mortality. Economically stable older adults have lower rates of mortality by 15.3 and 10.9% in men and women, respectively and may be due to accessibility to better food and treatment [5, 6]. Study by Doris et al. [7] demonstrated that consumption of healthy diet, regular exercise and proper medical treatment are among the health determinants of older adults.

Aging itself increases risk of malnutrition in older adults due to the simultaneous co-existence of several factors, namely poor oral health, frailty, chronic diseases, physical limitations and psychosocial problems which may gradually deteriorate bodily function [8]. Interference with food availability especially among socioeconomically disadvantaged older adults place them at higher risk of energy and protein deficiencies which may lead to debilitating conditions such as muscle wasting, slower wound healing, anaemia, osteoporosis, and higher risk of hospital admission [9].

Malaysia will be an aged nation by year 2035 and income inequality will become a serious issue among older adults [10]. Older people often categorised as low SES due to unemployment or lack of financial assistance at later life [9]. Earlier studies showed an association between low SES, poor well-being, deteriorating health, lower education level, lack of conducive living environment and limited access to facilities [11]. Survey by Abu Bakar among 1400 older adults around Malaysia showed that poverty is higher in the rural area especially among older women due to lower education level and no proper employment [12].

However, little is known about disparities according to either urban or rural settings. Such information is needed to appropriately plan for programme and resources to alleviate the quality of life of the low income older adults according to settings. Thus, this study aimed to determine the occurrence of low SES according to urban and rural settings and further explorefactorsassociated with low SES from a large scale community based population study.

1 Parameters included in the study

	Parameters
Socio-demography	Name, address, identification card number, gender, ethnicity, education years, living arrangement, marital status, smoking, household income
Medical history	Self-reported chronic diseases such as hypertension, diabetes, hypercholesterolemia, arthritis, heart diseases, asthma, constipation, urinary incontinence, hearing or vision problem
Anthropometry	Body mass index [15], waist circumference, calf circumference

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Respondents who were from the poor SES were older (70.6 ± 6.4), had lower education levels (3.3 ± 3.1), lived alone (16.6%) and were smokers (19.1%) as compared to those in the middle and high SES groups ($p < 0.05$) (Table 2).

Analysis of the urban respondents demonstrated lower SES among the oldest (70.1 ± 6.1 years old), lowest level of education (3.3 ± 3.4), women (65.3%) and Chinese (65.0%) ($p < 0.05$). Prevalence of asthma was also higher among the low SES (8.8%) respondents as compared to the medium and high SES groups. Besides that, those in the lower SES were nutritionally at risk due to the lowest MUAC (28.1 ± 3.3 cm) and calf circumference (3.31 ± 3.6 cm) ($p < 0.001$). Respondents in the low SES group had lower performance in both cognitive and physical fitness tests (Table 3).

Similar results were demonstrated among the rural respondents. Respondents from the low SES group were generally older (70.9 ± 6.6 years old), had lower education level (3.3 ± 2.8) and were Malays (88.2%) ($p < 0.001$). Respondents in the low SES group had significantly lower performance in all the cognitive and most of the physical fitness (except for back scratch and chair sit and reach with non-significant findings) tests ($p < 0.05$) (Table 4).

Among the issues found in the urban respondents in the low SES group were low dietary fibre (Adj OR:0.91; 95% CI: 0.84–0.99) and protein (Adj OR: 0.94; 95% CI: 1.01–10.6) intake, longer time to perform TUG test (Adj OR: 1.09; 95% CI: 1.01–1.17), greater disability (Adj OR: 1.02; 95% CI: 1.01–1.04), slower processing speed (Adj OR:0.94; 95% CI: 0.75–0.87) and less frequent practice of calorie restriction (Adj OR: 1.65; 95% CI: 1.17–2.35) (Table 5).

Meanwhile, among the rural respondents, lack of dietary fibre intake (Adj OR 0.79; 95%CI: 0.70–0.90), lower calf circumference (Adj OR: 0.91; 95% CI:0.85–0.98), lack of fruits intake (Adj OR: 0.91; 95% CI: 0.86–0.97), greater disability (Adj OR: 1.02; 95% CI: 1.01–1.03), and lower score in IADL (Adj OR: 0.92; 95% CI: 0.85–0.99) (Table 6).

Diet and nutritional status

In our study, low socioeconomic status (SES) is associated with lower intake of dietary fibre among older people residing in both urban and rural areas. Low SES attenuated poor nutrition knowledge and purchasing choices of older adults, thus leading to poor dietary pattern with lesser consumption of nutritious food high in fibre especially fresh fruits and vegetables [27–29]. Lower fibre intake is common among senior citizens due to failure of achieving the suggested daily servings of fruits and vegetables [30]. In addition, data from the National Health and Morbidity Survey 2011 in Malaysia, conducted among 2752 older people has reported higher prevalence of Malaysian older people did not meet the World Health Organization (WHO) recommendation for fruits and vegetables intake as compared to other developing and developed nations [31]. Another reason for the reduced intake of dietary fibre among older individuals especially in the rural area, may be due to the beliefsof food taboos such as the cool, hot, sharp and gassy food. Consumption of fruits and vegetables have been associated with chronic diseases such as joint pain, gastrointestinal discomfort, and heart burn [32]. Food high in fibre, which is acceptable and affordable for Malaysian older adults have to be identified and promoted for better dietary habits.

Furthermore, our study results showed that there is lower fruits intake among those staying in the rural areas. Rural areas have very less retail supermarkets and large grocery stores, thus narrowed the purchasing choices of fruits by older adults. Besides that, fruits are generally more expensive than vegetables and not all rural residents plant fruits at home, thus limiting their intake. Moreover, oral related problems such as gum diseases, tooth decay, dentures, mouth or tongue infection

and chewing problems may interfere with fruits intake [33, 34].

Adequate protein intake is essential among older adults for maintaining protein balance, reducing skeletal muscle atrophy and prevent functional decline. This is consistent with the study by Gaspareto et al. [35] showing better protein intake among the higher income older people. In our study, lower protein intake is one of the associated factors of lower SES among older adults in the urban area. Although protein rich food such as fish, milk and yogurt were available in the urban area, its price may be expensive for those in the low SES group. Study has shown that older adults consume less fruits, vegetables, milk, meat, poultry and fish as compared to those in the higher SES. Various factors may contribute to this situation namely lack of transport to purchase food, far distance of the shops, staying alone and loneliness [36]. Besides that, low SES urban senior dwellers may lack of awareness of the importance of protein intake in their daily diet. Lack of dietary protein intake may reduce protein synthesis leading to protein breakdown and muscle wasting [

3 Sociodemographic characteristic, medical profile, nutritional status, dietary intake and psychosocial profile of urban respondents [Presented as mean ± SD or n(%)]

	Low SES (n = 320)	Medium SES (n = 366)	High SES (n = 420)	Total (n = 1106)
Age, years	70.1 ± 6.1	68.5 ± 5.7	67.4 ± 5.7	68.6 ± 5.9***
Education years	3.3 ± 3.4	5.6 ± 3.7	8.3 ± 4.3	6.0 ± 4.4***
Gender				
Women	209 (65.3)	193 (52.7)	198 (47.1)	600 (54.2)***
Men	111 (34.7)	173 (47.3)	222 (52.9)	506 (45.8)
Ethnicity				
Malay	96 (30.0)	129 (35.2)	200 (47.6)	425 (38.4)***
Chinese	208 (65.0)	206 (56.3)	174 (41.4)	588 (53.2)
India & Others	16 (5.0)	31 (8.5)	46 (11.0)	93 (8.4)
Marital status				
Single	11 (3.4)	9 (2.5)	6 (1.4)	26 (2.4)***
Married	204 (63.8)	264 (72.1)	333 (79.3)	801 (72.4)
Divorced	105 (32.8)	93 (25.4)	81 (19.3)	279 (25.2)
Smoking				
Non-smoker	280 (87.5)	308 (84.2)	384 (91.4)	972 (87.9)**
Smoker	40 (12.5)	58 (15.8)	36 (8.6)	134 (12.1)
Living Status				
With others	266 (83.1)	324 (88.5)	401 (95.5)	991 (89.6)***
Alone	54 (16.9)	42 (11.5)	19 (4.5)	115 (10.4)
Medical History				
Diabetes				
No	239 (74.7)	250 (68.3)	310 (73.8)	799 (72.2)
Yes	81 (25.3)	116 (31.7)	110 (26.2)	307 (27.8)
Hypertension				
No	155 (48.4)	171 (46.7)	211 (50.2)	537 (48.6)
Yes	165 (51.6)	195 (53.3)	209 (49.8)	569 (51.4)
Vision or hearing				
No	287 (89.7)	330 (90.2)	389 (92.6)	1006 (91.0)
Yes	33 (10.3)	36 (9.8)	31 (7.4)	100 (9.0)
Urinary incontinence				
No	298 (93.1)	342 (93.4)	386 (91.9)	1026 (92.8)
Yes	22 (6.9)	24 (6.6)	34 (8.1)	80 (7.2)
Constipation				
No	308 (96.3)	348 (95.1)	404 (96.2)	1060 (95.8)
Yes	12 (3.7)	18 (4.9)	16 (3.8)	46 (4.2)
Asthma				
No	292 (91.3)	350 (95.6)	400 (95.2)	1042 (94.2)*
Yes	28 (8.8)	16 (4.4)	20 (4.8)	64 (5.8)
Heart disease				
No	289 (90.3)	327 (89.3)	373 (88.8)	989 (89.4)
Yes	31 (9.7)	39 (10.7)	47 (11.2)	117 (10.6)
Arthritis				
No	231 (72.2)	283 (77.3)	333 (79.3)	847 (76.6)

3 Sociodemographic characteristic, medical profile, nutritional status, dietary intake and psychosocial profile of urban respondents [Presented as mean ± SD or n(%)] (Continued)

	Low SES (n = 320)	Medium SES (n = 366)	High SES (n = 420)	Total (n = 1106)
Yes	89 (27.8)	83 (22.7)	87 (20.7)	259 (23.4)
Stroke				
No	316 (29.0)	359 (98.1)	413 (98.3)	1088 (98.4)
Yes	4 (1.3)	7 (1.9)	7 (1.7)	18 (1.6)
Hypercholesterolemia				
No	220 (68.8)	219 (59.8)	265 (63.1)	704 (63.7)
Yes	100 (31.2)	147 (40.2)	155 (36.9)	402 (36.3)
Anthropometry				
Body Mass Index, kg/m^2	24.9 ± 4.3	25.0 ± 4.4	25.6 ± 4.4	25.2 ± 4.4
BMI category				
Underweight	142 (45.7)	151 (41.8)	157 (38.0)	450 (41.5)*
Normal	67 (21.5)	115 (31.9)	119 (28.8)	301 (27.7)
Overweight	102 (32.8)	95 (26.3)	137 (33.2)	334 (30.8)
Waist Hip Ratio	0.9 ± 0.1	0.9 ± 0.1	0.9 ± 0.1	0.9 ± 0.1
Weight, kg	59.7 ± 11.9	62.1 ± 11.7	64.7 ± 12.5	62.4 ± 12.3***
Height, cm	154.6 ± 8.1	157.6 ± 8.1	158.8 ± 8.8	157.2 ± 8.5***
MUAC, cm	28.1 ± 3.3	28.7 ± 3.4	29.3 ± 3.6	28.7 ± 3.5***
Waist Circumference, cm	88.1 ± 11.1	88.4 ± 10.7	90.1 ± 11.1	89.0 ± 11.0*
Hip Circumference, cm	96.6 ± 9.1	97.5 ± 9.3	99.3 ± 9.0	97.9 ± 9.2***
Calf Circumference, cm	33.1 ± 3.6	34.0 ± 3.5	35.0 ± 3.8	34.1 ± 3.8***
Cognitive				
Digit span	7.5 ± 2.6	8.0 ± 2.6	8.4 ± 2.5	8.0 ± 2.6***
Best learning RAVLT	36.3 ± 10.5	38.1 ± 10.6	42.4 ± 10.8	39.2 ± 10.9***
Digit symbol	4.5 ± 2.2	5.3 ± 2.6	7.0 ± 3.0	5.7 ± 2.8***
MMSE	22.1 ± 5.3	23.6 ± 4.3	25.3 ± 3.7	23.8 ± 4.6***
Immediate visual memory	39.7 ± 30.7	46.5 ± 33.9	60.6 ± 31.5	49.9 ± 33.2***
Delayed visual memory	31.5 ± 33.0	40.2 ± 35.1	55.6 ± 36.3	43.6 ± 36.4***
Dietary Intake				
Protein, per 1000 kcal/day	43.8 ± 8.7	42.3 ± 8.2	41.4 ± 8.2	42.4 ± 8.4**
Carbohydrate,per 1000 kcal/day	132.7 ± 21.2	136.7 ± 19.2	135.7 ± 20.4	135.2 ± 20.3
Fat, per 1000 kcal/day	32.7 ± 8.4	31.6 ± 7.7	32.2 ± 7.4	32.2 ± 7.8
SFA, per 1000 kcal/day	5.1 ± 3.3	5.1 ± 3.1	5.3 ± 3.1	5.1 ± 3.2
Fibre, per 1000 kcal/day	2.5 ± 1.5	2.7 ± 1.8	3.0 ± 1.9	2.8 ± 1.8
Sugar, per 1000 kcal/day	11.3 ± 8.8	13.5 ± 9.9	16.3 ± 11.4	14.0 ± 10.4
Vitamin C, per 1000 kcal/day	76.2 ± 47.6	82.2 ± 59.6	76.2 ± 50.6	78.2 ± 53.0
Vitamin E, per 1000 kcal/day	6.1 ± 26.9	7.4 ± 32.6	3.3 ± 3.5	5.5 ± 23.8
Folate, per 1000 kcal/day	66.1 ± 44.6	72.1 ± 59.7	72.9 ± 44.1	70.7 ± 50.0
Sodium, per 100 kcal/day	941.2 ± 711.7	863.5 ± 523	856.9 ± 461.3	883.5 ± 566.8
Potassium, per 1000 kcal/day	915.6 ± 308.3	926.8 ± 317.3	944.6 ± 303.8	930.3 ± 309.6
Calcium, per 1000 kcal/day	315.4 ± 137.8	333.9 ± 182.5	333.2 + 159.2	328.3 ± 161.7
Calorie restriction				
No	238 (76.5)	242 (68.0)	239 (58.4)	719 (66.8)***
Yes	73 (23.5)	114 (32.0)	170 (41.6)	357 (33.2)

4 Sociodemographic characteristic, medical profile, nutritional status, dietary intake and psychosocial profile of rural respondents [Presented as mean ± SD or n(%)]

	Low SES (n = 325)	Medium SES (n = 373)	High SES (n = 433)	Total (n = 1131)
Age, years	70.9 ± 6.6	68.5 ± 6.5	68.7 ± 5.9	69.5 ± 6.5***
Education, years	3.3 ± 2.8	4.7 ± 3.2	4.4 ± 3.4	4.4 ± 3.4***
Gender				
Women	245 (56.6)	164 (44.0)	143 (44.0)	552 (48.8)***
Men	188 (43.4)	209 (56.0)	182 (31.4)	579 (51.2)
Ethnicity				
Malay	382 (88.2)	322 (86.3)	281 (28.5)	985 (87.1)
Chinese	45 (10.4)	42 (11.3)	39 (12.0)	126 (11.1)
India & Others	6 (1.4)	9 (2.4)	5 (1.5)	18 (1.6)
Marital status				
Single	11 (3.4)	9 (2.5)	6 (1.4)	26 (2.4)***
Married	204 (63.8)	264 (72.1)	333 (79.3)	801 (72.4)
Divorced	105 (32.8)	93 (25.4)	81 (19.3)	279 (25.2)
Smoking				
Non-smoker	280 (87.5)	308 (84.2)	384 (91.4)	972 (87.9)**
Smoker	40 (12.5)	58 (15.8)	36 (8.6)	134 (12.1)
Living Status				
With others	266 (83.1)	324 (88.5)	401 (95.5)	991 (89.6)***
Alone	54 (16.9)	42 (11.5)	19 (4.5)	115 (10.4)
Medical History				
Diabetes				
No	334 (77.1)	277 (74.3)	245 (75.4)	856 (75.7)
Yes	99 (22.9)	96 (25.7)	80 (24.6)	275 (24.3)
Hypertension				
No	209 (48.3)	192 (51.5)	173 (53.2)	574 (50.8)
Yes	224 (51.7)	181 (48.5)	152 (46.8)	557 (49.2)
Vision or hearing				
No	951 (84.1)	312 (83.6)	295 (90.8)	951 (84.1)***
Yes	180 (15.9)	61 (16.4)	30 (9.2)	180 (15.9)
Urinary incontinence				
No	294 (90.5)	327 (87.7)	374 (86.4)	995 (88.0)
Yes	31 (9.5)	46 (12.3)	59 (13.6)	136 (12.0)
Constipation				
No	368 (85.0)	326 (87.4)	296 (91.1)	990 (87.5)*
Yes	65 (15.0)	47 (12.6)	29 (8.9)	141 (12.5)
Asthma				
No	371 (85.7)	336 (90.1)	303 (93.2)	1042 (94.2)**
Yes	62 (14.3)	37 (9.9)	22 (6.8)	64 (5.8)
Heart disease				
No	392 (90.5)	336 (90.1)	286 (88.8)	1014 (89.7)
Yes	41 (9.5)	37 (9.9)	39 (11.2)	117 (10.3)
Arthritis				
No	249 (76.6)	273 (73.2)	307 (70.9)	829 (73.3)

4 Sociodemographic characteristic, medical profile, nutritional status, dietary intake and psychosocial profile of rural respondents [Presented as mean ± SD or n(%)] (Continued)

	Low SES (n = 325)	Medium SES (n = 373)	High SES (n = 433)	Total (n = 1131)
Yes	76 (23.4)	100 (26.8)	126 (29.1)	302 (26.7)
Stroke				
No	316 (98.2)	363 (97.3)	423 (97.7)	1105 (97.7)
Yes	6 (1.8)	10 (2.7)	10 (2.3)	26 (2.3)
Hypercholesterolemia				
No	232 (71.4)	282 (75.6)	338 (78.1)	852 (75.3)
Yes	93 (28.6)	91 (24.4)	95 (21.9)	279 (24.7)
Anthropometry				
Body Mass Index, kg/m^2	25.7 ± 4.2	24.7 ± 4.1	24.0 ± 4.7	24.7 ± 4.4***
Waist Hip Ratio	0.9 ± 0.1	0.9 ± 0.1	0.9 ± 0.1	0.9 ± 0.1
Weight, kg	56.0 ± 12.1	60.2 ± 11.5	62.8 ± 12.2	59.3 ± 12.2***
Height, cm	152.6 ± 8.7	155.8 ± 8.2	156.2 ± 8.6	154.7 ± 8.7***
MUAC, cm	27.4 ± 3.6	28.3 ± 3.2	28.9 ± 3.4	28.1 ± 3.5***
Waist circumference, cm	86.1 ± 12.3	87.5 ± 10.8	89.3 ± 10.7	87.5 ± 11.4**
Hip circumference, cm	93.0 ± 9.9	95.0 ± 9.0	97.6 ± 9.2	95.0 ± 9.6***
Calf circumference, cm	31.3 ± 3.8	32.7 ± 3.4	33.7 ± 3.6	32.5 ± 3.8***
BMI category, n(%)				
Underweight	232 (54.1)	162 (44.4)	109 (34.4)	503 (45.3)***
Normal	101 (23.5)	107 (29.3)	95 (30.0)	303 (27.3)
Overweight	96 (22.4)	96 (26.3)	113 (35.6)	305 (27.5)
Dietary				
Protein, per 1000 kcal/day	44.8 ± 8.4	43.7 ± 8.5	43.5 ± 8.8	44.0 ± 8.6
Carbohydrate, per 1000 kcal/day	155.8 ±	t-49-9536..4000		

4 Sociodemographic characteristic, medical profile, nutritional status, dietary intake and psychosocial profile of rural respondents [Presented as mean ± SD or n(%)] (Continued)

	Low SES (n = 325)	Medium SES (n = 373)	High SES (n = 433)	Total (n = 1131)
Cognitive Function				
Digit span	6.5 ± 1.9	7.2 ± 2.0	7.6 ± 2.4	7.0 ± 2.2***
Digit symbol	3.5 ± 1.4	4.1 ± 1.7	4.9 ± 2.3	4.1 ± 1.9***
MMSE	20.0 ± 4.9	22.7 ± 4.5	23.7 ± 4.5	22.0 ± 4.9***
Percentile VRI	29.1 ± 28.7	38.1 ± 31.5	43.4 ± 32.2	36.2 ± 31.3***
Percentile VR II	17.1 ± 23.8	28.3 ± 31.7	35.9 ± 35.0	26.3 ± 31.0***
Physical Fitness				
2 min step test, number	54.0 ± 24.9	58.7 ± 25.8	63.9 ± 24.0	58.4 ± 25.3***
Grip strength, kg	20.7 ± 7.4	23.6 ± 7.7	24.1 ± 8.0	22.6 ± 7.8***
Chair stand test, number	8.6 ± 2.9	9.5 ± 2.9	10.0 ± 3.0	9.3 ± 3.0***
Chair sit and reach, cm	−0.30 ± 12.1	−2.0 ± 10.9	−0.3 ± 10.9	−0.8 ± 11.4
TUG, seconds	12.8 ± 4.0	11.4 ± 3.1	11.4 ± 2.9	12.0 ± 3.5***
Back scratch test, cm	17.0 ± 12.2	15.9 ± 12.6	16.5 ± 12.8	16.5 ± 12.5

Abbreviation: *TUG* , *MUAC* , *MMSE* , *RAVLT* A
*$p < 0.05$; **$p < 0.01$;***$p < 0.001$

in the urban area may have lesser problems with IADL as they may be still be independent in doing these chores as they are familiar with the environment and have accessibility to the shops.

Taking longer time to perform Timed-up-and go (TUG) test was found to be an indicator of poor SES among older adults residing in the urban area. This may be probably associated with the unfavorable built environment [54] and sedentary lifestyle adopted among older adults residing in the urban area [55]. Study by Hurst et al. (2013) [56], found similar findings as theresults, demonstrating an association between poor performance in TUG tests and low SES. TUG test is an important measure of falls risk, frailty, physical disability, cognitive impairment and all-cause mortality [57, 58].

5 Predictors of poor socioeconomic status among urban respondents

	Estimate	SE	OR (95%CI)	Sig
Dietary Fibre	−0.092	0.044	0.91 (0.84–0.99)	0.035
Protein Intake	0.034	0.011	0.94 (1.01–1.06)	0.001
Timed Up and Go test	0.082	0.038	1.09 (1.01–1.17)	0.033
WHODAS	0.023	0.009	1.02 (1.01–1.04)	0.008
Processing Speed	−0.210	0.037	0.94 (0.75–0.87)	p < 0.001
Sunnah fasting				
No	0.505	0.179	1.65 (1.17–2.35)	0.005
Yes (ref)				

Abbreviation: *SE* , *WHODAS:* H D
A FQ
*$p < 0.05$; **$p < 0.01$;***$p < 0.001$

C c

Slower processing speed has been linked to poor SES among urban older people in our study. The exact mechanism explaining processing speed and SES is unclear. However, it can be associated with poor social interaction, limited access to health care especially memory clinics, unhealthy lifestyles and lack of involvement in mentally stimulating activities. Poor cognitive function was not associated with low SES among the rural respondents in this study. Migration of rural residents to the urban areas may contribute to this finding. Migrants had higher likelihood of adopting Westernized lifestyle such as dietary pattern high in fat and sugar as well as sedentary lifestyle. These unhealthy lifestyle were risk factors were of poor cognitive function [59].

This study has elucidated the differences in factors associated with SES among urban and rural dwellers. Urban older adults have better SES as compared to

6 Determinants of poor socioeconomic status among rural respondents

	Estimate	SE	OR (95%CI)	Sig
Dietary Fibre	−0.235	0.065	0.79 (0.70–0.90)	p < 0.001
Calf circumference	−0.089	0.035	0.91 (0.85–0.98)	0.012
Fruits intake	−0.09	0.031	0.91 (0.86–0.97)	0.004
WHODAS	0.016	0.006	1.02 (1.01–1.03)	0.015
IADL	−0.084	0.92	0.92 (0.85–0.99)	0.032

Abbreviation: *SE* , *WHODAS* H D
A ; *IADL* A D
*$p < 0.05$; **$p < 0.01$;***$p < 0.001$

those residing in the rural areas. Older adults in the urban area had higher education level, good previous employment which made them eligible for pension, bank savings, and insurance. Most importantly, urban older individuals have better accessibility to health care services which enabled them to seek immediate treatment at an earlier stage of diseases, thus prolonging survival [60]. The strength of this study is that it assessed a wide range of parameters via face-to face interview with stratification of geographical location (urban and rural) through a large scale epidemiological study. While, the limitation of this study is the measurement of SES is

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