

# Frailty: A Multifactorial Association

Nagrale Amit Vinayak<sup>1</sup>, Jiandani Mariya Prakash<sup>2</sup>, Banerjee Alakananda<sup>3</sup>

<sup>1</sup>Ph.T, PhD Scholar, PT School and Centre, Seth G.S. Medical College, Mumbai

<sup>2</sup>MSc (PT), Associate Professor, Department of Cardiovascular and Respiratory Sciences Physiotherapy, PT School and Centre, Seth G.S. Medical College & KEMH, Mumbai

<sup>3</sup>BPT, Founder Chairperson, Dharma Foundation of India, New Delhi

Corresponding Author: Mariya P Jiandani

## ABSTRACT

**Background:** Ageing has been attributed as an universal and inevitable process for mankind. Frailty is commonly seen in elderly and has been associated with adverse health outcomes. There are a number of personal and contextual factors that may be associated with frailty. The association of these factors in Indian Context is not known.

**Objectives:** To explore the association of various lifestyle factors with frailty in community dwelling and institutionalised older persons

**Methods:** This was prospective, cross sectional descriptive study carried out in local community and old age homes in Miraj and Kupwad. Healthy aged older adults devoid of major chronic illness, in age group of 60 years and above (N=470, 382 Community dwelling, 88 Institutionalised older adults) were recruited. Sociodemographic characteristics and various lifestyle factors were recorded and its association with the frailty was established. The frailty status using FiND questionnaire was recorded.

**Results:** Significant association was observed between socio demographic factors, life style, mobility, comorbidity, cognition and depression at  $p < 0.05$ .

**Conclusion:** Early detection of predisposing factors associated with frailty is crucial for the achievement of health ageing.

**Key-words:** co-morbidity, Lifestyle factors, Frailty, cognition, depression, geriatric, elderly

## INTRODUCTION

With newer innovations and advanced technology, there has been a miraculous shift in the history of mankind as they are considerably achieving longevity. [1] A joint report by United Nations Population Fund and Help Age International revealed that India has around 100 million older adults and the number is expected to increase to 323 million by 2050, constituting 20 percent of the total population. [2]

Frailty represents most problematic expression of longevity and population ageing, emerging as substantial cause of social isolation for older adults. [3] Out of six countries, highest percentages of frailty is noted in India (55.5%), [4] and 26 %

community-based prevalence in Maharashtra. [5]

Since the factors related to frailty are not fully known, it is crucial to understand and formulate the necessary preventive measures. This hidden phenomenon can be readily prevented at primary care level, provided healthcare professionals are aware about the determinant factors for syndrome. Literature denotes that various physiological, socio-demographic, psychological, and nutritional factors may be involved in the origin of frailty, in addition to associated comorbidities. [6,7] Combined frailty and cognitive impairment rather appeared as major predictor of mortality among oldest old people Chinese people. [8-10] Poor physical activity and

depression have been studied independently as risk factors of frailty. [11,12]

Although these domains are examined independently in various studies for community dwelling and institutionalised older persons respectively [13,14], no combined evidence is available quoting the association of these factors with frailty among community dwelling and institutionalised older persons in India. Hence, we aimed to explore the association of various factors with frailty in community dwelling and institutionalised older persons.

### MATERIAL AND METHODS

This was a prospective cross-sectional descriptive study approved from institutional ethics committee of tertiary care hospital of one of metropolitan city of India. The trial was registered under clinical trial registry of India (CTRI) prospectively. This study took place at Miraj, and Kupwad, Maharashtra, India.

Estimated sample size using OpenEpi software was 470 assuming 95% confidence level, prevalence of frailty (*p*) as 26%, [5] and allowable error of 10%. Due to less number of old age homes in Miraj and Kupwad region, the samples were recruited from community settings and old age homes in ratio of 4:1. In which total 470 (382 community dwelling older adults and 88 old age home residents) were screened and interviewed

The participants were randomly allotted to one of the two groups, community dwelling and institutionalised using a block randomization method. The independent observer, not associated with recording of outcome measures carried out block randomization process using a computer generated (SAS Proc Plan, SAS Institute, Inc., Cary, NC) randomization list. Participants were assigned to one of the two group, community dwelling and institutionalised.

The inclusion criteria consisted of healthy aged older persons having no major chronic illness, aged 60 years and above, while we excluded the individuals those with bed ridden, severely ill, visual, auditory or cognitively impaired. Basic sociodemographic details and lifestyle pattern, mobility status using presence of active physical activity, existing comorbidities, cognition via Montreal cognitive assessment scale (MOCA) and extent of depression using geriatric depression scale (GDS) were measured. Frailty status was assessed using FiND questionnaire Cesari M, et al.

### Statistical analysis

Mean, standard deviation, standard error, and confidence interval were calculated for all measurements. Data analysis was performed with SPSS version 22.0. The value of *p*<0.05 was considered as statistically significant.

		Group		Total n (%)	Value	Df	P-Value	
		CD n (%)	IN n (%)					
Frailty status on FiND Questionnaire	Robust	170 (47.5)	17(19.3)	187 (42.5)	Pearson Chi-Square	52.354a	2	0.000
	Disabled	107 (26.5)	13(14.8)	120 (24.4)	Likelihood Ratio	49.717	2	0.000
					Linear-by-Linear Association	44.782	1	0.000
	Frail	105 (26)	58 (65.9)	163 (33.1)	Linear-by-Linear Association	44.782	1	0.000
Total		n=382	n=88	n=470	N of Valid Cases	470		

In an attempt to eliminate the expected bias occurring due to unequal sample size in both the groups, Chi square ( $\chi^2$ ) value using expected frequencies and percentages was calculated than observed frequencies in both the groups. For

confirming the association of potential sociodemographic factors, and lifestyle factors including lifestyle, comorbidity, mobility, cognition, and depression with the frailty status of community dwelling and institutionalised older persons, Pearson's  $\chi^2$

test, linear regression and likelihood ratio was considered. We neglected Odd's ratio for establishing the association with variable, since the data was qualitative in nature.

### RESULTS

Table 1 shows the proportion of individuals with various degrees of frailty. 65.9 % institutionalized elderly were frail as compared to 26% community dwelling older persons. 68.6 % of the participants belonging to both rural setting, and presently residing in old age homes were frailer than the 28.7 % of community dwelling rural older persons.

Table 2 shows the association of sociodemographic characteristic with frailty. Pearson  $\chi^2$  test revealed a strong association between age and frailty in community dwelling group at  $P < 0.05$ . Institutionalized females were categorized as more frail than the community dwelling individuals, no association was established among them. The marital status was found as contributory factor for frailty. It was significantly associated with community dwelling females than institutionalized at  $p < 0.05$ . Frailty was also observed in persons who were economically compromised and dependent on their family for livelihood.

**Table 2: Association of Socio-demographic characteristics with frailty in community dwelling (CD) and institutionalized(IN) elderly.**

	Characteristics	Frailty Status n (%)			Chi-Square	* P-Value	
		Robust	Disabled	Frail			
CD	Age(years)	60-65	80 (47.3)	45 (26.6)	44 (26)	38.387 <sup>a</sup>	0.000
		65-70	50 (42.4)	28 (23.7)	40 (33.9)		
		70-75	44 (69.8)	10 (15.9)	9 (14.3)		
		75-80	16 (50)	10 (31.3)	6 (18.8)		
		80-85	1 (5.9)	10 (58.8)	6 (35.3)		
		>85	1 (20)	4 (80)	0		
	Gender	Male	127 (57.2)	42 (18.9)	53 (23.9)	21.222 <sup>a</sup>	0.000
		Female	65 (35.7)	65 (35.7)	52 (28.6)		
	Marital Status	Unmarried	1 (100)	0	0	21.123 <sup>a</sup>	0.000
		Married	191 (50)	96 (25.1)	95 (24.9)		
		Widow	0	11(52.4)	10 (47.6)		
	Geographic status	Rural	68 (41.5)	49 (29.9)	47 (28.7)	4.090 <sup>a</sup>	0.000
Urban		124 (51.7)	58 (24.2)	58 (24.2)			
Financial Status	Dependent	77 (38.3)	72 (35.8)	52 (25.9)	18.022	0.000	
	Independent	106 (55.2)	34 (17.7)	52 (27.1)			
IN	Age(years)	60-65	3 (17.6)	3 (17.6)	11 (64.7)	4.564 <sup>a</sup>	0.918
		60-65	3 (17.6)	3 (17.6)	11 (64.7)		
		65-70	6 (24)	2 (8)	17 (68)		
		70-75	2 (15.4)	2 (15.4)	9 (69.2)		
		75-80	4 (20)	3 (15)	13 (65)		
		80-85	2 (28.6)	2 (28.6)	3 (42.9)		
	Gender	Male	12 (27.3)	5 (11.4)	27 (61.4)	3.851 <sup>a</sup>	0.146
		Female	5 (11.4)	8 (18.2)	31 (70.5)		
	Marital Status	Married	17 (20.5)	13 (15.7)	53 (63.9)	2.742 <sup>a</sup>	0.254
		Widow	0	0	5 (100)		
	Geographic_status	Rural	7 (13.7)	9 (17.6)	35 (68.6)	2.778	0.249
		Urban	10 (27)	4 (10.8)	23 (62.2)		
	Financial Status	Dependent	6 (10.3)	11 (19)	41 (70.7)	9.706	0.008
		Independent	11 (36.7)	2 (6.7)	17 (56.7)		

*\*p < 0.05 is considered as significant*

Table 3 shows a significant association between lifestyle, mobility, cognition, and depression and frailty for community dwelling older persons rather than institutionalised individuals ( $p < 0.05$ ).

The lifestyle factor was independently associated with the frailty at  $p < 0.05$  for community dwelling as compared to institutionalised individuals at

$p < 0.05$ . Low physical activity demonstrated inclination towards the frailty, especially for the old age home residents (61.5%), who were confined, have limited opportunity to explore, and get socialized to the outer world as compared to community dwelling individuals (22%). Nevertheless, no significant association was observed for institutionalised persons at  $p < 0.05$ .

Comorbidities consisting of diabetes, and hypertension appeared as a factor for frailty in our participants, especially for the community dwelling elderly at  $p < 0.05$ .

**Table 3: Association of lifestyle, mobility, cognition and depression with frailty in community dwelling (CD) and institutionalized (IN) elderly**

	Characteristics		Frailty Status n (%)			Chi-Square	P-Value
			Robust	Disabled	Frail		
CD	LS	Active	138 (50.2)	60 (21.8)	77 (28)	9.701 <sup>a</sup>	0.008
		Sedentary	54 (41.9)	47 (36.4)	28 (21.7)		
	PA	No	52 (40.9)	47 (37)	28 (22)	10.539	0.005
		Yes	140 (50.5)	160 (21.7)	77 (27.8)		
	CoMorbid	No	91 (41.2)	59 (26.7)	71(32.1)	21.491	0.001
		DM	30 (69.8)	7 (16.3)	6 (14)		
		HT	35 (62.5)	13 (23.2)	8 (14.3)		
		DM/HT	36 (42.9)	28 (33.3)	20 (23.8)		
	GDS Score	0-5	11(61.1)	5 (27.8)	2 (11.1)	20.203	0.27
		5-10	48 (60.8)	16 (20.3)	15 (19)		
		10-15	78 (51)	37 (24.2)	38 (24.8)		
		15-20	41 (34.2)	37 (30.8)	42 (35)		
		20-25	12 (38.7)	11 (35.5)	8 (25.8)		
		25-30	2 (66.7)	1 (33.3)	0		
	MOCA Score	0-5	1 (50)	1 (0)	0	57.870	0.000
		5-10	22 (20.2)	43 (39.4)	44(40.4)		
		10-15	30 (43.5)	17 (24.6)	22 (31.9)		
		15-20	57 (57.6)	22 (22.2)	20 (20.2)		
20-25		63 (62.4)	21 (20.8)	17 (16.8)			
25-30		19 (79.2)	3 (12.5)	2 (8.3)			
IN	LS	Active	14 (22.6)	6 (9.7)	42 (67.7)	4.951	0.084
		Sedentary	3 (11.5)	7 (26.9)	16 (61.5)		
	PA	No	3 (11.5)	7 (26.9)	16 (61.5)	4.951	0.084
		Yes	14 (22.6)	6 (9.7)	42 (67.7)		
	Comorbid	No	17.9 (19.8)	13 (15.1)	56 (65.1)	1.059	0.589
		DM	0	0	2 (100)		
	GDS Score	5-10	0	0	2 (100)	8.049	0.235
		10-15	8 (16)	7 (14)	35 (70)		
		15-20	9 (30)	6 (20)	15 (50)		
		20-25	0	0	6 (100)		
	MOCA Score	5-10	4 (16.7)	7 (29.2)	13 (54.2)	7.261	0.509
		10-15	6 (26.1)	2 (8.7)	15 (65.2)		
15-20		7 (18.4)	4 (10.5)	27 (71.1)			
20-25		0	0	2 (100)			
		5-10	0	0	1 (100)		

Lifestyle (LS) Physical Activity (PA) \* $p < 0.05$  is considered as significant

We noticed a reciprocal interaction of the depression and frailty for the institutionalised individuals (65.9%) as compared to the community dwelling older persons (26%) was seen. Most of the participants felt in the category of 15-20 score, and 25-30 on GDS for community dwelling and institutionalised older persons respectively.

Severe cognitive decline was associated with frail community dwelling individuals (40.4. %) with a score of 5-10 on MOCA scale, and moderate affection was noted for the institutionalised persons (71.1%) with MOCA score of 15-20. However, cognitive function and frailty demonstrated a significant association for

community dwelling than institutionalised older persons at  $p < 0.05$ .

## DISCUSSION

In this study, sociodemographic characteristics and various lifestyle factors are strongly associated with the community dwelling older persons which makes them more vulnerable for the frailty and pre-frailty. The result of the present study is similar to the review conducted by Mello Ade et al. who identified socio-demographic, psycho behavioural, health-related, nutritional, and lifestyle factors associated with frailty in the older adults. [10]

Similarly, our findings resembled with Brinkman S et al. who observed a non-linear association between the lifestyle score

and frailty, suggesting that combining different healthy lifestyles may have additive effect on reducing frailty. [11] Salinas A. also reported that unfavourable life styles including excessive alcohol consumption, low physical activity, and low social participation are closely associated with the prevalence and incidence of frailty. [12]

Frailty appeared progressive with the advancing age above 80 years a result of age-related decline in multiple physiological systems, which ultimately results in susceptibility to sudden health status changes triggered by relatively minor stressor events. Chen et al. [15] also had found a convergent result as the prevalence increases with each 5-year age group before reaching a “stable value” (15.3% among 65–69 years; 18.6% among 70–74 years; 23.5% among 75–79 years; 22.4% among 80–84 years; 20.2% over 85 years).

In our study, older female individuals were more affected than males. Body composition in men and fat percentage in women are etiological factor associated with increased risk of frailty. [16] Due to feminization of ageing, differences in cultural background, women are vulnerable for developing chronic disabilities including frailty. Similarly, being a male dominated society and financial dependence, women are more vulnerable for frailty in Indian setup. Those females who have lost their spouse in our study were significantly affected by frailty and its associated consequences. Marital status seems to significantly influence the onset of frailty. [17]

Individuals belonging to rural setting were frail as compared to urban population. Better health status of urban dwellers compared with rural dwellers has been reported since they have easy access to health care and more conscious about the health and its ageing changes. [18]

Frailty was also more profound in individuals with compromised economic status in the present study. Compromised socioeconomic status including low

education and income has significant effect on frailty. [19] It may be linked to frailty through poor nutrition as those of low SES have decreased access to micronutrients and those with lower levels of micronutrients are more likely to become frail. [20]

Sedentary individuals and those without physical activity were more likely to develop frailty, as noted in present study. Recently, Rogers et al. concluded that moderate and vigorous physical activity reduced trajectories of frailty in older persons. [13] Cross-sectional studies observed that increased household physical activity and moderate-vigorous physical activity were associated with a lower frailty index. Optimal physical activity in a defined dose, regular basis and self-selected exercises has a potential benefit on prevention of frailty and pre frailty. [14]

Frailty usually acts as a precursor for comorbidities like diabetes and hypertension. Our participants with both the ailments were found to be more vulnerable for frailty and pre-frailty. Studies show higher prevalence of hypertension in frail elderly (67.8%) than pre-frail (60.8%) or robust elderly (49.2%) ( $P < 0.001$ ). [21] Chhetri et al. also observed that diabetic population had a much higher prevalence (19.32%) and incidence (12.32%) of frailty, compared to that of non-diabetic older adults (prevalence of 11.92% and incidence of 7.04%). [22]

Elderly with poor mental health and cognition demonstrated more prevalence of frailty in our study. Depression was shown to have strong relationship with frailty, also documented in WHI study. [23] Ma L et al. equally mentioned that social frailty was also associated with physical functioning, cognition, and depression, and predicts mortality. [24] The reason may be due to frailty, they prefer to stay homebound, and exhibit lack of interest in mingling with friends and society. A relative increase in frailty occurs with subsequent cognitive decline among the sufferers resulting due to socially less active life, limited outdoor

activity, reduced mobility, lower food intake and unhealthy habits.

The associations between individual and lifestyle factors and frailty could be of importance to public health professionals and policy makers. The WHO public health framework for global action has envisions to achieve a world where everyone can live a long and healthy life. Primary health care should focus on helping people to prevent Intrinsic Capacity (IC) declining in both the physical and psychosocial aspects of life. Adoption of a healthier lifestyle (such as through physical exercise and good nutrition) can positively modify the trajectory of the IC in later life. [25]

The study is limited as though we examined a large, representative sample, the sample size for some stratified analyses (for frail elderly adults) could have been too small to obtain robust estimates. The observational design does not include causal inference but the associations between various factors and frailty levels. There is no universal approach to diagnosing frailty. Similarly, family status whether nuclear or joint were not evaluated by us although it has a significant impact on meeting the physical, nutritional, social needs of the community dwelling older adults. Physical activity was self-reported, which may have led to recall bias and misclassification.

## CONCLUSIONS

A holistic approach needs to be considered while evaluation of frailty. The likelihood of number of modifiable factors associated with frailty gives one opportunity to empower the elderly towards increasing the internal capacity and function. Frailty is more likely to be a syndrome where numbers of cofactors exist. Knowledge of the factors associated with this syndrome and the complexity of its determinants would be helpful in formulating measures for prevention and early intervention, thus fostering aging with better quality of life and greater dignity. There is a difference between frailty scores in community dwelling and institutionalized elderly, given

the environment, facilitatory and inhibitory factors and needs consideration.

## ACKNOWLEDGEMENT

We would like express our cordial thanks to Dr Anita Melander Wikman, who has helped us in reviewing the draft of the manuscript, and providing her valuable inputs in bringing up the paper. Mr. Anjuman Khan President, Federation of Senior Citizens Association of Maharashtra (FESCOM) for Kolhapur Region, Mr. Sagar Khandagale, statistics consultant.

**Funding :** None

**Conflicting Interest:** None to be declared

## REFERENCES

1. IAGG Newsletter, Seoul.2016. [http://www.geriatri.org.tr/pdf/IAGG\\_Newsletter\\_Vol.20-7.pdf](http://www.geriatri.org.tr/pdf/IAGG_Newsletter_Vol.20-7.pdf). Accessed January 15, 2020.
2. Old-age homes: providing security and company for the aged. [https://www.business-standard.com/article/news-ians/old-age-homes-providing-security-and-company-for-the-aged-june-15-is-world-elder-abuse-awareness-day-114061400413\\_1.html](https://www.business-standard.com/article/news-ians/old-age-homes-providing-security-and-company-for-the-aged-june-15-is-world-elder-abuse-awareness-day-114061400413_1.html) Accessed January 22 , 2020
3. Clegg A, Young J, Iliffe S, Rikkert MO, Rockwood K. Frailty in elderly people. *Lancet* 2013;381(9868):752-762.
4. Biritwum RB, Minicuci N, Yawson AE, Theou O, Mensah GP, Naidoo N, et al. Prevalence of and factors associated with frailty and disability in older adults from China, Ghana, India, Mexico, Russia and South Africa. *Maturitas* 2016; 91:8-18.
5. Kashikar Y, Nagarkar A. Prevalence and Determinants of Frailty in Older Adults in India. *Indian Journal of Gerontology* 2016; 30 (3): 364-381.
6. Espinoza SE, Fried LP. Risk factors for frailty in the older adult. *Clinical Geriatrics*. 2007;15(6):37-44.
7. Levers MJ, Estabrooks CA, Ross Kerr JC. Factors contributing to frailty: literature review. *J Adv Nurs*. 2006; 56(3):282-91.
8. Kaiser MJ, Bandinelli S, Lunenfeld B. Frailty and the role of nutrition in older people: a review of the current literature. *Acta Biomed*. 2010; 81:37-45.

9. Siriwardhana DD, Hardoon S, Rait G, Weerasinghe MC, Walters KR. Prevalence of frailty and prefrailty among community-dwelling older adults in low-income and middle-income countries: a systematic review and meta-analysis. *BMJ Open* 2018;8(3): e018195.
10. Cesari M, Demougeot L, Boccalon H, Guyonnet S, Van Kan GA, Vellas B, et al. A Self-Reported Screening Tool for Detecting Community-Dwelling Older Persons with Frailty Syndrome in the Absence of Mobility Disability: The FiND Questionnaire. *PLoS One* 2014;9(7): e101745.
11. Brinkmana S, Voortmana T, Jong JCK, Frank JA, van Rooija M, Ikram MA, et al. The association between lifestyle and overall health, using the frailty index. *Archives of Gerontology and Geriatrics* 2018; 76 :85-91.
12. Salinas A, Espinoza M. Healthy lifestyles and its association with frailty. *Innov Aging* 2017;(1) :1249.
13. Rogers NT, Marshall A, Roberts CH, Demakakos P, Steptoe A, Scholes S. Physical activity and trajectories of frailty among older adults: Evidence from the English Longitudinal Study of Ageing. *PLoS One* 2017;12(2) :e01708780.
14. Stephan AJ, Strobl R, Muller M, Holle R, Autenrieth CS, Thorand B, et al. A high level of household physical activity compensates for lack of leisure time physical activity with regard to deficit accumulation: Results from the KORA-Age study. *Prev Med* 2016; 86:64-69.
15. Chen CY, Wu SC, Chen LJ, Lue BH. The prevalence of subjective frailty and factors associated with frailty in Taiwan. *Arch Gerontol Geriatr.* 2010;50(1):S43–47.
16. Waters DL, van Kan GA, Cesari M, Vidal K, Rolland Y, Vellas B. Gender specific associations between frailty and body composition. *J Frailty Aging.* 2012;1(1):18–23.
17. Trevisan C, Veronese N, Maggi S, Baggio G, De Rui M, Bolzetta F, et al. Marital Status and Frailty in Older People: Gender Differences in the Progetto Veneto Anziani Longitudinal Study. *J Womens Health (Larchmt).* 2016; 25(6):630-637.
18. Jang IY, Jung HW, Lee CK, Lee YS, Kim KI, Kim KW, et al. Rural and Urban Disparities in Frailty and Aging-Related Health Conditions in Korea. *J Am Geriatr Soc.* 2016; 64(4): 908–911
19. Szanton SS, Seplaki CL, Thorpe RJ Jr, Allen JK, Fried LP. Socioeconomic Status is associated with Frailty: the Women's Health and Aging Studies. *J Epidemiol Community Health.* 2010; 64(1): 63–67.
20. Semba RD, Bartali B, Zhou J, Blaum C, Ko CW, Fried LP. Low serum micronutrient concentrations predict frailty among older women living in the community. *J Gerontol A Biol Sci Med Sci.* 2006; 61(6):594–599.
21. Kang MG, Kim SW, Yoon SJ, Choi JY, Kim KI, Kim CH. Association between Frailty and Hypertension Prevalence, Treatment, and Control in the Elderly Korean Population. *Sci Rep* 2017; 7(1): 7542.
22. Chhetri J, Zheng Z, Xu X, Ma C, Chan P. The prevalence and incidence of frailty in Pre-diabetic and diabetic community dwelling older population: results from Beijing longitudinal study of aging II (BLSA-II). *BMC Geriatrics* 2017; 17(1):47.
23. Woods NF, LaCroix AZ, Gray SL, Aragaki A, Cochrane BB, Brunner RL, et al. Women's Health initiative. Frailty: Emergence and consequences in women aged 65 and older in the Women's Health Initiative Observational Study. *J Am Geriatr Soc* 2005; 53(8):1321-1330.
24. Ma L, Sun F, Tang Z. Social Frailty Is Associated with Physical Functioning, Cognition, and Depression, and Predicts Mortality. *J Nutr Health Aging* 2018; 22(8):989-995
25. Global strategy and action plan on ageing and health: World Health Organization. Available from <https://www.who.int/ageing/WHO-GSAP-2017.pdf>. [Last accessed on 2020 January 11].

How to cite this article: Vinayak NA, Jiandani MP, Alakananda B. Frailty: a multifactorial association. *Int J Health Sci Res.* 2021; 11(3): 14-20.

\*\*\*\*\*