also recruited to act as control. Thermal images of the patient's PU site and non-PU site were taken within 24 hours of PU occurrence. Thermal images of the control patients (no PU) were also taken. Each PU case was matched to three control patients in terms of age, gender, race and anatomical sites. All thermal images were taken using a portable CAT S60 Thermal Imaging Rugged Smartphone (Caterpillar Inc., US) that provided readings of the skin temperature in degree Celsius.

Results: A total of 17 cases and 51 controls were recruited. Among the cases, the mean difference in skin temperature between the PU site (mean: 31.14°C; standard deviation [SD]: 1.54) and control site within the cases (mean: 28.93°C; SD: 3.47) was significant (difference: 2.21±3.66°C; p=0.024). When comparing between all cases and controls, the mean temperature difference was non-significant. When comparing between the category I PU and suspected deep pressure injury cases, the mean difference was also non-significant.

Conclusion: Using infrared thermography technology at the bedside to measure skin temperature will support the clinical diagnosis of patients with skin types I to III. However, there is a need for a more accurate and objective measurement to identify and diagnose early category I PU or suspected deep tissue injury in adult patients with darker skin types 4 and above, enabling early initiation of preventive measures in the hospital acute care setting.

Aloweni FAB, Doshi K, Fook-Chong S, Malhotra R, Østbye T (2019). The types of caregiving reactions experienced by the older spouse caregivers. *Journal of Clinical Nursing*. DOI: 10.1111/jocn.15044.

Aims: To examine factors associated with the four types of caregiver reactions according to the modified Caregiver Reaction Assessment (mCRA) and assess the differences in the narrative assessment from spouse caregivers between the high-positive and high-negative caregiver reactions.

Methods: Demographic, socioeconomic, Frailty Index, perceived stress, and quality of life data were gathered from caregiver dyads. mCRA, relationship, and life satisfaction data were collected from caregivers. mCRA identified the four types of caregiver reactions: (a) high-positive, low-negative; (b) high-positive, high-negative; (c) low-positive, high-negative; and (d) low-positive, low-negative. A qualitative interview was conducted to understand the differences in the narrative and choice of words used to describe caregiving experience.

Results: Seventy-five caregiver dyads were recruited. Total perceived stress was found to be negatively associated with high-positive, low-negative caregiver reaction (baseline category: low-positive, high-negative) by multinomial logistic regression. Content analyses showed that low-positive and high-negative caregivers used words that implied a lack of volition. Caregivers with positive experience viewed caregiving as a responsibility; the opposite viewed it as having 'no choice'.

Conclusion: Perceived stress is an important indicator of caregiver reactions. Words used when describing caregiving experiences can potentially depict the spouse caregivers' current state of being as a caregiver.

Aloweni FAB, Saraswathi N, Yong BSL, Hassan N, Chew SM. Examining the information and support needs of first-degree relatives of breast cancer patients. *Proceedings of Singapore Healthcare*. 2019. DOI: 10.1177/2010105818824613.

Women with a family history of breast cancer, specifically among first-degree relatives (FDRs) such as daughter, mother and sister, face a two-fold higher risk of getting breast cancer than women with no family history. Current literature highlighted that these FDRs' needs for factual information and emotional support were poorly met. Owing to a lack of local research, this cross-sectional survey study aimed to identify the information and support needs of FDRs of breast cancer women, their risk perception and self-care practices. Forty-one FDRs of breast cancer patients were recruited via convenience sampling. They completed a questionnaire comprising primarily the Information and Support Needs Questionnaire (ISNQ). In general they perceived information needs to be more important than support needs. The most important need identified was "information about breast cancer treatment." Overall, only a few participants perceived that their needs were "met fully" both for information ($n = 2$, 4.9%) and support needs ($n = 3$, 7.3%). Breast screening examination (BSE) adherence was low; only eight FDRs (19.5%) performed monthly BSE. They expressed the need to receive guidance from health care professionals on the proper techniques of BSE.

In conclusion, the findings underscored the need for effective avenues to empower FDRs with information and support so they can better support themselves and their loved ones. This is essential to help them cope with the cancer diagnosis of their loved ones, while simultaneously engaging in early screening and health-promoting measures toward betterment of their own quality of life and health outcomes.

Ang SY, Lim SH, Lim ML, Ng XP, Lam M, Chan MM, Lopez V (2019). Health care Professionals' Perceptions and Experience of Initiating Different Modalities for Home Enteral Feeding. *Clinical Nutrition ESPEN*. Apr 30: pp. 67-72. DOI: 10.1016/j.clnesp.2019.02.005.

Aims: To explore the perceptions of health care professionals on different modalities for enteral feeding and their experiences in initiating long-term enteral feeding among adult patients.

Methods: A qualitative explorative descriptive study design with purposive sampling approach was adopted. A total of four speech therapists, fifteen nurses and seven doctors who were ever involved in initiating long term home enteral tube feeding were recruited over a data collection period of August to December 2017. One to one interviews were conducted and audio-recorded. An inductive content analysis approach, with open coding, creation of categories and abstraction of data was adopted.

Results: Four main themes were generated: (1) Naso-gastric Tube Feeding (NGT) is health care professionals' first choice of modality; (2) Percutaneous Endoscopic Gastrostomy Tube Feeding (PEG) is regarded as an alternative approach; (3) Perceived better outcomes with PEG; and (4) Identified barriers to promotion of PEG.

Conclusion: NGT remained as the modality of choice although health care professionals perceived that patients will have better outcomes with the use of PEG.

Ang SY, Lim ML, Ng XP, Lam M, Chan MM, Lopez V, Lim SH. Patients and Home Carers' Experience and Perceptions of Different Modalities of Enteral Feeding. *Journal of Clinical Nursing*. 2019. DOI: 10.1111/jocn.14863.

Aims: To explore patients and carers' experience and perceptions of different modalities of long-term enteral feeding.

Methods: A qualitative descriptive approach fulfilling the COREQ checklist criteria (See File S1). Nine patients who were receiving long-term enteral feeding and nine carers were recruited over the period of August to December 2017. One-to-one interviews were conducted and audio-recorded. An inductive content analysis approach, with open coding, creation of categories and abstraction of data, was adopted.

Results: Three themes were generated: (a) factors influencing choice of mode of enteral feeding; respondents narrated factors such as need to "conceal" illness, need to be independent and previous bad experience with alternative modality (b) identified informational, emotional and physical needs. Respondents reported the need for support in terms of information on the different modalities, and training on how to self-care or provide care and (c) individual perception and attitude towards life with enteral feeding. Most respondents portrayed a positive outlook to life, despite that they could no longer participate in communal eating.

Conclusion: Understanding patients and carers' experience and perceptions will inform the development of strategies to empower future patients and carers in choice of modality for enteral feeding. Patients with percutaneous endoscopic gastrostomy (PEG) found it easier to integrate enteral tube feeding into daily lives. Carers played a pivotal role in choice of modality, as well as in care of patients on enteral feeding.

Bharadwaj S, Ho SKY, Khong KC, Seet A, Yeo KC, Chan XY, Wong LL, Karlin RB, Chan KLD, Ling ML (2019). Eliminating MRSA transmission in a tertiary neonatal unit—A quality improvement initiative. *American Journal of Infection Control*. DOI: 10.1016/j.ajic.2019.06.001.

Aims: To achieve zero transmission of MRSA among all neonatal unit admissions, and to improve hand hygiene (HH) and environmental hygiene compliance to 100%.

Methods: Existing inpatient admission processes, staff HH, and environmental hygiene practices were critically analyzed. Sequential interventions were implemented, including reinforcing staff awareness on infection control practices through regular education and updates, providing "just in time" feedback, ensuring easy availability of cleaning equipment, individualizing items for all patients, keeping personal belongings away from clinical areas, and revising admission work flow for ex-utero transferred babies from other hospitals.

Results: The neonatal unit achieved zero MRSA transmission to previously noninfected and noncolonized patients over the 9-month period, and HH and environmental hygiene compliance improved from a pre-intervention median of 87.1% and 82.2%, respectively, to 100%, which has been sustained to date.

Conclusion: Intensive reinforcement of infection control practices, strict cohorting of ex-utero transfers, universal surveillance on admission, and improvement in HH and environmental hygiene compliance were key to infection prevention and control measures, resulting in elimination of MRSA transmission in our neonatal unit.

Chang PEJ, Tan HK, Lee Y, Fook-Chong S, Chia PY, Hussain NBS, Lee HL, **Aloweni FAB** (2019). Clinical validation of the Chronic Liver Disease Questionnaire for the Chinese Population in Singapore. *Journal of Gastroenterology and hepatology*. DOI: 10.1002/jgh3.12239.

Aims: To examine the internal consistency and validity of the Singapore-Mandarin version (CLDQSG) in patients with chronic liver disease (CLD).

Methods: We conducted a cross-sectional study of adult patients with CLD seen in a tertiary center in Singapore who completed both the CLDQ-SG and Short Form Health Survey 36 version 2 (SF-36v2) questionnaires. Internal consistency of the CLDQ-SG was assessed using Cronbach's alpha coefficient. Convergent and divergent validity of the SF-36v2 was assessed using the Spearman correlation coefficient, while discriminant validity was assessed using the Jonckheere-Terpstra test for trend. Exploratory factor analysis was performed to evaluate the factor structure of the CLDQ-SG.

Results: We enrolled 242 subjects (68.2% males, median age 67 years). Predominant etiology of CLD was chronic hepatitis B. Severity of CLD was divided into noncirrhotic (67.3%), compensated cirrhosis (24.0%), and decompensated cirrhosis (8.7%). Item convergent and discriminant validity of the CLDQ-SG was excellent, with 100% scaling success in all six domains. All domains exhibited good internal consistency, with Cronbach's $\alpha > 0.70$. We observed a consistent trend of a reduction in mean CLDQ-SG score in the three groups reflecting the discriminant validity of the CLDQ-SG to assess changes in HRQOL in different severities of CLD. Factor analysis of the CLDQ-SG demonstrated an independent factor assessing sleep.

Conclusion: The Singapore-Mandarin version of CLDQ-SG is a valid and reliable instrument to measure HRQOL in patients with CLD.

Chang YB, Lee FY, **Goh MM**, Lam KHD, Tan BHA (2018). Assessment of occupational exposure to airborne chlorine dioxide of healthcare workers using impregnated wipes during high-level disinfection of non-lumened flexible nasoendoscopes. *Journal of Occupational and Environmental Hygiene*. 2018 Dec.15 (12): pp. 818-823. DOI: 10.1080/15459624.2018.1523617.

Routine flexible nasoendoscopy in otolaryngology clinics is well established, the rate-limiting step of which being the speed of the nasoendoscopes reprocessing method used. Non-lumened flexible nasoendoscopes are expensive, heat-sensitive, delicate instruments that cannot be sterilized in an autoclave but must be disinfected by means of high level disinfection (HLD). In one of the public hospitals in Singapore, the method of disinfection was recently changed to the use of commercial impregnated wipes which generates less than 1% chlorine dioxide upon activation. An exposure assessment was performed to assess the potential exposure of healthcare workers (HCWs) to airborne chlorine dioxide during nasoendoscope disinfection. A total of 14 long-term personal samples, four short-term personal samples and 16 long-term area samples were collected over 8 days in midge impingers containing 0.02% potassium iodide in sodium carbonate/sodium bicarbonate buffer during the nasoendoscope disinfection. The samples were then analyzed by ion-chromatograph. The chlorine dioxide concentrations and upper confidence limit at 95% confidence level (UCL95%) for personal and area samples collected were all below the occupational exposure limits (OEL) for chlorine dioxide (Singapore Workplace Safety and Health PELs, ACGIH TLVs, U.S. OSHA PELs). The study presented evidence that the exposure of HCWs to chlorine dioxide during high-level disinfection of flexible nasoendoscopes were deemed insignificant.

Cheung YB, Neo SHS, Teo I, Yang GM, Lee GL, Thumboo J, Chia JWK, Koh ARX, Qu DLM, Che WWL, **Lau A**, Wee HL (2019). Development and evaluation of a quality of life measurement scale in English and Chinese for family caregivers of patients with advanced cancers. *Health and Quality of Life Outcomes*. 2019 Feb. 17(1):35. DOI: 10.1186/s12955-019-1108-y.

Aims: To develop and evaluate a locally derived measurement scale in English and Chinese to assess the quality of life of family caregivers of patients with advanced cancers in Singapore.

Methods: Scale contents were generated from qualitative research that solicited inputs from family caregivers. Six hundred and twelve family caregivers of patients with advanced cancers were recruited, of whom 304 and 308 chose to complete the English and Chinese versions of the quality of life scale, respectively. A follow-up survey was conducted for test-retest reliability assessment. Analyses began with pooling all observations, followed by analyses stratified by language samples and ethnic groups (among English-speaking participants).

Results: Factor analysis identified 5 domains of quality of life. The Root Mean Square Error of Approximation was 0.041 and Comparative Fit Index was 0.948. Convergent and divergent validity of the total and domain scores were demonstrated in terms of correlation with the Brief Assessment Scale for Caregiver and its sub-scales and a measure of financial concern; known-group validity was demonstrated in terms of differences between groups defined by patient's performance status. Internal consistency (Cronbach's alpha) of the total and domain scores ranged from 0.86 to 0.93. Test-retest reliability (intraclass correlation coefficient) ranged from 0.74 to 0.89. Separate analyses of the English- and Chinese-speaking samples and ethnic groups gave similar results.

Conclusion: A new, validated, multi-domain quality of life measurement scale for caregivers of patients with advanced cancers that is developed with inputs from family caregivers is now available in two languages. We call this the Singapore Caregiver Quality Of Life Scale (SCQOLS).

Chia GSZ, How MKB, Chlebicki MP, Ling ML, Tan BH, Gan WH (2019). A retrospective review of tuberculosis exposure among healthcare workers in a tertiary hospital. *American Journal of Infection Control*. DOI: 10.1016/j.ajic.2019.10.014.

Aims: To evaluate tuberculosis (TB) acquisition rate and risk factors among health care workers (HCWs) exposed to index TB patients.

Methods: We performed a retrospective cohort study on exposed HCWs from August 2016 to January 2018 at a tertiary hospital in Singapore. Demographic factors and TB exposure episodes per HCW were obtained. A modified Poisson regression model was used to identify factors associated with TB infection.

Results: A total of 32 TB exposure events occurred during the study period. A total of 881 HCWs with 1,536 exposure episodes were screened with QuantiFERON-TB Gold In-tube assay (QFT-GIT) at baseline and 8 weeks. A total of 129 (14.6%) HCWs had positive QFT-TB at baseline, whereas 22 (2.5%) HCWs had QFT-GIT conversion, with a latent TB infection (LTBI) rate of 1.14 cases per 100 exposure episodes per year. Foreign nationality, non-Chinese ethnicity, and age above 40 years were independently associated with baseline LTBI, whereas having >2 TB exposure episodes and working in internal medicine, medical subspecialties, and psychiatry wards were associated with QFT-GIT conversion.

Conclusion: The study results will guide TB contact tracing protocols in health care institutions.

Fan PEM, Tan SB, Irani FG, Cheok PG, Chock WT, Wasudevan S, Xu DH, Chua WY, Kwan XL, Li CL, Teo WQ, Ang SY. Adequacy of different measurement methods in determining nasogastric tube insertion lengths: An observational study. *International Journal of Nursing Studies*. 2019 Apr 92: pp. 73-78. DOI: 10.1016/j.ijnurstu.2019.01.003.

Aims: To evaluate four formulae and the distance from the tip of the nose to earlobe to xiphisternum in estimating the internal length of nasogastric tube required for optimal positioning.

Methods: Upon nasogastric tube insertion, the external length of the tube was measured and the corresponding internal length calculated. Several anatomical measurements were taken as required in the formulae below: 1. ((Distance from tip of nose to earlobe to xiphisternum_50 cm)/2) + 50 cm. 2. $29.38 + 4.53 * \text{gender} + 0.34 * \text{distance from nose to umbilicus with head flat on bed} - 0.06 * \text{weight}$ (gender = 1 for male, and 0 for female). 3. Distance from xiphisternum to earlobe to nose + 10 cm. 4. Distance from earlobe to xiphisternum to umbilicus – distance from tip of the nose to earlobe. Post insertion chest x-rays were examined to evaluate the position of the nasogastric tube. For those with optimal positioning, the distance from tip of the nose to earlobe to xiphisternum and the four formulae were compared to determine which provided the least difference with the internal length of the nasogastric tube.

Results: Ninety-two participants were recruited. The average age of the cohort was 62.9 years old with 54% being male. Twenty-five had nasogastric tubes in optimal position; 13 had it too short and 54 had it too long. For nasogastric tubes in optimal position, distance from xiphisternum to earlobe to nose + 10 cm provided the best estimate of the internal length. Average difference between the distance from xiphisternum to earlobe to nose + 10 cm and internal length of the nasogastric tubes in optimal position was only 1.8 cm which was by far the least difference compared to other formulae.

Conclusion: This study found distance from xiphisternum to earlobe to nose + 10 cm to provide the best estimate for the internal length of nasogastric tube required. However, even this formula could result in placement that is not optimal due to anatomical differences.

Hameed S, Shah JM, Ting S, Gabriel C, Tay SY, Chotphoksap U, Liong A. Improving the Quality of Life in Persons with Dementia through a Pilot Study of a Creative Dance Movement Programme in an Asian Setting. *International Journal of Neurorehabilitation*. 2018. 5(6). DOI: 10.4172/2376-0281.1000334.

Aims: To study the effect of a creative dance movement programme on physical, social, psychological and overall well-being of dementia patients.

Methods: A prospective, cohort study was performed outpatient, on ten community-dwelling patients with mild-moderate dementia, with their care-givers. All the study participants underwent a creative dance movement programme (Everyday Waltzes) by two dance therapists, weekly for six weeks. The Alzheimer's disease Quality of Life Inventory (ADQoL) scores of both patients and their caregivers' impression of the patient's quality of life in each of the 13 items, and combinations of items to obtain physical, social and psychological domains, pre and post intervention were recorded in a numerical scale. Wilcoxon's signed rank test was used to determine the statistical significance of any change in summated score of each of the domains and overall score, post intervention in both patients and caregivers.

Results: Except for one of the items, all the items had improvements pre to post intervention ranging from 0 to 0.8 in patients and caregivers. For patients, the overall summated score was statistically significant for improvement post intervention with a p value of between 0.02 to 0.05. The improvements in the physical, psychological and social domains were not statistically significant. For caregivers, the improvement in post intervention was not statistically significant in neither the domains nor the overall score.

Conclusion: A creative dance movement programme had a positive effect on overall well-being in patients with mild-moderate dementia in an Asian setting.

Kamaruzaman NR (2019) 'Inpatient Care for Individuals Struggling with Eating Disorders', in *Treating eating disorders. The SGH experience* (Book chapter). Singapore General Hospital, pp. 131.

No abstract available.

Leong XYA, Yee FZY, Leong YY, **Tan SG**, Amin IBM, Ling ML, Tay SM (2019). Incidence and analysis of sharps injuries and splash exposures in a tertiary hospital in Southeast Asia: a ten-year review. *Singapore Medical Journal*. 60(12): pp. 631-636. DOI: 10.11622/smedj.2019082.

Aims: To report the ten-year incidence and trend of sharps injuries and splash exposures (SISE), and analyse the causative instruments and risk factors leading to these injuries to identify potential areas of improvement.

Methods: A retrospective review of self-reported SISE incidents from 2005 to 2014 was conducted in Singapore General Hospital. Data was extracted from the electronic database of the Department of Infection Prevention and Control. Incidence of SISE was calculated per 1,000 healthcare workers (HCWs) per year.

Results: Over the ten-year period, a total of 1,901 SISE were reported. The average SISE incidence per year was 110.5 per 1,000 doctors and 22.8 per 1,000 nursing staff, with an overall incidence of 28.9 per 1,000 HCWs. The incidence of SISE decreased from 30.3 to 22.0 per 1,000 HCWs per year from 2005 to 2014, while that for splash exposures increased from 1.9 to 3.7 per 1,000 HCWs per year. Doctors reported the highest number of SISE (43.7%), followed by nurses (37.7%). Top mechanisms of injury were intraoperative procedures (22.8%), drawing blood (14.4%) and splash exposures (13.7%).

Conclusion: Overall incidence of SISE decreased over the decade. Improved training and increasing use of safety devices, education and awareness could have contributed to the fall in incidence of sharps injuries; these measures should be reinforced and continued. However, the incidence of splash exposures increased over the same period. Preventive measures such as the use of protective goggles and face shields, together with personal protective equipment, should be emphasised and encouraged.

Lim ML, Ang SY. A time–motion observation study to measure and analyse clinical nursing workload in an acute care hospital in Singapore. *Proceedings of Singapore Healthcare*. 2019 Jun 28(2): pp. 124-128. DOI: 10.1177/2010105819834569.

Internationally, there are concerns about rising nursing workforce shortages, which could be attributed to both recruitment and retention issues. As the population rapidly ages in Singapore, there is an increase in demand for more trained nurses to staff new facilities. Given the problem that Singapore is facing, there is a need for other solutions besides increasing recruitment rate. A time-motion study of nurses' workload can assist us in determining how and what nurses spend their time on during their working shift. Work processes can then be studied to allow for improvements and implementation of strategies to ease nurses' workload. Results of the current study demonstrated four main processes (preparing and clearing requisites, documentation, care coordination, transportation) that can be improved upon. Some of these processes do not require dedicated nursing skills; and can potentially be performed for other staff members. Results also demonstrated that nurses spent significantly less time on patient care activities as compared to nurses in United States; with as much as 31% of the nurses' time being spent on documentation. Future studies can target on the effectiveness of strategies to improve the efficiency and quality of nursing care.

Lim SH, Chan WCS, Chow A, Zhu L, Lai JH, He HG. (2019). Pilot Trial of a STOMA psychosocial intervention programme for colorectal cancer patients with stomas. *Journal of Advanced Nursing*. 2019 Jun 75(6): pp. 1338-1346. DOI: 10.1111/jan.13973.

Aims: To evaluate preliminary effects of a newly developed STOMA psychosocial intervention programme that was delivered via a multi-modal and multi-dimensional approach on the improvement of outcomes of colorectal cancer patients with stoma.

Methods: Fifty-three participants were recruited from July 2015–November 2016 in a tertiary public hospital in Singapore. They were randomized into either intervention group ($N = 29$) or control group ($N = 24$). Stoma care self-efficacy, acceptance of stoma, stoma proficiency, length of hospital stay, anxiety and depression and quality of life were measured. IBM SPSS 24.0 was used to analyse the data.

Results: There was an improvement in acceptance of stoma in the intervention group ($p < 0.05$). Significant effects on stoma care self-efficacy, stoma proficiency, length of hospital stay, anxiety and depression level and quality of life were not shown.

Conclusion: This study developed a feasible and applicable psychosocial intervention programme and generated preliminary evidence in the positive outcomes of colorectal cancer patients with stoma. Future studies can explore technology-based interventions to provide a more sustainable support for patients with stoma.

Lim SH, Ang SY, Aloweni FAB, Østbye T. (2019) An integrative review on screening for frailty in acute care: accuracy, barriers to implementation and adoption strategies .Geriatric Nursing. DOI: 10.1016/j.gerinurse.2019.06.005.

Frailty is a multifactorial clinical syndrome associated with increased vulnerability to negative health-related outcomes including disease and disability. Many frailty screening tools are established for use in community settings with few for acute care. An integrative review methodology by Whitemore and Knafl, was adopted to summarise the reliability and validity of different frailty screening tools, barriers to implementation and adoption strategies in acute care settings. Thirteen relevant papers met the inclusion criteria. Validity and reliability of 14 screening tools were reported in 10 studies, whereas barriers identified in implementing frailty screening and potential adoption strategies were reported in 5 studies. Accuracy of screening tools require further improvement before use in hospitalized elderly. Strategies including the improvement of hospital guidelines and practices, promoting early involvement of stakeholders, and choosing a reliable and quick to administer screening tool can be implemented to help improve and facilitate early frailty screening in acute care.

Shorey S, Goh ML, Ang SY, Ang L, Devi, MK, Ang E. The Progression and Future of Nursing in Singapore: A Descriptive Qualitative Study. Journal of Transcultural Nursing. 2019. DOI: 10.1177/1043659618823909.

Aims: To understand the perceptions of the progression and future of the nursing profession in Singapore.

Methods: A descriptive qualitative study design was used. The participants were 20 nurse educators, clinical nurses, and student nurses. Data were collected through focus group and online interviews and analyzed thematically.

Results: Nurses felt a need to bridge the theory–practice gap and various factors to the underlying cause of the shortage of nurses were highlighted. Nurses shared their desires to see greater autonomy among nurses and a greater focus on community nursing in the future.

Conclusion: Collaboration between nurse academics and clinical nurses may bridge the theory–practice gap. To reduce the issue of the shortage of nurses, efforts to nursing professionalism are required.

Towle RM, Tan CG, Saptu K, Ong LJ, Yap MM, Kheng JH, Low LL (2019). What do caregivers value and is there agreement in perception of met needs between nurses and caregivers? Singapore Medical Journal. 60(11): pp. 1-8. DOI: 10.11622/smedj.2019040.

Aims: To identify needs valued by caregivers and if there was agreement between acute care nurses and caregivers in the perception of whether caregiver needs were being met.

Methods: We conducted face-to-face interviews with 100 pairs of acute care nurses and caregivers. Participants were recruited from inpatient wards through convenience sampling. Questionnaires included demographic data of nurses and caregivers, patients' activities of daily living, and perception of caregiver needs being met in six domains of care. Independent t-test was used to compare mean values in each domain, and intraclass correlation coefficient was used to compare agreement in perception.

Results: Caregivers valued reassurance the most. Three domains of care needs showed significant differences in perception of caregiver needs being met: reassurance ($p = 0.002$), honesty and timeliness ($p = 0.008$), and kindness and genuine care ($p = 0.026$). There was poor agreement in all six domains of caregiver needs being met between nurses and caregivers.

Conclusion: Although caregivers valued reassurance the most, there was poor agreement between acute care nurses and caregivers in the perception of caregiver needs being met. Hence, more attention should be paid to the caregiver's needs. Further studies can examine reasons for unmet caregiver needs and interventions to improve support for them.

Xu Y, Lim SF (2019). The Development of Geographically-Based SGH Community Nursing In SingHealth (Southeast) Regional Health System. The College Mirror. 45(1): pp. 12-13.

No abstract available.

Xu Y, Lim SF, Aloweni FAB, Chua YY, Huang JY (2019). Development of a patient-centred model of community based OPAT (CoPAT) service in Singapore. *Health and Primary Care*. 3:pp.1-3. doi: 10.15761/HPC.1000169.

There is a growing trend of expanding Outpatient Parenteral Antibiotics Therapy (OPAT) services to the community as it is more cost-effective for both patients and healthcare organisations. At the Singapore General Hospital (SGH), frail patients requiring intravenous (IV) antibiotics often have to prolong their hospitalisation to complete the course of treatment.

Community OPAT (CoPAT) service is a joint effort between SGH Community Nursing and Department of Infectious Diseases. With the new CoPAT service, patients have the options of receiving their IV antibiotics at home rather than receiving treatment at the hospital or outpatient clinic.

This case study described the process of providing CoPAT services in the community, its challenges and learning points and the positive outcomes of cost saving and improved patient experience. Early preliminary screening of suitable patients and good communication link among hospitals and community teams are essential in ensuring its success.

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