The association between frailty and quality of life among community-dwelling older adults in rural Sri Lanka

Dhammika Deepani Siriwardhana[1,2], Kate Walters[1], Manuj Chrishantha Weerasinghe[3], Greta Rait[1], Sarah Hardoon[1]

[1] Research Department of Primary Care and Population Health, University College London, Rowland Hill Street, London, NW3 2PF, UK
[2] Department of Disability Studies, Faculty of Medicine, University of Kelaniya, P.O. Box 6, Thalagolla Road, Ragama, 11010, Sri Lanka
[3] Department of Community Medicine, Faculty of Medicine, University of Colombo, No. 25, Kynsey Road, Colombo 08, Sri Lanka

Introduction

Frailty is an important clinical condition of older age characterized by decreased physiological reserves in multiple physiologic systems. The prevalence of frailty is increasing with the age. Therefore, quality of life (QoL) of frail older adults has become an important concern with increased longevity. Sri Lanka is a multi-ethnic country which has a deeply rooted culture of caring older adults. Currently, there are no published studies on frailty and QoL from Sri Lanka or other South-East Asian countries.

Objective

To estimate the association of frailty with overall quality of life after adjusting for socio-demographic and health related covariates in community-dwelling older adults in rural Sri Lanka.

Methods

Study design: Population based cross-sectional study.

Study population: Community-dwelling older adults aged ≥60 years residing in rural a district of Sri Lanka. We excluded those unable to give informed consent including people with severe dual hearing and vision impairment, aphasia, severe stages of dementia, those with unstable severe mental illnesses and those who are terminally ill.

Sample size: 746 participants.

Sampling design: A three stage probability sampling.

Assessment of frailty: Fried phenotype comprising five components; shrinking, self-reported exhaustion, weakness, slowness and low physical activity level.

Assessment of quality of life: Older people's quality of life questionnaire.

Covariates: Socio-demographic covariates included sex, age at last birth day, ethnicity, marital status, living arrangements, social support, education level, longest-held occupation and subjective financial strain. Health related covariates included multimorbidity, chronic pain, cognitive impairment, self-perceived vision and hearing impairment.

Data collection: Five trained nursing graduates collected data from the entire sample.

Statistical analyses: Descriptive statistics and linear regression. All statistical analyses were performed in Stata version 15 accounting for the complex sampling design.

Ethical considerations: The ethical clearance for this study was obtained from two ethics review committees at University College London (Project ID: 8155/001) and Faculty of Medicine, University of Colombo, Sri Lanka (Protocol No. EC-16-071).

Results

The median (IQR) age of the sample was 68 (64: 75) years. The sample was 56.7% women and the majority (97.4%) were Sinhalese ethnicity and had lower secondary or above education level (71.3%).

According to the Fried phenotype of frailty, 15.2% (95% CI: 12.4%, 18.7%) were frail and 48.5% (95% CI: 43.9%, 53.2%) were pre-frail.

The unadjusted mean (SE) of the overall QoL score of frail, pre-frail and robust participants was, 115.7 (1.32), 128.3 (1.00) and 135 (0.64) respectively.

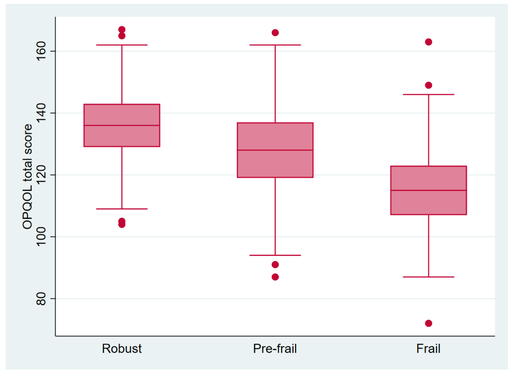

Figure 1. Distribution of overall quality of life score according to frailty status

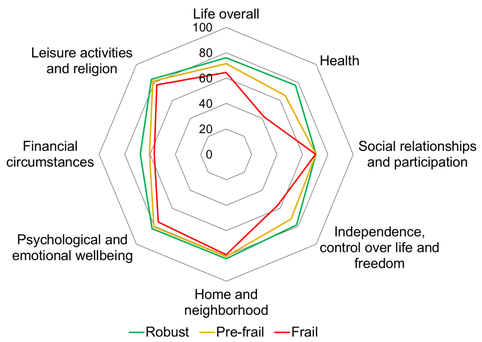

Figure 2. Domain specific standardized unadjusted mean scores by frailty status

After adjusting for socio-demographic and health related covariates in the final multivariable model, estimated differences in means were lower for both frail and pre-frail groups versus robust (Table 1).

The estimated reduction in the overall quality of life score was 7.6% for those frail and 2.2% for those pre-frail.

Table 1. Multivariable linear regression models: association between frailty, pre-frailty and overall quality of life

Model	Coefficient (95% CI)		R^2 (%)
	Pre-frailty	Frailty	
Model 1: Unadjusted	-7.4 (-9.9, -4.8)	-20.0 (-23.3, -16.7)	22.1
Model 2: Model 1+ age and sex	-6.9 (-9.4, -4.4)	-19.9 (-23.2, -16.6)	23.6
Model 3: Model 2+ longest-held occupation	-6.3 (-8.6, -3.9)	-18.1 (-21.8, -14.5)	29.0
Model 4: Model 3+ social support	-5.4 (-7.8, -2.9)	-16.4 (-20.1, -12.7)	34.9
Model 5: Model 4+ multimorbidity, chronic pain	-4.7 (-7.3, -2.2)	-15.1 (-18.6, -11.6)	37.4
Model 6: Model 5+ cognitive impairment	-4.0 (-6.4, -1.6)	-13.7 (-16.9, -10.4)	40.0
Model 7: Model 6+ self-perceived vision and hearing impairment	-3.8 (-6.3, -1.4)	-13.3 (-16.7, -10.0)	40.1

All domains apart from "social relationships and participation" and "home and neighbourhood" were associated with frailty.

Table 2. Domains of quality of life associated with frailty and pre-frailty

Domain of quality of life	Coefficient (95% CI) †		R^2 (%)
	Pre-frailty	Frailty	
Life overall	-0.45 (-0.97, 0.05)	**-1.44 (-2.20, -0.68)**	19.9
Health	**-1.42 (-1.99, -0.85)**	**-5.35 (-6.21, -4.49)**	49.0
Social relationships and participation	0.12 (-0.22, 0.46)	-0.01 (-0.58, 0.55)	4.8
Independence, control over life and freedom	**-0.65 (-1.15, -0.15)**	**-2.98 (-3.73, -2.24)**	39.7
Home and Neighborhood	-0.00 (-0.55, 0.56)	-0.16 (-0.86, 0.54)	11.3
Psychological and emotional wellbeing	-0.16 (-0.60, 0.27)	**-0.99 (-1.56, -0.42)**	14.3
Financial circumstances	**-0.83 (-1.50, -0.17)**	**-1.01 (-1.99, -0.03)**	25.0
Leisure activities and religion	-0.20 (-0.66, 0.26)	**-1.16 (-2.04, -0.28)**	9.9

†adjusted for sex, age group, longest held occupation, social support, multimorbidity, chronic pain, cognitive impairment, vision and hearing impairment.

Significant coefficients are displayed in bold.

Conclusions

Frailty was associated with a small but significant lower quality of life in this rural Sri Lankan population, which appears largely explained by health and independence. Interventions aiming to improve quality of life in frail older adults should consider targeting these aspects.

Ageing, Longevity and Health- New Frontiers and Perspectives, 2018 International Alliance of Research Universities (IARU) Ageing, Longevity and Health Scientific and Graduate Student Conference, 17-19 October

Acknowledgements: Commonwealth Scholarship Commission in the UK, Centre for Ageing Research and Education, Duke-NUS Medical School, Singapore

Contact details: deepani.siriwardhana.15@ucl.ac.uk; deepani_siriwardhana@kln.ac.lk