

Title page

Full Title **Occupational Patterns of Community-Dwelling Older Adults
in Singapore: A Mixed Method Study**

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The authors confirm that there is no conflict of interest

Statement of contributorship

WK, YC, and TC contributed to the conceptualisation of the research. WK, YC, WN, FL and TC contributed to the data collection and/or analysis. WK wrote the first draft of the manuscript. All authors reviewed and approved the final manuscript.

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Abstract

Introduction The aim of this study is to understand the patterns of occupations among community-dwelling older adults in Singapore. The objectives are to describe their occupational engagement using the Activity Card Sort Singapore, understand their occupational preferences, and perceived barriers and facilitators to engagement.

Methods A convergent parallel mixed-method study was conducted over a 5-month period in 2018. Purposive and snowball sampling were used to recruit the participants. Individual 1-hour interviews were conducted at participants' homes. Quantitative data collected include demographic information, modified Barthel Index scores and activity participation based on the Activity Card Sort Singapore. Qualitative data were collected using semi-structured interviews.

Results 105 participants were enrolled in the study. Overall, older adults engaged mostly in instrumental and social activities. However, leisure and social activities were most preferred. Gender, educational level, and age were found to influence occupational engagement. Overall, six main themes relating to perceived barriers and facilitators to occupational engagement were identified: cognition and physical status, self-efficacy, resources, affect and meaningfulness, social influence, and environmental factors.

Conclusion The findings from this study provided insights into the occupational patterns of community-dwelling older adults in Singapore, their perceived barriers, and facilitators to engagement. Recommendations for practice were identified.

Introduction

Like many countries, Singapore's population is rapidly ageing. By 2030, Singapore is expected to become a super-aged society, where people aged 65 and above will exceed 21% of the total population (United Nations Department of Economic and Social Affairs, 2017). Occupational therapists are well positioned to support older adults to age successfully (CAOT, 2011; COTEC, 2010). The theoretical basis of occupational therapy lies in the belief that the engagement in meaningful occupations facilitates well-being (Christiansen, Baum, & Bass-Haugen, 2005). The positive impacts of occupational engagement among older adults have been empirically supported in literature. Engaging in social activities have been found to ameliorate depressive symptoms (Chiao, Weng, & Botticello, 2011) and reduce cognitive decline among older adults (Tomioka, Kurumatani, & Hosoi, 2018), while participating in leisure activities has positive benefits on mental well-being and cognitive function (Sala et al., 2019). Furthermore, occupational engagement creates a sense of purposefulness for older adults (Nilsson, Bernspång, Fisher, Gustafson, & Löfgren, 2007).

Some studies have been conducted to identify the occupational engagement and preferences of community-dwelling older adults, which appear to be varied across studies. Older adults in Australia were found to spend nearly half their day engaging in instrumental activities (Fricke & Unsworth, 2001; McKenna, Broome, & Liddle, 2007), which are activities that enable independent community living. Using the telephone, transportation, and reading were perceived to be the most important (Fricke & Unsworth, 2001). In Norway, community-dwelling older people perceived personal care and leisure activities to be most important (Vik & Eide, 2014), which were reflected in their prioritization of rehabilitation goals in reablement services (Tuntland, Kjekken, Folkestad, Førland, & Langeland, 2019). They prioritised self-care, followed by leisure activities which include recreation and social activities, such as visiting or receiving social visits. Finally, in Sweden, older adults were found to most frequently participate in leisure pursuits, which included reading newspapers and books, doing crosswords, internet-related occupations and watching the television (Nilsson, Blanchard, & Wicks, 2015). However, further synthesis of findings to identify patterns of engagement and preferences is challenging, as each study had a different focus on the occupational domains that were investigated and employed varied data collection methods and tools. As these studies were conducted in a Western context, there may be

limited applicability to the Singapore context, as occupational engagement can be influenced by cultural differences (Eriksson et al., 2011; Whiteford & Wilcock, 2000).

There is a scarcity of studies conducted to understand the occupational patterns or preferences of older adults in Singapore. This has been resonated by local occupational therapists, who have cited challenges in engaging older Singaporean adult clients in occupation-centred practice (Fisher, 2013), as many of them lived lives with an inordinate focus on paid employment and had difficulties reporting on their activity engagement or preferences beyond that domain (Yang, Shek, Tsunaka, & Lim, 2006). One study investigated the 24-hour time use on a weekday and weekend among older people in Singapore (Krishnasamy, Unsworth, & Howie, 2011). Most spent their time outside their home, and engaged in shopping, exercising, meeting friends/family and participated in leisure activities. Two publications reported on older adults' social participation, specifically for five types of social activities: Going out to eat, attending religious activities, attending events, playing a game of sport, and going for walks (Ang, 2018; International Longevity Centre, 2014). However, these studies held focus on specific activity domains. Additionally, engagement in other occupations that older people may prefer were not explored. Overall, no previous studies have investigated comprehensive patterns of occupational engagement among community-dwelling (i.e., non-institutionalised) older adults in Singapore. This understanding is essential for occupational therapy practice in Singapore to facilitate meaningful occupational engagement and to promote successful aging. The aim of this study was to understand the patterns of occupations among community-dwelling older adults in Singapore. The research questions were:

- 1) What occupations do community-dwelling older adults engage in?
- 2) What occupations do community-dwelling older adults prefer?
- 3) What are the barriers and facilitators to engaging in preferred occupations?

Method

Study design and ethics

A convergent parallel mixed-method design was employed. This approach was chosen to draw on the strengths of each method. A quantitative approach alone provides numerical data, however it lacks description of context and participants' experiences (Wisdom &

Creswell, 2013). Similarly, although qualitative approaches can generate insightful descriptions of a phenomena, findings may not be generalisable (Creswell & Creswell, 2017). This study was approved by the SingHealth Centralised Institutional Review Board, Singapore (Ref: 2018/2127). All participants provided written informed consent.

Sample size

Based on a 90% confidence interval and a population of 487,570 individuals above 65 years old in Singapore (Department of Statistics Singapore, 2016) with an 8% margin error (Conroy, 2016), the required sample size is 106.

Participants

This study took place in Singapore. Prospective participants were first identified through a database obtained during a wellness carnival for older adults. Admission to the event was free of charge, and participants were asked to fill up a form and indicate if they are agreeable to be contacted for research. Convenience sampling was then to recruit participants. The inclusion criteria were: (i) aged 65 and above, (ii) no formal diagnosis of psychosis or dementia, (iii) able to speak English and/or Mandarin, (iv) not residing in an institution. To achieve the target sample size, snowball sampling was also employed, where participants could invite their friends to contact the researchers if they were interested to enrol in the study. Participants were remunerated with a S\$10 voucher in appreciation of their time.

Data Collection

Eleven registered occupational therapists who had experience interviewing older adults were involved in data collection over a 5-month period from July to November 2018. Prior the commencement of data collection, all data collectors underwent a training session to ensure consistency in our approach to data collection. Individual 1-hour semi-structured interviews were conducted at participants' homes.

Quantitative data

A structured survey was used to collect demographic data: age, gender, level of education, living arrangement, marital status, and self-reported chronic diseases as listed on Singapore's Chronic Diseases Management Program (Ministry of Health Singapore, 2018).

The Modified Barthel Index (MBI), an ordinal scale that measures functional independence in ten activities of daily living was administered to characterise their level of independence in self-care.

The Activity Card Sort Singapore (ACS-SG) was used to collect data on occupational patterns and preferences of community dwelling older adults. The ACS-SG is a culturally-adapted version of the Activity Card Sort, and has been reviewed by an expert panel to ensure local content validity (Lim, Tan, Hobman, & Cheng, 2018). It contains 85 picture cards depicting people engaged in activities in four activity subtypes – 26 instrumental activities, 28 low demand leisure, 14 high demand leisure and 17 social activities. Pictures are concrete cues for older adults to report occupational engagement, eliminates potential recall bias, and are perceived be less intimidating for older people with lower literacy (Baum & Edwards, 2001). The administration of ACS-SG was adapted slightly after being pre-tested. The categories “Not done since 60” and “Given up” were perceived to be confusing, as older adults often felt that these categories overlapped. Hence, the former category was removed. Consequently, participants were asked to sort the 85 picture cards into three remaining categories: 1) Do now, 2) Given up, 3) Never done. Due to the adaption, the original scoring system was not used. Instead, engagement was calculated based on the number of cards sorted into each of the three categories.

Qualitative data

Following the card sort, each participant was asked to pick two cards from each of the three categories that depict their most preferred activities. Semi-structured interviews were conducted using an interview guide to understand perceived barriers and facilitators to engagement preferred activities in activities that they were doing (i.e. “Do now”). Other questions also focused on understanding barriers and facilitators to engaging in preferred activities that they have given up (i.e. “Given up), and those they preferred or had interest in, but have never done (i.e. “Never done”). Physical note taking was used to record participants’ responses for pragmatic and logistical purposes due to time limitation. We acknowledge that this method of collecting data has its disadvantages. Since interviews were not audio recorded, they cannot be re-encountered. Nevertheless, measures were taken to upkeep the rigour of this approach. To ensure completeness of notes, two occupational therapists recorded notes during each interview. Additional notes were also

added immediately after interviews while researchers' impressions were still vivid (Sanjek, 1990).

Data Analysis

Quantitative data

Descriptive statistics were applied to quantitative data using the Statistical Package for Social Sciences (SPSS) Version 21. Independent sample t-test and one-way ANOVA were used to examine statistical differences between categorical variables, while correlation analyses were applied to explore the strength of the relationship between the activity engagement on ACS-SG and continuous variables.

Qualitative data

Microsoft Excel was used to organise qualitative data on barriers and facilitators. Data was transcribed and analysed inductively using conventional qualitative content analysis as described by Hsieh and Shannon (2005). This method of data analysis was chosen as it guides systematic categorization of large volumes of text-based data, facilitates the identification of occurrence of patterns (Tesch, 2013), and represents an objective means of describing and quantifying phenomena (Schreier, 2012). First, all three authors (WK, TC and FL) immersed in the data by reading and reading the data. Next, WK and TC independently coding the first page of data using descriptive and low-inference codes (Punch, 2013). More than one code could be ascribed to each participant's response to each question; however, the same code may only be ascribed once. Both coders compared and discussed the codes to develop a coding manual, which was applied to the rest of the data by WK, TC and FL. Upon the completion of coding, all coders met to discuss, compare, and agree on the final applied codes. Using an iterative approach, codes were then sorted into key themes, named, and presented. Results were reported as a descriptive qualitative summary of the derived themes.

Trustworthiness

To ensure trustworthiness, multiple strategies were taken. The study's credibility was supported by the formation of a team with research and clinical experience in this area, and the research method was clearly described. Qualitative data was recorded by two data

collectors, which promoted descriptive validity of the data collected (Johnson & Christensen, 2019). The involvement of three independent coders, as well as each coder's prolonged engagement with the data, supported rigour of the analysis. Finally, researchers met regularly to discuss the study and critically appraise potential biases, which enhanced confirmability.

Results

130 potential participants were screened. Six participants did not meet the inclusion criteria, and 18 declined to participate. Of the 106 participants who were recruited, one withdrew from the study without providing a reason. Hence, the final sample was 105.

Quantitative findings

Participants' Characteristics

Participants were mostly from the same residential region. All participants were ethnically Chinese, and their ages ranged from 65 to 91 years old ($M=74.6$, $SD=5.7$). Majority were female (70.5%), married (57.2%), had primary to secondary school education (81%), and lived in three to five room flats (83.8%). Over half (53.3%) lived with their spouses, followed by 38.1% who lived with their children. 15.2% of the participants lived alone. Each participant had an average of two chronic health conditions, of which hyperlipidaemia (60.0%) and hypertension (59.0%) were the most prevalent. All participants were minimally modified independent in activities of daily living, and the mean MBI score was 98.9. Most (82.9%) were unemployed or have retired.

Occupational Engagement

Table 1 illustrates participants' engagement in activities that were listed on ACS-SG, while Table 2 shows the correlation between activity engagement and continuous demographic variables (i.e. participants' ages and MBI scores). The break-down of activity engagement by four activity subtypes (i.e. instrumental, high-demand leisure, low-demand leisure and social activities) are shown in Table 3. In consideration that the number of cards vary across activity subtypes, activity participation in each subtype is expressed in percentages in relation to the total number of activity cards within that subtype.

Do Now

The mean number of “Do now” activities that participants were engaged in is 43 (SD=12.4), which constituted 50.6% of activities listed on ACS-SG. Participants were most engaged in instrumental activities (60%) and social activities (58.3%). Women were engaged in significantly more activities (M=44.8, SD12.0, $p<0.05$) as compared to men (M=38.4, SD=12.5, $p<0.05$). Further analysis by activity subtype showed that women were participating in more low demand leisure activities ($p<0.05$) and instrumental activities ($p<0.05$) as compared to men.

However, there were no gender differences for participation in social ($p=0.25$) and high demand leisure activities ($p=0.60$). Participants engaged in significantly lesser activities with age ($r=-0.36$, $p<0.05$), while those with higher MBI scores engaged in more activities ($r=0.31$, $p<0.05$). Other demographic factors that were found to influence the total number of “Do now” activities include participants’ marital status ($p<0.05$), where those who were married were more engaged in more activities. Similarly, participants with higher educational levels had more activity engagement ($p<0.05$).

Given Up

The mean number of activities that participants have given up is 17 (SD=7.2), which made up 20% of the activities listed on ACS-SG. Most activities that were given up by participants were high demand leisure (27.1%) and social (22.4%) type activities. Overall, the number of activities that were given up increased with age ($r=0.33$, $p<0.05$). There were no statistically significant correlations to other demographic characteristics.

Never Done

The mean number of activities that participants have never done is 25 (SD=12.0), which constituted 29.4% of all activity cards listed on ACS-SG. Most activities that were never done by participants were high demand leisure (46.4%) and low demand leisure (31.1%) activities. There are no significant differences for gender comparisons. However, there is a statistically significant difference based on marital status and educational level ($p<0.05$). Participants who were divorced or had lower education levels had the highest number of “never done” activities.

Table 1: Engagement in activities listed on the Activity Card Sort Singapore (ACS-SG)

	Do Now				Never Done			Given Up		
	N	Mean	SD	p	Mean	SD	p	Mean	SD	p
<i>Overall</i>	105	42.9	12.4		24.8	12.0		17.2	7.2	
<i>Age Group</i>										
65 – 69	22	49.2	9.8		21.3	11.0		14.5	6.2	
70 – 74	32	45.0	12.5		25.2	12.5		14.8	6.1	
75 – 79	34	42.1	12.0	0.01	23.6	12.2	0.164	19.2	6.8	0.00
80 - 84	9	33.4	9.9		33.3	10.2		18.1	4.0	
85 - 89	7	33.7	9.2		29.3	12.0		22.0	5.4	
90 - 94	1	16.0	-		21.0	-		48.0	-	
<i>Sex</i>										
Male	31	38.4	12.5	0.017	27.2	3.0	0.183	19.2	6.2	0.065
Female	74	44.8	12.0		23.7	11.6		16.4	7.5	
<i>Marital Status</i>										
Single	14	38.5	11.5		30.4	14.0		16.1	7.6	
Married	60	45.6	11.6	0.035	22.3	11.2	0.007	17.0	6.5	0.348
Divorced	4	31.8	12.8		40.0	13.6		13.3	4.8	
Widowed	27	41.0	13.4		25.0	10.7		19.0	8.6	
<i>Educational Level</i>										
None and primary	60	39.3	12.9		28.8	11.6		16.8	7.5	
Secondary to post-secondary	43	47.5	10.1	0.01	19.7	10.6		17.7	7.1	0.725
Diploma and above	2	54.0	2.8		10.5	0.7	0.00	20.0	2.8	

Table 2: Correlation between Continuous Variables

	Do Now		Never Done		Given Up	
	r	p	r	p	r	p
Age	-0.363	0.00	0.184	0.06	0.329	0.01
MBI Score	0.312	0.001	-0.229	0.019	-0.128	0.193

Table 3: Occupational Engagement by Activity Sub Types in ACS-SG

	Do Now			Given Up			Never Done		
	Mean	SD	%	Mean	SD	%	Mean	SD	%
Total (number/total cards)	43/85	12.4	50.6	17.2/85	7.2	20.2	24.7/84	12.1	29.2
Instrumental activities (IA) (number/total IA cards)	15.6/26	3.6	60	4.2/26	2.8	16.2	6.2/26	3.2	23.8
Low demand leisure activities (LDLA) (number/total LDLA cards)	13.8/28	5.4	49.2	5.5/28	2.9	19.6	8.7/28	5.2	31.1
High demand leisure activities (HDLA) (number/total HDLA cards)	3.7/14	1.9	26.4	3.8/14	2.1	27.1	6.5/14	2.7	46.4
Social activities (SA) (number/total SA cards)	9.9/17	3.3	58.3	3.8/17	2.1	22.4	3.3/17	2.7	19.4

Preferred Activities

All participants were able to identify two most preferred activities from the list of activities that they were engaged in (i.e. “Do now” activities). Of these, social activities were identified as the most preferred activity subtype. However, 9 were unable to or declined to choose preferred activities from those that they have given up. Similarly, 23 were unable to do so for activities that they have not engaged in previously (i.e. “Never done” activities). Overall, the top preferred activities are listed in Table 4. Activities that were not chosen by any participants as preferred activities were instrumental activities, which included: Shopping in store, taking out trash, pumping petrol, car maintenance, paying bills and using postal service.

Table 4: Top preferred activities on ACS-SG

Top preferred activities	Frequency (%)	Activity sub-type
1. Practicing Taichi/Qigong	26.6%	High demand leisure activity
2. Traveling	23.4%	Social activity
3. Flowers arrangement	21.3%	Low demand leisure activity
4. Going to places of worship	21.3%	Social activity
5. Singing Karaoke	20.2%	Low demand leisure activity
6. Going to the cemetery	20.2%	Social activity

Qualitative findings

Six main themes relating to perceived barriers and facilitators to occupational engagement were identified: cognition and physical status, self-efficacy, resources, affect and meaningfulness, social influence, and environmental factors. Table 5 shows exemplars of quotes and codes within each theme.

Table 5: Exemplar of quotes, codes and themes

Exemplar quotes	Code	Themes
Leg pain, cannot walk long distances... need to bring walking frame out, it is troublesome	Physical difficulties	Physical and cognitive status
slow to learn. tried many times and learned many times	Cognitive difficulties	
I am not praising myself but my voice is pretty good	Confidence	Self-efficacy
Learn a lot of things from soka (religious group)... about theories to help myself and organise [my] thoughts	Motivation	
Must tell them (grandchildren) meaningful stories but [I] only know history stories, [which] doesn't interest them	Lack of knowledge	
[doing] activities cost money... people who are retired have no money	Financial challenges	Resources
Pass time meaningfully, especially over the weekend	Time	
No place to do gardening	Facilities	
if someone organises it, I will be very happy to go	Organised activities	
Feel very happy after going to the temple	Positive emotions	Affect and meaningfulness
Important to get fresh air... also a good opportunity to look at nature... good for body and health	Perceived health benefits	
It is a necessity; it is a must to do it	Need	
To meet my sisters in christ, (we) go out for lunch after (church) for chit chats	Partner	Social influence
[I] know many people through karaoke and my friends help to teach [me the] lyrics	Support from others	
We have family gathering every Sunday... chance to maintain connectedness with (the) younger generation	Family	
friends live too far... have a scooter but cannot travel so far on scooter	Distance	Environmental factors
There are stairs (in the temple); not every place has slopes... cannot ride scooter if there are steps	Accessibility	

Theme one: Cognition and Physical Status

Barrier

Most did not experience any barriers engaging in preferred occupations that they were still doing. Those who experienced barriers reported difficulties primarily to physical difficulties, such as reduced mobility and effort tolerance. They reported knee pain, lower limb weakness, and difficulties walking distances. Some also shared that the decline in their sensory capacities, such as reduced hearing and eyesight, affected occupational engagement.

'I have no difficulties, but [my] eyesight [is] not as good...'

(M71, ACS-SG activity 41: Reading Newspaper/Magazine/ Books – 'Do now')

Physical difficulties were more commonly reported as barriers to engagement in preferred activities that were given up, and those that they had interest in but have never done:

'[it is] difficult to take bus to the temple. Cannot climb bus steps, cannot walk too long... [my] leg will be pain(ful) if walk too long'

(R55, ACS-SG activity 78: Going to places of worship – 'Given up')

Cognitive issues related to memory difficulties were also brought up. Participants shared that their memory was not as good as it was before. Hence it was challenging for them to remember the steps that were necessary for activity engagement.

Theme two: Self efficacy

Barrier

Reduced self-efficacy was identified as a key barrier towards engagement in preferred occupations, particularly those that were given up or have never been done previously. A lack of confidence, knowledge and skills were frequently mentioned. Despite their interest, older adults did not know how they could engage or reengage in them. Some shared that that lower literacy levels influenced their ability to find information or resources. A lack of previous experience was also influenced their confidence:

*'[I] cannot read posters of activities, [I] don't know where to go to participate'
(M70, ACS-SG activity 62, Games in the park – 'Never done')*

Some older adults cited "old age" as a limitation without further elaboration. Others shared that with age, more time may be required for them to learn and participate in the activities. Hence, they feared embarrassment and impatience from others. Fears about safety were also raised, as older adults shared that they or their family members were concerned about falls or injuries.

Facilitator

Correspondingly, older adults perceived that having sufficient knowledge and skills has enabled them to engage in their preferred occupations, particularly in those that they were already doing. One participant shared that she was able to engage in hand crafts because of her "long term skills", which made her feel confident. Others reported intrinsic motivation as a facilitator:

*'having regular classes (in the community 5 days a week helps, but I will still be motivated to continue [even] if [there are] no classes at all'
(M67, ACS-SG activity 67, Practicing Taichi/Qigong – 'Do now')*

Theme three: Resources

Barrier

Resource issues impeded occupational engagement, especially in preferred activities that older adults have given up or have never done. A key issue was financial challenges. Participants reported financial constraints due to a lack of income, and inability to afford additional expenses necessary for participation in their preferred occupations:

*'No money, expensive. Sometimes [I] even have issues paying for my meals... [I am] not working, no income'
(M106, ACS-SG activity 57: Golfing – 'Never done')*

Some also reported a lack of time as a barrier. These participants perceived themselves to be occupied by other activities, such as caring for their grandchildren or their spouses. Hence, although they were could identify preferred activities from ACS-SG that they have

never done or given up, they were less enthusiastic than those who perceived themselves to have time to pursue preferred activities. Other resource challenges included the lack of facilities, organized activities or relevant classes:

“if there are classes to learn, [I am] interested in learning Erhu (a type of musical instrument), but don't have such classes”

(M69, ACS-SG activity 40: Playing Musical Instrument – “Never done”)

Facilitator

Having time to engage in preferred occupations was reported as an enabler. This has also, reciprocally, helped them “pass time more meaningfully”. Some shared about their perceptions of time decay as a facilitator. They felt that their abilities will decrease with time and age, and perceived the importance of making the best of their time while they are relatively healthy and able:

‘as we age, we are dying one by one.... need to take the opportunity to meet up before we leave the world’

(R51, ACS-SG activity 72: Family gathering – ‘Do now’)

Having financial resources was seen as an enabler, especially for preferred activities that were given up or never done. Most shared that they hoped for that activity participation can be made free-of-charge, and they hoped for governmental financial subsidies. Finally, some shared that that the availability and accessibility to facilities would facilitate occupational engagement.

Theme four: Affect and Meaningfulness

Facilitator

Positive emotions derived through activities were cited as a facilitator, particularly for activities that participants were doing. Older adults reported enjoyment and sense of fulfilment when engaging in their preferred occupations. Some also shared that this helped them alleviate loneliness:

‘... too bored at home, going out [will] help [me] forget about loneliness’

(M38, ACS-SG activity 75: Visiting with friends – ‘Do now’)

The meaningfulness of an occupation, such as perceived health benefits in domains of physical, cognitive, and emotional health, were also seen as enablers:

‘... because to maintain health and to keep active, I am worried about getting health conditions’

(M71, ACS-SG activity 68: Other exercises – ‘Do now’)

Some also perceived occupational engagement as a necessity for survival, particularly for instrumental activities such as cooking meals or preparing a hot beverage. Other facilitators include participants’ interests and habituation.

Theme five: Social influence

Barrier

Older adults reported that not having a companion impeded occupational engagement, especially for ones that they have given up or have never done. Some shared that they used to engage in activities with their friends or spouses. However, some of these companions were no longer available as they were deceased, have health issues or have moved away to another estate. A lack of support from their social circle was also impeded engagement. One participant declined to choose a preferred activity that she had given up, as she felt strongly that she will not be able to re-engage in activities that she had given up:

‘They (passersby and neighbors) tell me: “Disabled people [should] not come down to the coffee shop. If you fall down, who can take care of you?” They don’t welcome me; I don’t want to go down. If anything happens, [my] son will scold [me]’ (M80)

Facilitator

Enablers to occupational engagement corresponded directly with the reported barriers. Many reported that having a companion enabled them to continue engaging in their preferred occupations, and also made their experiences more enjoyable. Pragmatic support from others, such as family and neighbors were also seen as facilitators. Some shared that their family or friends would help to simplify an activity for them, which they perceived to

be helpful. One participant with mobility difficulties shared about the support that he received from community members:

“... they (stall owners at a hawker center) will bring food to me because I cannot carry my own food [tray] to the table. I already know which stall (owners) will help”

(M82, ACS-SG activity 76: Eating at a hawker centre – “Do now”)

Some older adults also shared about familial values as facilitators, where they hoped that engagement in the occupation could benefit family members or familial relationships:

“it is a chance for me to maintain connections to the younger generation”

(R65, ACS-SG activity 72: Family gathering – “Do now”)

Finally, participants also reported that they would be more encouraged to engage in preferred activities that they have previously given up or have never done, if their friends or if activity centers organized and invited them to participate.

Theme six: Environmental factors

Barrier

Accessibility issues and distance were cited as barriers, particularly for activities that older adults have given up or never done. Some participants saw it as a challenge to commute to facilities due to mobility difficulties. One participant shared about perceived accessibility to commute to a place of worship - the distance from her place to the nearest bus stop for commute to the temple was far, and there was nowhere enroute that she could sit to take a rest. Other participants shared similar perceptions:

“It is far. By the time [I] travel to there (swimming pool), I will be tired already”

(M24, ACS-SG activity 55: Swimming – “Given up”)

Facilitator

Correspondingly, distance and accessibility were reported to facilitate participants to engage in occupations. Participants reported that necessary facilities or resources were within proximities of their homes, which reduces the need to travel. By the same note,

participants felt that physical proximity and accessibility would enable them to re-engage in preferred activities.

Discussion

This is the first study to identify the occupational patterns of community-dwelling older adults in Singapore. The use of a mixed-method design enabled thorough exploration of the phenomena of interest with mutually informing findings based on both quantitative and qualitative findings. According to the population data for Singapore in 2018 (Department of Statistics Singapore, 2020) there were more females (54.7%) than males aged above 65. As we had more female participants (70.5%), the gender distribution for this study is skewed. However, other demographics, including housing type, living arrangements, self-reported chronic diseases, and independence in self-care, are in tandem with national data (International Longevity Centre Singapore, 2014; Linton et al, 2018). Although all participants were ethnically Chinese, this overrepresentation also corresponds to national data, as ethnic Chinese constitute a significant majority (87.5%) of older adults (Department of Statistics Singapore, 2020). Therefore, findings from our study might be indicative of the majority of the older population in Singapore. Findings show that older people who were married participated in more activities, and activity participation decreases with age. These corresponded with previous studies (Milanović et al., 2013; Pettee et al., 2006). We also found that women participated in more activities than men, particularly in instrumental and low demand leisure activities. However, gender did not influence other aspects of occupational engagement. Nevertheless, considering the predominantly female population in our study, gender specific analysis may be skewed.

Among the ACS-SG subtypes, older adults engaged in more instrumental activities. This finding is not novel, as previous studies have identified that instrumental activities are central occupations regardless of cultural contexts (Eriksson et al., 2011). Nevertheless, it is worth noting that instrumental activities were not among the top preferred activities that were chosen by participants. Similarly, most ACS-SG cards that were not chosen by any participants as preferred activities were instrumental-type activities. A few who chose instrumental activities felt that these essential activities for sustenance have helped to facilitate occupational engagement. In other words, the facilitators relating to occupational engagement in instrumental activities primarily relate to their essentiality for ageing in place

(Edemekong, Bomgaars, & Levy, 2019). Based on quantitative findings, it was hardest for participants to choose preferred activities from those that they have never done, followed by those that were given up. This finding corresponds with the qualitative data, as most of the reported barriers relate to activities that were given up or have never done. Overall, perceived barriers and facilitators to engagement in preferred occupations manifested at multiple levels: individual, community, and national levels.

At an individual level, several barriers were identified. Reports of physical and cognitive difficulties may not strike as a surprise, since reduced functions are a part of the ageing trajectory (Nigam, Knight, Bhattacharya, & Bayer, 2012). Older adults reported a lack of confidence to engage in activities that they have given up and never done, and further cited concerns about falling or injuring themselves. This perception appeared to be accentuated by their social influences, who also emphasized the importance on ensuring their physical safety. Although such concerns are entirely relevant and imperative to avoid the consequences of falls, which at times might be severe, it is also imperative to question how enabling or debilitating such perceptions may be. Past studies have reported activity restriction due to fears of falling (Choi & Ko, 2015; Fucahori, Lopes, Correia, Silva, & Trelha, 2014), and disengagement can have repercussions on other aspects of older adults' wellbeing. Therefore, it is important for clinicians to consider how to strike a balance; to ensure physical safety while still advocating for occupational engagement, and to empower older adults to take weighted decisions.

Perceived facilitators largely correspond with reported barriers. Participants felt that having the necessary knowledge and skills equipped them with confidence to engage in their preferred occupation. They valued positive emotions that were derived through engagement and were driven by the perceived health benefits of occupations. Participants also perceived time as a resource. They perceived that their capacities would decline with age, and that want to make the best of their time while they are still healthy and able. Overall, these findings reflect an intrinsic motivation to play an active role in self-management to improve their health, as well active efforts to assume control over their personal circumstances involving their reported barriers. This suggests that participants held positive self-perceptions about ageing which, as previous studies suggested, could improve

health, and ameliorate the negative effect of age-related functional decline (Bandura, 1997; Marino, Sirey, Raue, & Alexopoulos, 2008).

At a community level, participants felt that the absence of companionship and the lack of support from their social circle impeded engagement. They also reported issues relating to community accessibility and distance. Perceived facilitators generally corresponded with barriers. The presence of companionship and support from their social circle were enablers for engagement in activities that they were doing. Furthermore, they perceived the importance of using occupations as means to shape and maintain familial cohesion. This appears to be a culturally unique facilitator, as familial ideologies are embodied as a cultural value especially among older adults in Singapore. Family networks serve as a fundamental social network that can exert both positive and negative influences on the well-being of older individuals (Thang, 2015). However, this context may evolve with an up-trending proportion of older adults living alone (Linton, Gubhaju, & Chan, 2018). Therefore, it is worth considering how to support older adults to expand their social networks beyond the familial context.

Next, participants also reported that they would be more encouraged to engage in preferred activities if these activities were organised for them by activity centres. This suggests that participants were aware of existing community resources, which may relate to their area of residence. The majority live in an estate which has the one of the highest percentage of older people among housing estates in Singapore, and a corresponding large number of facilities and services catered to older people (Chong, Yow, Loo, & Patricia, 2015). An awareness of such services is a fundamental step to service utilisation to maximise occupational engagement (Tang & Pickard, 2008). However, awareness alone cannot predict service use (Tang & Pickard, 2008). Therefore, active steps have to be taken to enable older adults to leverage on these resources. Older adults have raised concerns that such centres do not sufficiently consider their interests and abilities (Wong, Lee, James, & Jancey, 2019), which highlights the essentiality of community services to ensure that organised activities are meaningful and valued by older people. Our findings regarding the list of top preferred activities may therefore serve as useful considerations for clinicians and service providers when planning programs or collective activities. Furthermore, participants also shared that they hoped to be invited to participate, in contrast to taking a proactive

approach to seek engagement. This appears to address their perceived barrier of reduced confidence, especially to engage in preferred activities that they have given up or never done. Therefore, service providers may have to consider active outreach, particularly towards those who are more vulnerable to occupational deprivation. Finally, participants felt that having the financial capacity to engage in preferred occupations would enable engagement in preferred occupations that were given up, or those they had interest in but have never done. Ng, Teo, Maulod, and Ting (2019) found that older adults perceived the budget to engage in valued activities, beyond those necessary for subsistence, as basic needs. Our participants resonated these thoughts and hoped that engagement in preferred occupations would not incur additional costs. Nevertheless, due to the exploratory nature of this study, we did not collect quantitative data in this area.

Based on these findings, efforts may be made at multiple levels to support the community-dwelling older adults to engage in their preferred occupations. First, clinicians may consider identifying participants who may be at risk of reduced occupational engagement, based on their demographics. At an individual level, clinicians can empower older adults to adopt an active approach to occupational engagement through advocacy about the benefits and value of occupational engagement. At a community level, clinicians and service providers can take a more proactive approach to reach out to older adults, to increase their awareness of the available services. Organized activities should cater to collective interests, to ensure that they are meaningful and valued by older people. At a national level, more considerations can be made to ensure that older adults receive financial support to engage in their preferred occupations to support healthy aging.

Limitations

Limitations include participant selection bias, which was minimized through a systematic approach of telephone recruitment. Due to the language proficiency of data collectors, only English and/or Mandarin speaking participants were included. As such, participants from other ethnic groups may have been missed out. Since all participants were ethnic Chinese; results cannot be reflective of other ethnic groups. A significant limitation is the qualitative data collection method. Due to time and logistical restrictions, qualitative interviews were not audio-recorded. Instead, interviews were recorded through physical note-taking which cannot be reencountered. Therefore, there could be potential interviewer bias, as well as

potential loss of data. Finally, occupational engagement was measured solely based on the number activity cards chosen on ACS-SG.

Conclusion

This study has contributed to the understanding of the patterns of occupations engagement among community-dwelling older people in Singapore, including an understanding of their engagement, preferences, and perceived barriers and facilitators to engagement. Findings suggest that although most engage in instrumental activities, most preferred social and leisure type activities. Barriers and facilitators to occupational engagement were identified. These findings can support clinicians and service providers to better advocate for and facilitate occupational engagement at the individual, community and national levels.

Key Findings

- Instrumental activities were most participated in, however older adults preferred social and leisure type activities
- The top preferred activities by older adults in Singapore include practicing Taichi/Qigong, traveling, flowers arrangement, going to places of worship, singing karaoke, and going to the cemetery
- Perceived barriers and facilitators to occupational engagement manifested at multiple levels

What the study has added

This mixed method study has contributed to the understanding of the patterns of occupations engagement among community-dwelling older people in Singapore, including an understanding of their engagement, preferences, as well as perceived barriers and facilitators to engagement.

References

- Ang, S. (2018). Social participation and mortality among older adults in Singapore: does ethnicity explain gender differences? *The Journals of Gerontology: Series B*, 73(8), 1470-1479.
- Bandura, A. (1997). Self-efficacy: The exercise of control. In: New York: Freeman.
- Baum, C. M., & Edwards, D. F. (2001). *Activity Card Sort (ACS): Test manual*. St. Louis, MO: Penultima Press.
- CAOT. (2011). *CAOT position statement: Occupational therapy and older adults (2011)*. Retrieved from <https://www.caot.ca/document/3708/O%20-%20OT%20and%20Older%20Adults.pdf>
- Chiao, C., Weng, L.-J., & Botticello, A. L. (2011). Social participation reduces depressive symptoms among older adults: an 18-year longitudinal analysis in Taiwan. *BMC public health*, 11(1), 292.
- Choi, K., & Ko, Y. (2015). Characteristics Associated With Fear of Falling and Activity Restriction in South Korean Older Adults. *Journal of Aging and Health*, 27(6), 1066-1083. doi:10.1177/0898264315573519
- Chong, K. H., Yow, W. Q., Loo, D., & Patricia, F. (2015). Psychosocial well-being of the elderly and their perception of matured estate in Singapore. *Journal of Housing for the Elderly*, 29(3), 259-297.
- Christiansen, C., Baum, C. M., & Bass-Haugen, J. (2005). *Occupational therapy: Performance, participation, and well-being*: Slack Thorofare, NJ.
- Conroy, R. (2016). The RCSI sample size handbook: A rough guide. 2016. Retrieved from <https://www.beaumontethics.ie/docs/application/samplesizecalculation.pdf>
- COTEC. (2010). *Occupational therapists' contribution to active ageing, health and well being in the older population: A statement from the council of occupational therapists for the European countries (COTEC)*. Retrieved from <https://coteceurope.eu/COTEC%20Docs/Publications/COTEC%20Political%20statement%20OT%20Contribution%20to%20active%20ageing%e2%80%a6.pdf>
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*: Sage publications.
- Department of Statistics Singapore. (2016). *Population trends, 2016*. Retrieved from Singapore: [http://www.singstat.gov.sg/docs/default-source/default-document-library/publications/publications and papers/population and population structure/population2016.pdf](http://www.singstat.gov.sg/docs/default-source/default-document-library/publications/publications%20and%20papers/population%20and%20population%20structure/population2016.pdf)
- Department of Statistics Singapore. (2020). Elderly, youth and gender profile. Retrieved from <https://www.singstat.gov.sg/find-data/search-by-theme/population/elderly-youth-and-gender-profile/latest-data>
- Edemekong, P. F., Bomgaars, D. L., & Levy, S. B. (2019). *Activities of Daily Living (ADLs)*: StatPearls Publishing, Treasure Island (FL).
- Eriksson, G. M., Chung, J. C., Beng, L. H., Hartman-Maeir, A., Yoo, E., Orellano, E. M., . . . Baum, C. M. (2011). Occupations of older adults: a cross cultural description. *OTJR: Occupation, Participation and Health* 31(4), 182-192.
- Fisher, A. G. (2013). Occupation-centred, occupation-based, occupation-focused: Same, same or different? *Scandinavian Journal of Occupational Therapy*, 20(3), 162-173.
- Fricke, J., & Unsworth, C. (2001). Time use and importance of instrumental activities of daily living. *Australian Occupational Therapy Journal*, 48(3), 118-131. doi:10.1046/j.0045-0766.2001.00246.x
- Fucahori, F. S., Lopes, A. R., Correia, J. J. A., Silva, C. K. d., & Trelha, C. S. (2014). Fear of falling and activity restriction {in older adults from the urban community of Londrina: a cross-sectional study. *Fisioterapia em Movimento*, 27(3), 379-387.

- Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative health research, 15*(9), 1277-1288.
- International Longevity Centre. (2014). *A profile of older men and women in Singapore 2014*. Retrieved from <https://tsaofoundation.org/doc/A%20profile%20of%20older%20men%20and%20women%20in%20singapore%202014.pdf>
- Johnson, R. B., & Christensen, L. (2019). *Educational research: Quantitative, qualitative, and mixed approaches*: SAGE Publications, Incorporated.
- Krishnasamy, C., Unsworth, C., & Howie, L. (2011). The patterns of activity, and transport to activities among older adults in Singapore. *Hong Kong Journal of Occupational Therapy, 21*(2), 80-87.
- Lim, H. B., Tan, H. L., Hobman, J., & Cheng, M. I. I. (2018). *Activity Card Sort (Singapore Version) ACS-SG. Test manual*. Singapore: Nanyang Polytechnic, School of Health Sciences, Singapore.
- Linton, E., Gubhaju, B., & Chan, A. (2018). *Home alone: Older adults in Singapore*. Retrieved from Centre for Ageing Research and Education (CARE):
- Marino, P., Sirey, J. A., Raue, P. J., & Alexopoulos, G. S. (2008). Impact of social support and self-efficacy on functioning in depressed older adults with chronic obstructive pulmonary disease. *International Journal of Chronic Obstructive Pulmonary Disease, 3*(4), 713.
- McKenna, K., Broome, K., & Liddle, J. (2007). What older people do: Time use and exploring the link between role participation and life satisfaction in people aged 65 years and over. *Australian Occupational Therapy Journal, 54*(4), 273-284.
- Milanović, Z., Pantelić, S., Trajković, N., Sporiš, G., Kostić, R., & James, N. (2013). Age-related decrease in physical activity and functional fitness among elderly men and women. *Clinical Interventions in Aging, 8*, 549.
- Ministry of Health Singapore. (2018). *Chronic Disease Management Programme: Handbook for Healthcare Professionals*. In. Retrieved from <https://www.moh.gov.sg/docs/librariesprovider4/guidelines/cdmp-handbook-for-professionals.pdf>
- Ng, K. H., Teo, Y. Y. N., Yu Wei, Maulod, A., & Ting, Y. T. (2019). *What older people need in Singapore: a household budgets study*. Retrieved from ScholarBank@NUS Repository: <https://scholarbank.nus.edu.sg/handle/10635/157643>
- Nigam, Y., Knight, J., Bhattacharya, S., & Bayer, A. (2012). Physiological changes associated with aging and immobility. *Journal of Aging Research*.
- Nilsson, I., Bernspång, B., Fisher, A. G., Gustafson, Y., & Löfgren, B. (2007). Occupational engagement and life satisfaction in the oldest-old: The Umeå 85+ study. *OTJR: Occupation, Participation and Health, 27*(4), 131-139. doi:10.1177/153944920702700403
- Nilsson, I., Blanchard, M., & Wicks, A. (2015). Occupational engagement among community dwelling older people: A time-geographic perspective. *Health promotion international, 30*(3), 484-494.
- Pettee, K., Brach, J., Kriska, A., Boudreau, R., Richardson, C., Colbert, L., . . . Exercise. (2006). Influence of marital status on physical activity levels among older adults. *Medicine & Science in Sports & Exercise, 38*(3), 541-546.
- Punch, K. F. (2013). *Introduction to social research: Quantitative and qualitative approaches*: sage.
- Sala, G., Jopp, D., Gobet, F., Ogawa, M., Ishioka, Y., Masui, Y., . . . Ishizaki, T. (2019). The impact of leisure activities on older adults' cognitive function, physical function, and mental health. *Plos One, 14*(11).
- Sanjek, R. (1990). On ethnographic validity. *Fieldnotes: The makings of anthropology, 385-418*.
- Schreier, M. (2012). *Qualitative content analysis in practice*: Sage publications.
- Tang, F., & Pickard, J. G. (2008). Aging in place or relocation: Perceived awareness of community-based long-term care and services. *Journal of Housing for the Elderly*

- 22(4), 404-422.
- Tesch, R. (2013). *Qualitative research: Analysis types and software*: Routledge.
- Thang, L. L. (2015). Social networks and the wellbeing of older adults in Singapore. In *Successful aging* (pp. 147-163): Springer.
- Tomioka, K., Kurumatani, N., & Hosoi, H. (2018). Social participation and cognitive decline among community-dwelling older adults: a community-based longitudinal study. *The Journals of Gerontology: Series B*, 73(5), 799-806.
- Tuntland, H., Kjeker, I., Folkestad, B., Førlund, O., & Langeland, E. (2019). Everyday occupations prioritised by older adults participating in reablement. A cross-sectional study. *Scandinavian Journal of Occupational Therapy*, 27(4), 248-258.
- United Nations Department of Economic and Social Affairs. (2017). *World Population Prospects: The 2017 Revision*. Retrieved from https://population.un.org/wpp/Publications/Files/WPP2017_DataBooklet.pdf
- Vik, K., & Eide, A. H. (2014). Evaluation of Participation in Occupations of Older Adults Receiving Home-Based Services. *British Journal of Occupational Therapy*, 77(3), 139-146. doi:10.4276/030802214X13941036266540
- Whiteford, G. E., & Wilcock, A. A. (2000). Cultural relativism: Occupation and independence reconsidered. *Canadian Journal of Occupational Therapy*, 67(5), 324-336.
- Wisdom, J., & Creswell, J. W. (2013). Mixed methods: integrating quantitative and qualitative data collection and analysis while studying patient-centered medical home models. *Rockville: Agency for Healthcare Research and Quality*.
- Wong, E. Y.-S., Lee, A. H., James, A. P., & Jancey, J. (2019). Recreational Centres' Facilities and Activities to Support Healthy Ageing in Singapore. *International Journal of Environmental Research and Public Health* 16(18), 3343.
- Yang, S., Shek, M. P., Tsunaka, M., & Lim, H. B. (2006). Cultural influences on occupational therapy practice in Singapore: a pilot study. *Occupational Therapy International*, 13(3), 176-192.