Perspectives on Frailty Screening, Management and Its Implementation Among Acute Care Providers in Singapore: A Qualitative Study

Xiao Liu

Geriatric Education and Research Institute

Vivienne Mai Khanh Le

Geriatric Education and Research Institute

Amber Lim Yew Chen

Geriatric Education and Research Institute

Emily Jiali Koh

Geriatric Education and Research Institute

Tu Nguyen

Geriatric Education and Research Institute

Naveed Anjum Malik

Khoo Teck Puat Hospital

Christopher Tsung Chien Lien

Changi General Hospital

Jer En Lee

Woodlands Health Campus

Lydia Shu Yi Au

Ng Teng Fong General Hospital

James Alvin Low

Geriatric Education and Research Institute

Shiou Liang Wee (✉ weeshiouliang@gmail.com)

Singapore Institute of Technology

Research Article

Keywords: Screening, Perspective, Healthcare Providers, Implementation

Posted Date: December 9th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-116949/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Version of Record: A version of this preprint was published at BMC Geriatrics on January 17th, 2022. See the published version at <https://doi.org/10.1186/s12877-021-02686-w>.

Abstract

Background Frailty has emerged to be a public health concern among aging populations. COVID-19 pandemic has reminded how the frailest individuals are particularly exposed to adverse outcomes. It is important to identify and manage frailty to delay functional decline and reduce unnecessary health utilizations. Our study explored understanding on frailty and practice of frailty screening among different acute care professionals in Singapore, (2) identify barriers and facilitators concerning frailty screening, management and its implementation.

Methods A qualitative study using focus group discussion among nurses and individual interviews among physicians from four departments (Accident & Emergency, Anaesthesia, General Surgery, Orthopedics) in three acute hospitals from the three public health clusters in Singapore. Participants were recruited through a combination of purposive, convenience and snowball approach with a directed approach by using NVIVO 12.0 to analyse the data.

Result Frailty was mainly but inadequately understood as a physical and age-related concept. Screening for frailty in acute care was considered necessary to reduce adverse health outcomes. Specific issues related to screening, management and implementation identified were: cooperation from patient/caregivers, acceptance from healthcare workers/hospital managers, need for dedicated resources, guidelines for follow-up management and consensus on the scope of measurement for different specialties.

Conclusion Our findings indicated the need for 1) education program for patients/care givers and stakeholders 2) hospital wide push to adopt and develop a uniform frailty screening tool and process and 3) applying relevant guidelines, developing whole of hospital approach and process for the management of frail patients.

Introduction

Frailty, defined as a state of decreased physiological reserve and increased vulnerability to stressor events, is a common problem in older persons (1–3). A standardized definition was first developed by Fried et al in 2001(2) and the concept gained increased attention only in the last decade. Frailty increases the risk of adverse health outcomes and is an important factor for prognostication and targeted interventions in acute care settings and transitions (4). The prevalence of frailty in community-dwelling older adults ranged from 4%-27% in the Asia-Pacific region (4, 5). In Singapore, frailty is of concern given the ageing population and negative outcomes associated with it. The issue of frailty also only received research and policy attention recently. Before 2016, there were, on average, only 1–2 publications on frailty each year from Singapore, but this has increased 5–10 fold in the last few years. According to the Singapore Healthy Older People Everyday (HOPE) study, the prevalence of frailty and pre-frailty in community-dwelling older adults, aged ≥ 65 years, was 6.2% and 37%, respectively (6). The Singapore Longitudinal Ageing Study (SLAS) reported that the prevalence of frailty and pre-frailty in community

dwelling older people, aged 55 years and above, was 5% and 46%, respectively (7). In the acute care settings, frailty was present in 50–80% of older patients, and was significantly associated with increased adverse outcomes after discharge (8–11).

Hospitalisation is a stressor event that can lead to a further deterioration and loss of independence in older people, especially in the frail (12). There is compelling evidence that frailty is a significant predictor of hospitalisation and adverse outcomes after discharge in older people, such as readmission rates as well as increased risks of disability and mortality (1, 13, 14). Hospitals are being increasingly stretched to cope with the influx of frail older patients and changes need to be made to address the shortage of beds in the acute hospitals. This is further exacerbated by the COVID-19 pandemic. There is, thus, a need for routine and systematic assessment of frailty in patients admitted into acute hospitals in order to allow for early interventions and advance care planning in frail older patients, to improve outcomes.

Frailty is relatively new concept amongst many healthcare providers, especially in those who are not familiar with geriatric care. Furthermore, there is currently no routine frailty screening programme available in the acute care setting. A recent scoping review reported a lack of comprehensive policies in implementing frailty screening in the healthcare setting (15). Most older patients were admitted to general medical wards instead of geriatric wards and receive disease-based models of care instead of frailty-centred care. According to the Intramural Frailty Science Symposium of the National Institute on Aging (USA), the lack of general consensus on the language used to describe frailty and the varied theories on the pathophysiology of frailty are among the barriers that may discourage clinicians from implementing frailty assessments in clinical practice (16). To effectively develop and implement a frailty screening program in acute care, the perspectives and understanding of frailty among health care providers who care for and treat older patients should be explored. There have been several studies exploring the perceptions of health professionals about frailty and frailty screening of older patients, but these studies looked mainly at general practitioners; there was limited information on health professionals in the acute care setting (17–19).

This study, therefore, explores the following in the acute care setting: (1) level of understanding of frailty and practice of frailty screening, (2) identify barriers to frailty screening, and (3) identify facilitators of implementation of frailty management program.

Methods

The study employed an exploratory qualitative design, using one-on-one in-depth interviews (IDI) with physicians and focus group discussions (FGD) with nurses, to understand their perceptions and knowledge of frailty as well as the screening and management of the latter. IDI instead of FGD was used for physicians owing, in part, to the challenges of scheduling a common timing for physicians across departments, whereas nurses engaged in shift work, making it feasible to conduct FGDs for them. This study had been performed in accordance with the Declaration of Helsinki and was approved by the local IRB- Domain Specific Review Board of National Healthcare Group (Reference number: 2018/00551).

Setting:

The study involved clinicians from four specialties- Accident & Emergency (A&E), Anesthesia, General Surgery and Orthopedics. An acute hospital from each of the three public health clusters in Singapore (20) was selected. Geriatricians were excluded as they were expected to already have extensive knowledge of frailty. These four specialties were selected on the basis that they managed a significant proportion of prefrail/frail patients in the acute setting. Hence, their perspectives on frailty, frailty screening and management would play an important role in subsequent implementation of hospital frailty care programs.

Participants and recruitment:

We adopted a purposive, snowball and convenience sampling method to recruit the participants. Site PI's were senior geriatricians from each hospital who led the recruitment effort by identifying potential participants who were involved in the clinical management of frail patients. Physicians and nurses received invitation emails with the study details before making their decision to participate. Varied disciplines or specialties and ranks of staff ensured heterogeneity, which, in turn, improved the breadth and depth of the discussion. Focus groups from same hospitals, on the other hand, ensured standardization and also facilitated discussions (21).

Data collection:

Based on our research aims and questions, we developed a semi-structured interview guide. A review of the literature helped to formulate the domains for the guide, which explored frailty awareness and the possibility of implementing frailty screening in acute care. The data was collected between September 2018 and November 2019 from a total of 70 participants (51 IDI with physicians and three FGDS with 19 nurses). All participants gave informed consent prior to the interviews, which lasted between 20 and 54 min. Participants were first asked about their perspectives on frailty and frailty screening, after which, they were introduced to and asked to comment on six common frailty assessment tools: 1) Fried's Frailty Phenotype (22) ; 2) Frailty Index (23); 3) FRAIL scale (24); 4) Clinical Frailty Scale (CFS) (23); 5) Edmonton Frail Scale (25) and 6) Tilburg Frailty Indicator (26). Participants were asked about their understanding of frailty, perceptions on the role of frailty in healthcare, frailty screening, and frailty screening tools in relation to their specialty. They were also asked about their practice when handling frail patients, the inhibitors and facilitators of adoption of frailty screening and their preferred frailty screening tool. The interviews were conducted by three investigators who were unacquainted with the participants. Field notes were taken during the sessions. The interviews were audio-recorded, transcribed, and thematically analyzed.

Analysis:

Data from all 51 physicians and 19 nurses were useful and included in the analysis. Thematic analysis (27) was conducted using the framework approach (FA) (28) to incorporate and categorize complex data from both focus group and individual interviews. The development of a preliminary coding framework

was based on prior literature review. Each transcript was coded by two out of the four investigators using NVivo 12.0 Pro (QSR International 2020). The investigators coded independently, met afterwards to check and discuss any discrepancies and refine the framework. Final themes derived from the codes were decided by two members most experienced in qualitative analyses. Data saturation was achieved during analyses of the transcripts.

Results

Table 1
Demographics and job experience information

	Physician (N = 51)	Nurse (N = 19)
Age	44.9 (9.0)	42.7 (10.7)
Years of experience	18.6 (9.3)	19.8 (11.5)
Race		
Chinese	35 (68.6)	10 (52.6)
Indian	11 (21.6)	1 (5.3)
Others	5 (9.8)	8 (42.1)
Job title (Physician)		
Consultant	16 (31.4)	
Senior consultant	20 (39.2)	
Others	15 (29.4)	
Job title (Nurse)		
Assistant Nurse Clinician		3 (15.8)
Nurse Clinician		6 (31.6)
Surgery Nurse Manager		3 (15.8)
Others		7 (36.8)

Table 1 shows the demographic information and job roles of the participants. Findings were categorized into three major themes: 1) understanding of frailty, 2) perceived importance of frailty and frailty screening and 3) the barriers and facilitators to frailty screening, frailty management and implementation of frailty screening.

1. Understanding on frailty

While some participants showed extensive understanding of frailty and related clinical conditions, some admitted that they had limited knowledge of the topic:

"It's quite new concept for us. I never had like a proper teaching on frailty, to be honest." (F065).

Such difference probably stemmed from the fact that frailty was a relatively new concept that was not well-defined and therefore not taught at the undergraduate, postgraduate and advanced specialist training levels. Participants often learnt about the concept through self-learning or during work interactions:

"Okay, we hear it being mentioned once in a while by our geriatricians, they also talk about it in the notes" (F002).

Frailty was mostly understood as a physical and age-related construct. Most participants defined frailty as (1) a decline in functionality where patients lose their mobility and ability to perform activities of daily living (ADLs), (2) weakness in strength and appearance, (3) physiological deterioration (e.g. deterioration in bone, muscle mass, organs), (4) increase in health risks, and (5) having comorbidities:

"Frailty what I understand is like, patient who lost their muscle, they lost their weight, then feel lethargy, feeling very weak, cannot undergo their day-to-day activities because of the— progressing in the age." (F067)

Frailty was generally thought to be age-related. However, some participants acknowledged that frailty was a result of medical problems, hence, it could present in younger patients too:

"I suppose you could be young and if you have a certain medical condition, you could be frail as well, and then the other converse is also not necessarily true, you can be elderly and still very strong." (F001)

Although less mentioned, a number of participants did recognize that frailty could also encompass social, psychological, and cognitive dimensions.

"[...] for example, they come in they have a fracture. We can do the operation and they are able medically to walk but you need to be back in the social environment safely. So they may need caregiver training, caregiver acceptance or sometimes they don't have caregiver, so the social setting may not be suitable. So they are frail in both these areas; their setup and their medical." (F019)

2. Perceived importance of frailty and frailty screening

Despite varying levels of understanding of frailty, participants recognized the importance of frailty in medical care, as evidenced by the increasing recognition of the syndrome across departments and hospitals:

"I think increasingly more and more relevant because, I mean, our population is ageing so that's why there is... A&E, generally, not just our A&E but most emergency departments are also placing an increase

emphasis on screening for these possibly frail patients and also to guide them in correct dispositions when they get admitted to the ward as well.” (F006)

Several risks related to frailty were identified by participants. The commonly mentioned

ones were poorer clinical outcomes and higher risk of complications compared to patients who were not frail:

“So loss of muscle mass, loss of fitness, loss of aerobic, anaerobic endurance. All these things go together. All that globally contributes to an increasing susceptibility to perioperative issues, related to surgery, particularly major surgery that may predispose them to more complications and a longer stay in hospital and so on.” (F020)

Screening for frailty will allow those risks to be addressed pre-emptively. Almost half of the participants stated that, by screening for frailty among patients, they could better prognosticate how patients would respond to treatment, set more attainable care goals, mobilize appropriate clinical expertise, choose care in the patient’s best interest, hence, provide individualized and personalized care to frail patients.

Well it gives us risk stratification for the patients. If they are frail it’s more likely that they won’t do well for surgery. So we can inform their relatives of their para-operative risk. That’s one aspect. If they are truly frail we’ll tailor our anaesthetic accordingly. Try to minimise morbidity in these patients.” (F028)

3. The barriers and facilitators to frailty screening, frailty management and implementation of frailty screening

Cooperation from patient/caregivers

A number of participants mentioned that the lack of cooperation from patients or caregivers, for both subjective and objective reasons, could impede the implementation of frailty screening. Some patients might feel uncomfortable answering questions related to their own social status (household income, living status, etc.) due to privacy concerns, or might not be forbearing enough to answer questions that do not appear relevant to their emergent health issues:

“Both emotionally to give the answer to how much is their household income, versus do they really want to reveal this kind of information that indirectly would have implications on their frailty but can still-they might not be comfortable in giving you this kind of information.” (F042)

At the same time, difficulty in communication was a major reason for inaccuracies in patients’ answers. For example, some patients might lack the capability to answer independently (e.g. loss of mental capacity, physically unable to communicate, inability to read or respond, language barriers, etc.), and may require assistance from their family members or other caregivers to communicate the answers. Hence, the fidelity of the answers could be compromised since the caregivers may not comprehend or

understand the patient's answers, e.g. foreign domestic helpers who are less conversant in local languages and/or dialects:

"[...] cause patient report—sometimes may not be accurate also. The family, sometimes report from them also may not be accurate." (F005)

In addition, comprehensive physical assessments required of frailty assessments would impose additional burden on busy clinicians, even for the less frail patients, since the former takes extra time, effort and resources (manpower, funds, etc) to carry out. Frailty diagnosis and treatment are not covered by any insurance plans, hence, they would be hesitant to follow the instructions.

Acceptance from healthcare workers/hospital managers

Some participants felt that frailty screening was not important to their specialty. Frailty screening was thought to be relevant to only a certain group of patients, such as older patients, and, even then, only certain aspects of frailty were relevant to their specialty, which would have been assessed anyway with their existing practice. This sentiment is borne out by the following statement from an anesthetist:

"[...] we do what we call system screening, so basically is going through the patient's medical history which I think is already forming a part of the frailty screening." (F021)

Others felt that frailty screening would not impact their medical decision. A&E physicians consistently responded that their main responsibility was to respond to patients' acute needs, which did not call for frailty screening:

"I mean personally it does not affect my decisions in terms of actual medical management for the patient. It might to a certain extent affect in terms of what is the extent of care, but the initial management is still the same." (F026)

Participants also felt that frailty screening was unimportant as they thought that their colleagues and hospital management felt the same way. Not all healthcare workers would be willing to conduct frailty screening, due to their limited knowledge of frailty screening tools, perceived complexity of conducting frailty assessment and added workload that come with screening. Although some tools, such as the CFS, were proven to be easy to administer, there still appears to be some resistance from healthcare providers: *"Definitely there's a challenge where we have to get buy-in from everyone, from the doctors and nurses, to bring forward the CFS scoring that is to be done at triage." (F007)*

Furthermore, participants shared other factors that have stronger influence on care decision. For example, participants from A&E would prioritize treatment of life-threatening symptoms and while discounting the need for frailty screening.

Dedicated resources (manpower-workload, funding, space)

More than half of the participants raised concerns related to the limited resources available to perform frailty screening, especially among participants from A&E. They felt that the current workforce was already overwhelmed with existing duties and complex clinical tasks. However, some nurses felt that frailty screening should be conducted by the physicians while physicians thought otherwise. Nevertheless, the analysis showed that majority of the nurses and physicians found it appropriate to have geriatricians perform the screening instead. In addition, insufficient funding, lack of tools and equipment, and inadequate space were also raised as barriers to effective frailty screening. An example would be gait speed measurement which requires extra space to be carried out.

Although some participants admitted the importance of frailty screening, others, particularly from A&E, shared that the availability of limited resources restricted them to “eyeball” screening, instead of a systematic screening for frailty. In summary, the benefits from frailty screening could also be too minimal and would be offset by the logistic and resources challenges that come with added screening.

“But you want to do a proper comprehensive geriatric screening like in the (hospital name omitted) A&E, (it) takes a long time and you need trained nurses. So it’s good to have, but not possible.” (F030)

Guidelines for frailty management

An overarching concern by participants was the lack of follow-up care after frailty screening. Without proper follow-up, clinical management guideline or discharge plans, frailty screening could be regarded as futile and a waste of effort and resources. As one of the participants stated:

“We screen, we pick up issues and there’s no intervention in the end. So I think it must be a smooth flow where everyone sits together and come up with the workflow.” (F007)

Uniform scope of measurement among specialties

Different specialties often approach the assessment, care and management of patients from very diverse angles. For example, while all were focused on the patient’s primary conditions, Anesthetists tended to be less concerned about a comprehensive medical history and with activities of daily living. As a result, the different specialties had varied opinions about frailty screening tools. When asked to comment on the six frailty screening tools presented, participants shared their thoughts on the advantages or disadvantages of each tool. Participants felt that the Fried’s Frailty Phenotype was quick to administer while the Frailty Index was comprehensive. They found that the Edmonton Frail Scale and Tilburg Frailty Indicator were simple to administer. However, participants felt that some of these tools were not suitable for use in their departments. For example, participants from A&E were not in favor of using any of the tools even though they thought CFS was the only one relevant to their work; while participants from surgery favored using the tools and specifically mentioned Fried’s phenotype, Frailty Index and CFS as being relevant to their daily jobs: *“If the patient lands up with a surgeon, it is related to some surgical issue or something which is required, then we want a very objective scoring system which is not relying only on patient’s questions. So then the frailty index will be, for surgeons the best way to get a very objective scoring.” (F040)”*.

Table 2 shows detailed information of all the mentioned advantages and disadvantages.

Table 2
Perspectives of 6 proposed tools from stakeholders

Name of the Tool	Pros	Cons
Fried's Frailty Phenotype	Quick to administer Objective Simple to do Relevant to work	Difficult to administer Not comprehensive Not suitable for department Not useful Takes time
Frailty Index	Straightforward Relevant to work Simple to do Comprehensive Objective	Takes time Difficult to administer Not suitable for department
FRAIL	Simple to do Self-administered Quick to administer Relevant to work	Not comprehensive Self-administered Difficult to administer Not suitable for department Not Useful/Not meaningful
CFS	Simple to do Quick to administer Objective Relevant to work Have pictures	Subjective Not Comprehensive Not suitable for department
Edmonton	Relevant to work Comprehensive Simple to do Quick to administer Simple scoring	Takes time Difficult to administer Not suitable for department

Name of the Tool	Pros	Cons
Tilburg	Simple to do	Takes time
	Comprehensive	Difficult to administer
	Relevant for work	Self-administered
	Self administered	Not useful
		Not applicable to Singapore

Discussion

This study sought to explore healthcare professionals' understanding of frailty, frailty screening practice and perceived barriers to frailty screening and management in the acute care setting. Despite varied levels of understanding about frailty, participants recognized the importance of frailty and frailty screening. However, challenges to the implementation of frailty screening were expressed by participants. Implementation of frailty screening should be informed by proper evaluation of the feasibility and applicability of the tools in a structured and standardized manner. The expressed barriers should be addressed by closing the knowledge gap of the clinicians. It is clear that hospital managers and clinicians need to work together to adopt clear frailty management plan and workflow to go with frailty screening. In addition, patients and caregivers should be educated on the importance of frailty as a determinant of their care outcome.

Comparison with existing literature

Stakeholders' level of understanding on frailty seen in our study was in line with results from previous studies in Canada (17, 29), especially from the perspective of aging as well as physical, cognitive and social factors. Similar to our findings, these two studies, conducted on participants from health clinics, found that healthcare providers possessed various levels of understanding regarding frailty, and recognized aging and physical factors to be the most important aspects of frailty. The results of the meeting between six major international, European and US societies along with 7 experts in the area of frailty reached the same conclusions, i.e. the importance of frailty and frailty screening in healthcare.

Previous literature and guidelines in primary care settings found that frailty screening was often thought to help in the reduction of complications and mortality of patients (30–33). It is worth noting, however, that most of the patients in primary care were in the prefrail stage whereas those in the acute care settings were often frail. Hence, while frailty screening was carried out in primary settings to avert the frail status of patients, this may not be practical or applicable in the acute settings. Another study with surgeons showed that frailty screening could lead to less adverse outcomes in the peri-operative period (34, 35).

Barriers identified such as the lack of resources (time, manpower) and guidelines in the healthcare system were consistent with an integrative review conducted in 2019 (36). However, our study recognized an additional barrier, which is the lack of agreement about the importance of frailty screening and, therefore management, among different specialties in the acute setting. The need to better define frailty and the use of a standardized tool to ensure consistent and transferable results as suggested by the participants was also shown by several studies (29, 33). A study in the Netherlands (29) found that the lack of guidelines for care after frailty screening prevented frailty screening programs from being implemented. In the A&E setting specifically, due to patients' reduced function and increased vulnerability, it would be challenging to obtain accurate frailty screening results (29). In addition, an integrative review of 14 screening tools in acute care settings suggested that overwhelming workloads, uncooperativeness among members of the multidisciplinary team and insufficient follow-up management support could hamper the implementation of frailty screening (36). Similar to our findings, interdisciplinary teamwork between professionals, specialties and departments was suggested as a solution to this issue (37).

Implementation of frailty screening in acute settings

Our findings on stakeholders' understanding or perspectives on frailty, its role in hospital care, screening and management provide valuable information for the implementation of frailty screening and management programmes in the acute care setting in Singapore. Effective implementation of changes in the healthcare system or hospital through initiatives such as advance care planning will require cultural and behavioural transformation (38). Some of the possible measures to adopt in the implementation process include:

1) Education program for patients/care givers and stakeholders

Designing and customizing education programs for both patients/caregivers and stakeholders are essential to improve the probability of getting buy-in. Patients/caregivers would be more likely to cooperate if they were aware and understood more about the importance of frailty and frailty screening, and how much frailty screening would benefit them. Possible solutions might include disseminating easy-to-read flyers to the community centers or public educational campaigns.

Meanwhile, health professional education programs on frailty, highlighting the importance of frailty screening, and targeted frailty screening methods for physicians, nurses and administrators should be implemented in a formal setting as well as complementary training to enhance the competency and confidence of stakeholders when handling frail patients and dealing with frailty issues. Such training programs could also help healthcare providers appreciate the cost-effectiveness of frailty screening and garner more buy-in from the higher level stakeholders. Nurses in one hospital mentioned that attending relevant education programs on frailty screening could promote more awareness of frailty and frailty screening among nurses. Such education programs should form part of the strategy towards implementing and sustaining hospital wide frailty screening and management programs.

2) Hospital wide and inter-professional involvement

Given the complexity of frailty issues, whole of hospital and inter-professional collaboration would be helpful to fill in the knowledge and expertise gaps, especially among non-geriatric specialties. As previous literature suggested, early Comprehensive Geriatric Assessment (CGA) involving a multidisciplinary team (MDT) (32) will improve collaboration, communication and the sharing of information with minimal omissions and duplication, which would help conserve resources from the outset. Health providers from the various departments would benefit from geriatric expertise and be able to utilize results from frailty screening to make their own informed medical decisions. Last but not the least, inter-professional collaboration would allow frailty screening results to be obtained and delivered across specialties quickly and effectively.

3) Developing a universal frailty screening tool

In order to ensure that there is a common understanding of frailty and a seamless flow of information between specialties, a universal frailty screening tool that takes into account the different needs of the various specialties is imperative. The Clinical Frailty Score (CFS) (23) and Edmonton Frail Scale (25) were the most favored tools among the participants. According to a scoping review of 204 articles, CFS seemed to be the most commonly used tool among 13 established tools, followed jointly by the Frailty Index and the Frailty Phenotype (14). It is therefore possible that the standardized tool can be adapted from the CFS and/or Edmonton Frail Scale. It would also be necessary to involve the multidisciplinary or interprofessional teams at the development stage of the standardized frailty tool, taking into account not only the needs, but also the challenges of administering the tool, in terms of manpower and resources constraints, that each department faces. Finally, we found that most participants of this study were not aware of currently available frailty screening tools. Hence, should the standardized frailty screening tool be developed, knowledge translation approaches should be applied to scale up and sustain its use in the healthcare system. This would include strategies to build and develop awareness, training and quality improvement programs, which would ultimately lead to improved quality of care of patients.

Strength and limitations

To our knowledge, this study is among the first to explore the acute care providers' perception and attitudes towards frailty and frailty screening. Our findings could inform healthcare administrators and policy makers on potential knowledge and service gaps associated with frailty management and improve acute care of frail patients. In addition, by collating the views of non-geriatric physicians and nurses, the study was able to unveil the general perspectives of those who might not be familiar with frailty issues, despite caring for a large number of frail patients.

Due to the convenience recruitment approach, we expect certain level of selection bias to be present. However, care was put into recruiting healthcare providers of various age, gender, seniority, and level of experience to limit the effect of bias as much as possible.

Conclusion

In general, nurses and physicians in acute hospitals in Singapore share similar perspectives on the importance of frailty and frailty screening although their understanding of the latter is varied. This study revealed important barriers to frailty screening in the acute care setting, which informed our recommendations on how to implement frailty awareness and screening in the acute care setting in Singapore. Interprofessional collaboration, a universal screening tool and education efforts to close the knowledge and expertise gaps in frailty care are necessary ways towards successful implementation of frailty screening and management in the acute care setting.

List Of Abbreviation

In Depth Interviews (IDI)

Focus Group Discussions (FGD)

Accident & Emergency (A&E)

Clinical Frailty Scale (CFS)

Framework Approach (FA)

Activities of Daily Living (ADLs)

Declarations

Ethics approval and consent to participate

This study was approved by the local IRB- Domain Specific Review Board of National Healthcare Group (Reference number: 2018/00551). All participants gave informed consent prior to the interviews.

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare no competing interests.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the Geriatric Education & Research Institute [GERI1617].

Authors' contributions

XL and VMKL did data collection, data analysis and manuscript writing. ALYC did data collection, data analysis and made comments in drafted manuscript. EJK did data analysis. TNN helped on study design and manuscript writing. NAM, CTCL, JEL, LSYA, JAL helped on recruiting participants, managing study sites and making comments in drafted manuscript. WSL designed the study, managed the study and made comments in drafted manuscript.

Acknowledgements

We thank the employees from the three participating hospitals who helped and made the research proceed smoothly.

References

1. Clegg A, Young J, Iliffe S, Rikkert MO, Rockwood K. Frailty in elderly people. *The Lancet*. 2013;381(9868):752–62.
2. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, et al. Frailty in older adults: evidence for a phenotype. *J Gerontol A Biol Sci Med Sci*. 2001;56(3):M146-56.
3. Sternberg SA, Schwartz AW, Karunananthan S, Bergman H, Mark Clarfield A. The identification of frailty: A systematic literature review. *Journal of the American Geriatrics Society*. 2011;59(11):2129–38.
4. Dent E, Lien C, Lim WS, Wong WC, Wong CH, Ng TP, et al. The Asia-Pacific Clinical Practice Guidelines for the Management of Frailty. *J Am Med Dir Assoc*. 2017;18(7):564–75.
5. Collard RM, Boter H, Schoevers RA, Oude Voshaar RC. Prevalence of frailty in community-dwelling older persons: A systematic review. *Journal of the American Geriatrics Society*. 2012;60(8):1487–92.
6. Merchant RA, Chen MZ, Tan LWL, Lim MY, Ho HK, van Dam RM. Singapore Healthy Older People Everyday (HOPE) Study: Prevalence of Frailty and Associated Factors in Older Adults. *J Am Med Dir Assoc*. 2017.
7. Wei K, Nyunt MSZ., Gao Q., Wee SL., Ng TP. Frailty and Malnutrition - Related and Distinct Syndrome: Prevalence and Association among Community-Dwelling Older Adults – Singapore Longitudinal Ageing Studies). Final Review by Journal of the American Medical Directors Association (2017).
8. Chong E, Ho E, Baldevarona-Llego J, Chan M, Wu L, Tay L. Frailty and Risk of Adverse Outcomes in Hospitalized Older Adults: A Comparison of Different Frailty Measures. *J Am Med Dir Assoc*. 2017;18(7):638.e7-.e11.

9. Tan KY, Kawamura YJ, Tokomitsu A, Tang T. Assessment for frailty is useful for predicting morbidity in elderly patients undergoing colorectal cancer resection whose comorbidities are already optimized. *Am J Surg*. 2012;204(2):139–43.
10. Tan LF, Lim ZY, Choe R, Seetharaman S, Merchant R. Screening for Frailty and Sarcopenia Among Older Persons in Medical Outpatient Clinics and its Associations With Healthcare Burden. *J Am Med Dir Assoc*. 2017;18(7):583–7.
11. Chua XY, Toh S, Wei K, Teo N, Tang T, Wee SL. Evaluation of clinical frailty screening in geriatric acute care. *J Eval Clin Pract*. 2020;26(1):35–41.
12. Andela RM, Dijkstra A, Slaets JP, Sanderman R. Prevalence of frailty on clinical wards: description and implications. *Int J Nurs Pract*. 2010;16(1):14–9.
13. Hubbard RE, Peel NM, Samanta M, Gray LC, Mitnitski A, Rockwood K. Frailty status at admission to hospital predicts multiple adverse outcomes. *Age Ageing*. 2017;1–6.
14. Theou O, Squires E, Mallery K, Lee JS, Fay S, Goldstein J, et al. What do we know about frailty in the acute care setting? A scoping review. *BMC geriatrics*. 2018;18(1):139.
15. Liu X, Ng DH-M, Seah JW-T, Munro YL, Wee S-L. Update on interventions to prevent or reduce frailty in community-dwelling older adults: A scoping review and community translation. *Current Geriatrics Reports*. 2019;8(2):72–86.
16. Walston J, Bandeen-Roche K, Buta B, Bergman H, Gill TM, Morley JE, et al. Moving Frailty Toward Clinical Practice: NIA Intramural Frailty Science Symposium Summary. *J Am Geriatr Soc*. 2019;67(8):1559-64.
17. Korenvain C, Famiyeh IM, Dunn S, Whitehead CR, Rochon PA, McCarthy LM. Identifying frailty in primary care: a qualitative description of family physicians' gestalt impressions of their older adult patients. *BMC Fam Pract*. 2018;19(1):61.
18. Saleh PY, Maréchal F, Bonnefoy M, Girier P, Krolak-Salmon P, Letrilliart L. [Views of general practitioners on the frailty in elderly: a qualitative study]. *Geriatr Psychol Neuropsychiatr Vieil*. 2015;13(3):272–8.
19. R CA, M MA, Lawless M, Mills D, Yu S, Beilby JJ. General practitioners' perceptions, attitudes and experiences of frailty and frailty screening. *Aust J Gen Pract*. 2019;48(7):426–33.
20. Singapore MoHi. Reorganization of Healthcare system into three integrated clusters to better meet future healthcare needs. 2017.
21. Billson JM. Focus groups: A practical guide for applied research. *Clinical Sociology Review*. 1989;7(1):24.
22. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, et al. Frailty in older adults: evidence for a phenotype. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*. 2001;56(3):M146-M57.
23. Rockwood K, Song X, MacKnight C, Bergman H, Hogan DB, McDowell I, et al. A global clinical measure of fitness and frailty in elderly people. *Cmaj*. 2005;173(5):489–95.

24. Morley JE, Malmstrom T, Miller D. A simple frailty questionnaire (FRAIL) predicts outcomes in middle aged African Americans. *The journal of nutrition, health & aging*. 2012;16(7):601–8.
25. Rolfson DB, Majumdar SR, Tsuyuki RT, Tahir A, Rockwood K. Validity and reliability of the Edmonton Frail Scale. *Age and ageing*. 2006;35(5):526–9.
26. Gobbens RJ, van Assen MA, Luijkx KG, Wijnen-Sponselee MT, Schols JM. The Tilburg frailty indicator: psychometric properties. *Journal of the American Medical Directors Association*. 2010;11(5):344–55.
27. Barnett-Page E, Thomas J. Methods for the synthesis of qualitative research: a critical review. *BMC medical research methodology*. 2009;9(1):1–11.
28. Ritchie J, Spencer L. Qualitative data analysis for applied policy research. *The qualitative researcher's companion*. 2002;573(2002):305 – 29.
29. Van Damme J, Neiterman E, Oremus M, Lemmon K, Stolee P. Perspectives of older adults, caregivers, and healthcare providers on frailty screening: a qualitative study. *BMC geriatrics*. 2020;20(1):1–12.
30. Morley JE, Vellas B, Van Kan GA, Anker SD, Bauer JM, Bernabei R, et al. Frailty consensus: a call to action. *Journal of the American Medical Directors Association*. 2013;14(6):392–7.
31. Van Kan GA, Rolland Y, Bergman H, Morley J, Kritchevsky S, Vellas B. The IANA Task Force on frailty assessment of older people in clinical practice. *The Journal of Nutrition Health and Aging*. 2008;12(1):29–37.
32. Turner G, Clegg A. Best practice guidelines for the management of frailty: a British Geriatrics Society, Age UK and Royal College of General Practitioners report. *Age and ageing*. 2014;43(6):744–7.
33. Ambagtsheer RC, Beilby JJ, Visvanathan R, Dent E, Yu S, Braunack-Mayer AJ. Should we screen for frailty in primary care settings? A fresh perspective on the frailty evidence base: a narrative review. *Preventive medicine*. 2019;119:63–9.
34. George EL, Arya S. The importance of incorporating frailty screening into surgical clinical workflow. *JAMA Network Open*. 2019;2(5):e193538-e.
35. Archibald MM, Lawless M, Gill TK, Chehade MJ. Orthopaedic surgeons' perceptions of frailty and frailty screening. *BMC geriatrics*. 2020;20(1):1–11.
36. Lim SH, Ang SY, Aloweni FBAB, Østbye T. An integrative review on screening for frailty in acute care: Accuracy, barriers to implementation and adoption strategies. *Geriatric Nursing*. 2019;40(6):603–13.
37. Brouwers C, Merten H, Willems M, Habraken D, Bloemers F, Biesheuvel T, et al. Improving care for older patients in the acute setting: a qualitative study with healthcare providers. *Neth J Med*. 2017;75(8):335–43.
38. Tan WS, Car J, Lall P, Low CK, Ho AHY. Implementing Advance Care Planning in Acute Hospitals: Leading the Transformation of Norms. *J Am Geriatr Soc*. 2019;67(6):1278–85.