Cross Cultural Cohort Studies May Improve Understanding of Contributory Factors to Ageing Well

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Abstract

Objective: Comparative studies of ageing well using a biopsychosocial model among populations of disparate cultures and ethnicity could provide better understanding of factors contributing to ageing well. We compared characteristics of Hong Kong Chinese people born in 1921 with people born in the same year in Newcastle, UK, using available published data from the Newcastle Study.

Results: Compared with the UK cohort, Hong Kong elderly had more informal social support, in that fewer people lived alone and the ratio of married to widowed persons was higher. There were fewer ex-smokers, lower prevalence of overweight and obesity, lower prevalence of all compared chronic diseases with the exception of dementia, fewer falls in the past 12 months, and more people reporting independence in all activities of daily living. However more Hong Kong people rated their health as fair only, and the prevalence of mild cognitive impairment was higher.

Conclusion: The finding of lower prevalence of people rating their health as good in Hong Kong in spite of lower prevalence of chronic diseases, falls and dependency may be an indicator of lack of self-confidence in taking charge of their own health, perhaps a reflection of lower health literacy regarding ageing issues and the way the health system is structured. In depth cross cultural comparisons including longitudinal component would be of interest in determining the relative importance of the diverse contributory factors to ageing well.

Keywords: Healthy ageing; Cognitive impairment; Dependency; Self-rated health; Geriatric syndromes

Introduction

World-wide populations are ageing and accompanying these increases in life expectancy is the goal of ageing well. While there is no consensus regarding suitable population indicators of ageing well, outcome variables common to comprehensive geriatric assessment are usually collected in surveys as indicators. For example the UK Newcastle 85+ healthy ageing study collected information covering biological, clinical and psychosocial factors [1,2], with an emphasis not only on disease prevalence, but included detailed assessment of capability, dependency and cognitive dysfunction [3].

World-wide variations in life expectancy, diseases, and disability life-adjusted years have been compiled based on available statistics provided by individual countries, but do not include outcome variables for the very old [4]. In depth comparative studies of ageing well using a biopsychosocial model could provide better understanding of factors contributing to ageing well, providing useful data to inform government policies. Such initiatives have started within European Countries (SHARE-Survey, 2013) [5]. However there are few studies comparing populations of widely disparate cultures and ethnicity, such as between Caucasians and Asians. Such comparisons would provide information regarding the impact of personal factors (genetic, life course, lifestyle, psychosocial and socioeconomic), environmental factors (living environment, climate, pollution etc.), and arrangement of health and social care services on ageing well.

Ideally comparisons could be done between cohort sequential studies in different cultures, to take into account longitudinal changes. Nevertheless a preliminary comparison of cross-sectional data may be of interest. The Hong Kong population has the longest life expectancy in the world but there is uncertainty regarding whether they are ageing well. To investigate differences in multiple aspects of ageing well among older adults in Hong Kong and the UK, we compared characteristics of Hong Kong Chinese people born in 1921 with people born in the same year in Newcastle, UK, making use of available published data from the Newcastle Study.

Methods

Data from participants born in 1921 were extracted from the Mr. and Ms. Os (Hong Kong) study. The cohort study was established in 2001 to examine bone health, and consisted of 2,000 men and 2,000 women aged 65 years and older living in the community [6]. Participants responded to a territory-wide invitation for a health check at the research site. Those who were ambulant and living at home were included in the cohort. Those with terminal illness were excluded. The cohort was a stratified sample consisting of approximately 33% of people aged 65-69, 70-74, and 75 and older.

For comparison, data from subjects born in 1921 who participated in the baseline assessment for the Mr. and Ms. Os (Hong Kong) study (n=72) were used. Prevalence data of the elderly population in Newcastle, UK was based on the available publications from the Newcastle Study [2,3]. Variables used in the analyses include socio-demographics data, smoking status, body mass index and a number of

chronic diseases/conditions such as cardiovascular diseases, musculoskeletal diseases, eye diseases, cancer, chronic obstructive pulmonary disease, endocrine, neurological and psychiatric problems. Geriatric syndromes (falls and depression), cognitive impairment, dependency and self-rated health between the two populations were also compared. Presented data from the Hong Kong study were mostly self-reported. Exceptions were body mass index, depression and cognitive impairment, which were assessed using standardized protocols or scales. Depressive symptoms were assessed using the geriatric depression scale (GDS) [7], which has been validated in elderly Chinese adults, with a score of 8 or greater representing depressive symptoms [8]. Cognitive impairment was assessed using the cognitive screening instrument for dementia (CSID), with a cutoff of 28.4 [9], and the mini-mental state examination (MMSE) [10]. The comparisons do not constitute a separate test but are presented for heuristic purposes. Prevalence rate and the corresponding 95% confidence intervals (95% CI) were calculated for each variable in the Hong Kong study and these 95% CI were compared with the prevalence rate and 95% CI for subjects in the Newcastle study. Differences between prevalence rates were considered significant if the 95% CI did not overlap.

Results

Prevalence rates of characteristics of Hong Kong older adults born in 1921 with people born in the same year in Newcastle, UK by sex are provided in Table 1. Compared with the UK cohort, Hong Kong elderly had more informal social support, in that fewer people lived alone and the ratio of married to widowed persons was higher. There were fewer ex-smokers, lower prevalence of overweight and obesity, lower prevalence of all compared chronic diseases with the exception of dementia, fewer falls in the past 12 months, and more people reporting independence in all activities of daily living. However more Hong Kong people rated their health as fair only, and the prevalence of mild cognitive impairment was higher.

Variables	Mr. and Ms. Os (Hong Kong) study (n=72)				Newcastle 85 + cohort study (n=853/1030*)			
	All	Women	Men	95% CI	All	Women	Men	95% CI
Men	38 (52.8)	--	--	--	323 (37.9)	--	--	--
Women	34 (47.2)	--	--	--	530 (62.1)	--	--	--
Sociodemgraphic data, smoking status and body mass index								
Living arrangements								
Alone**	13 (18.1)	9 (26.5)	4 (10.5)	9.2-27.0	465 (61.0)	338 (73.3)	127 (42.2)	57.5-64.5
With spouse or others**	59 (81.9)	25 (73.5)	34 (89.5)	73.0-90.8	297 (39.0)	123 (26.7)	174 (57.8)	35.7-42.3
Marital status								
Widowed**	29 (40.3)	24 (70.6)	5 (13.2)	29.0-51.6	500 (59.0)	371 (70.4)	129 (40.2)	55.7-62.3
Married**	39 (54.2)	9 (26.5)	30 (78.9)	42.7-65.7	254 (30.0)	86 (16.3)	168 (52.3)	26.9-33.1
Single, never married	3 (4.2)	0 (0)	3 (7.9)	-0.4-8.8	70 (8.3)	52 (9.9)	18 (5.6)	6.4-10.2
Divorced or separated	1 (1.4)	1 (2.9)	0 (0)	-1.3-4.1	24 (2.8)	18 (3.4)	6 (1.9)	1.7-3.9
Smoking status								
Current smoker	7 (9.7)	1 (2.9)	6 (15.8)	2.9-16.5	49 (5.8)	34 (6.5)	15 (4.7)	4.2-7.4
Former smoker**	31 (43.1)	6 (17.6)	25 (65.8)	31.7-54.5	495 (58.5)	272 (51.6)	223 (69.7)	55.2-61.8
Never smoker	34 (47.2)	27 (79.4)	7 (18.4)	35.7-58.7	303 (35.8)	221 (41.9)	82 (25.6)	32.6-39.0
Body mass index (kg/m2)								
Underweight (<18.50)	7 (9.7)	4 (11.8)	3 (7.9)	2.9-16.5	48 (6.4)	35 (7.8)	13 (4.4)	4.8-8.0
Normal weight (18.50-24.99)**	48 (66.7)	20 (58.8)	28 (73.7)	55.8-77.6	383 (51.3)	230 (51.2)	153 (51.3)	47.7-54.9
Overweight (25.00-29.99)	15 (20.8)	8 (23.5)	7 (18.4)	11.4-30.2	243 (32.5)	136 (30.3)	107 (35.9)	29.1-35.8
Obese (≥30.00)**	2 (2.8)	2 (5.9)	0 (0)	-1.0-6.6	73 (9.8)	48 (10.7)	25 (8.4)	7.7-11.9
Diseases								
Cardiovascular								
Hypertension (self-reported)	34 (47.2)	17 (50.0)	17 (44.7)	35.7-58.7	592 (57.5)	397 (60.1)	195 (52.9)	54.5-60.5

Stroke**	5 (6.9)	2 (5.9)	3 (7.9)	1.0-12.8	207 (20.1)	116 (17.6)	91 (24.7)	17.7-22.5
Musculoskeletal								
Osteoarthritis/degenerative arthritis**	5 (6.9)	3 (8.8)	2 (5.3)	1.0-12.8	534 (51.8)	377 (57.0)	157 (42.6)	48.7-54.9
Rheumatoid arthritis	1 (1.4)	0 (0)	1 (2.6)	-1.3-4.1	36 (3.5)	34 (5.1)	2 (0.5)	2.4-4.6
Osteoporosis**	4 (5.6)	2 (5.9)	2 (5.3)	0.3-10.9	146 (14.2)	132 (20.0)	14 (3.8)	12.1-16.3
Eye								
Cataract	38 (52.8)	18 (52.9)	20 (52.6)	41.3-64.3	483 (46.9)	341 (51.6)	142 (38.5)	43.9-49.9
Glaucoma	5 (6.9)	3 (8.8)	2 (5.3)	1.0-12.8	89 (8.6)	59 (8.9)	30 (8.1)	6.9-10.3
Cancer								
Any cancer**	5 (6.9)	2 (5.9)	3 (7.9)	1.0-12.8	246 (23.9)	131 (19.8)	115 (31.2)	21.3-26.5
Respiratory								
Chronic obstructive pulmonary disease	7 (9.7)	3 (8.8)	4 (10.5)	2.9-16.5	170 (16.5)	96 (14.5)	74 (20.1)	14.2-18.8
Endocrine								
Diabetes	8 (11.1)	6 (17.6)	2 (5.3)	3.8-18.4	135 (13.1)	80 (12.1)	55 (14.9)	11.1-15.2
Hypothyroid**	2 (2.8)	1 (2.9)	1 (2.6)	-1.0-6.6	124 (12.0)	104 (15.7)	20 (5.4)	10.0-14.0
Hyperthyroid	1 (1.4)	1 (2.9)	0 (0)	-1.3-4.1	29 (2.8)	27 (4.1)	2 (0.5)	1.8-3.8
Neurological and psychiatric								
Dementia (HK: CSID ≤ 28.3vs. Newcastle: record review)**	19 (26.4)	14 (41.2)	5 (13.2)	16.2-36.6	86 (8.4)	60 (9.1)	26 (7.1)	6.7-10.1
Parkinson's disease	0 (0)	0 (0)	0 (0)	--	15 (1.5)	8 (1.2)	7 (1.9)	0.8-2.2
Geriatric syndromes, impairments, dependency and self-rated health								
Self-reported falls in past 12 months**	12 (16.7)	5 (14.7)	7 (18.4)	8.1-25.3	312 (38.3)	193 (38.2)	119 (38.4)	35.0-41.6
Depression (GDS-15 score)								
None (0-5)	53 (73.6)	24 (70.6)	29 (76.3)	63.4-83.8	601 (79.1)	356 (76.4)	245 (83.3)	76.2-82.0
Mild or moderate (6-7)	6 (8.3)	2 (5.9)	4 (10.5)	1.9-14.7	94 (12.4)	66 (14.2)	28 (9.5)	10.1-14.7
Severe (8-15)	13 (18.1)	8 (23.5)	5 (13.2)	9.2-27.0	65 (8.6)	44 (9.4)	21 (7.1)	6.6-10.6
Cognitive impairment (MMSE score)								
Normal (26-30)**	35 (48.6)	9 (26.5)	26 (68.4)	37.1-60.1	602 (73.1)	372 (73.1)	230 (73.0)	70.1-76.1
Mild (22-25)**	24 (33.3)	15 (44.1)	9 (23.7)	22.4-44.2	126 (15.3)	71 (14.0)	55 (17.5)	12.8-17.8
Moderate (18-21)	8 (11.1)	5 (14.7)	3 (7.9)	3.8-18.4	42 (5.1)	33 (6.5)	9 (2.9)	3.6-6.6
Severe (0-17)	5 (6.9)	5 (14.7)	0 (0)	1.0-12.8	54 (6.6)	33 (6.5)	21 (6.7)	4.9-8.3
Independence in all activities of daily living (HK:IADL score*** vs. Newcastle: ADL score)								
No (0)**	48 (66.7)	20 (58.8)	28 (73.7)	55.8-77.6	165 (20.0)	--	--	17.3-22.7
Yes (≥1)**	24 (33.3)	14 (41.2)	10 (26.3)	22.4-44.2	676 (80.0)	--	--	77.3-82.7
Self-rated health (compared to others of same age)								
Excellent	9 (12.5)	1 (2.9)	8 (21.1)	4.9-20.1	86 (10.3)	49 (9.5)	37 (11.7)	8.3-12.3
Very good	--	--	--	--	247 (29.7)	145 (28.1)	102 (32.3)	26.6-32.8

Good	28 (38.9)	15 (44.1)	13 (34.2)	27.6-50.2	313 (37.6)	197 (38.2)	116 (36.7)	34.3-40.9
Fair**	31 (43.1)	15 (44.1)	16 (42.1)	31.7-54.5	157 (18.9)	104 (20.2)	53 (16.8)	16.2-21.6
Poor	3 (4.2)	2 (5.9)	1 (2.6)	-0.4-8.8	29 (3.5)	21 (4.1)	8 (2.5)	2.3-4.7
Very poor	1 (1.4)	1 (2.9)	0 (0)	-1.3-4.1	--	--	--	--

CSID=community screening instrument for dementia; GDS=geriatric depression scale; MMSE=mini-mental state examination; IADL = Instrumental activities of daily living. HK=Hong Kong; Values are numbers (percentages) unless stated otherwise. Data from the Mr. and Ms. Os (Hong Kong) study were self-reported based on questionnaire interview/from health assessment. Data from the Newcastle study were from general practice record review/health assessment. *Data from record review in the Newcastle study are reported on a maximum of 1,030 and from health assessment on a maximum of 853. **Significant difference between the Mr. and Ms. Os (Hong Kong) study and the Newcastle 85+ cohort study (i.e., non-overlapping 95% CI). ***No. of activities patient cannot do (walking 2-3 blocks outside on level ground, climbing up 10 steps without resting, preparing your own meals, doing heavy housework like scrubbing floors or washing windows, doing your own shopping for groceries or clothes).

Table 1: Sociodemgraphic data, smoking status, body mass index, diseases, geriatric syndromes, impairments, dependency and self-rated health of elderly people born in 1921, by sex.

Discussion

While the sampling methods between the two cohorts are not directly comparable, in that 10% of the Newcastle cohort resided in care homes while the Hong Kong group lived in the community and responded to a call for health check, possibly introducing a bias towards more diseases and dependency in the UK cohort, the finding of poorer self-rated health and higher prevalence of cognitive impairment among the Hong Kong cohort suggests that there are real differences that likely reflect a complex interplay between life course (both cohorts experienced the two world wars), psychosocial factors, and differences in primary care provision (predominantly self-paying in Hong Kong). In particular the unexpected finding of lower prevalence of people rating their health as good in Hong Kong in spite of lower prevalence of chronic diseases, falls and dependency may be an indicator of lack of self-confidence in taking charge of their own health [11], perhaps a reflection of lower health literacy regarding ageing issues and the way the health system is structured. Poor health literacy is known to create burden in individuals and health care systems [12]. Therefore, strategies to tackle the challenge of chronic diseases through promoting patient empowerment are needed. Previously we have evaluated a chronic disease self-management programme (CDSMP) for older adults in Hong Kong. Our findings suggested that CDSMP may improve self-management behaviors, self-efficacy and health status among older adults with chronic diseases [13]. Other disease and care management models (e.g., the introduction of 'care managers' as a bridge between the general practitioners, the patient and other medical specialists in the setting of clinical practice) have been also been evaluated with positive results [14,15].

Our study has some limitations. There is no source of individual level data that would allow us to compare the factors contributing to ageing well; therefore we used aggregated data to examine the issue in both regions. Furthermore, the two cohorts differ on several dimensions, most notably sample size and the sampling method. These differences need to be considered in interpreting findings. Nevertheless, because most previous comparatives studies on ageing well have been conducted within Caucasians, our study allows a preliminary assessment of the level of contributory factors to ageing well across Caucasians and Asians. In depth cross cultural comparisons including longitudinal component would be of interest in determining the relative importance of the diverse contributory factors to ageing well.

Conflict of Interest

The authors report no conflicts of interest in the writing of this manuscript.

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