The Impact of Chronic Diseases on Health Services and Quality of Life of a Chinese Population

(Running Title: Impact of Chronic Diseases)

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Abstract

Background: Chronic diseases are becoming the major global burden of disease. Information on their impact on health services and quality of life can facilitate the provision of appropriate care. **Objectives**: To determine the self-reported prevalence of chronic diseases and their impact on health service utilisation and quality of life. **Methods**: A cross-sectional random telephone survey on 2410 Chinese adults from the general population in Hong Kong with a structured questionnaire and the SF-36 Health Survey. The effects of chronic diseases on consultation rates, hospitalisation risk and the SF-36 scores were analysed by multivariate stepwise regressions, controlling for sociodemographic variables and co-morbidity. **Results:** 38% of subjects reported one or more chronic diseases with 59% of them below the age of 60. Chronic joint problems were the most common. Every additional chronic disease increased the annual number of consultations by 60% and the likelihood of hospitalisation in the last year by 79%. Most chronic diseases had a negative impact on quality of life with the most associated with psychological problems. **Conclusions**: One in three Chinese adults in Hong Kong reported to have chronic diseases. The total number of chronic diseases had a linear relationship with service utilization, which could be a useful medical risk adjustment factor. Enhancing quality of life should be an important aim in the management of chronic diseases.

Keywords: Chronic disease, Service utilisation, Quality of life, Chinese, SF-36

Introduction

The success of life-saving technology and medical care has led to a paradoxical increase in the prevalence of chronic diseases and perpetuated sick lives more than healthy ones, which Ernest Gruenberg calls the failures of success [1]. It was projected that chronic diseases will become the major global burden of disease in the coming two decades [2]. Data from Western populations have shown that chronic diseases are associated with higher service utilization and poorer quality of life [3-6]. The change in morbidity pattern is expected to be the most rapid in Asia but there is little data on the burden of chronic diseases from this part of the world.

Chronic diseases have become the major causes of hospital admissions and deaths in Hong Kong since 1971 [7-9]. A few recent studies have reported on the prevalence of chronic diseases in Hong Kong but the results are limited either to a few conditions [8], the older population [10] or diseases that required regular follow-up [11], and none of them has evaluated the impact of chronic diseases on health services or quality of life.

The aim of this study was to find out the impact of self-reported chronic diseases on health services and quality of life of the Chinese adult population in Hong Kong. We would like to estimate the population-based self-reported prevalence of chronic diseases, find out if they were associated with higher health service utilisation rates, and what impact they had on quality of life.

Methods

Study Design and Setting

This was a cross-sectional random telephone survey of the general adult Chinese population in Hong Kong. Ninety-five percent of the Hong Kong population are Chinese and 15% of them are 60 years or older. All households in Hong Kong, except for the 0.1% who live on boats, have telephones and local calls are free of charge [12]. Lam et al have shown that the results of telephone interviews were similar to that found in face-to-face household surveys [13]

Sampling Method

Household telephone numbers were selected randomly by the computer from the Chinese Residential Telephone Directories that contained 90% of all residential telephone numbers in Hong Kong [14]. Trained interviewers called the households in the order of the random telephone list in the evening of each weekday from June 1 to September 30, 1998. Among those members who were present in the contacted household, only the person who last had his/her birthday and was eighteen years or above was surveyed.

Sample

The intended sample size was 2500, based on a power calculation for a standard error of percentage of no more than 2% at 95% confidence interval, assuming the prevalence was unknown. A total of 7185 telephone numbers were attempted but 4328 had to be excluded because 3957 were not answered despite three attempts, there were no eligible subjects in 266, and 105 were commercial or invalid numbers.

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There were 2857 eligible subjects but 345 refused to participate; 2512 subjects were surveyed and 2410 completed the whole interview giving a final response rate of 84.4% (2410/2857). Table 1 shows that the sociodemographic characteristics of the subjects compared with the Hong Kong general population data [12].

Survey Instrument and Outcome Measures

The survey instrument consisted of a structured questionnaire on sociodemographic data, chronic morbidity and service utilisation rates, and the Chinese (HK) version of the 36 item Short-form Health Survey (SF-36)[15]. It took 15 to 20 minutes to complete.

Sociodemographic data that were collected included age, gender, educational level, marital status and social class by occupation [16]. Chronic morbidity was measured by the total number and diagnosis of self-reported chronic diseases. Each subject was asked if he/she had ever been diagnosed for more than one month by a registered medical practitioner to have hypertension, diabetes mellitus, heart disease of any kind, stroke, chronic pulmonary disease (asthma or other chronic respiratory problems), chronic joint problem, psychological illness or any other chronic disease. The total number of chronic diseases was calculated by the summation of the number of positive responses to these questions.

Service utilisation was measured by self-reported annual consultation rate (number of outpatient consultations in the past one year), monthly consultation rate (number of outpatient consultations in the past one month), hospitalisation rate (any admission into the hospital in the past one year), the need for regular medications and the need for regular medical consultations.

The SF-36 is a widely used health-related quality of life (HRQOL) measure that has been translated and validated on the adult Chinese population in Hong Kong [15]. It measures eight domains of HRQOL: physical functioning (PF), role limitation due to physical problems (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role limitation due to emotional problems (RE) and mental health status (MH); each with a scale ranging from zero to 100 with a higher score indicating better HRQOL [17].

Data Analysis

The effects of sociodemographic variables on the total number of chronic diseases was tested by multivariate forward stepwise linear regression. Relevant multivariate forward stepwise linear or logistic regressions were carried out to determine the effects of the total number of chronic diseases or specific diagnosis on service utilisation rates or the SF-36 scores, controlling for sociodemographic variables and co-morbidity. Subjects with unknown or missing data in any variable were excluded from the relevant regression analysis, resulting in different sample sizes in different regression models. All data analyses were done by the SPSS-Windows 8.0 programme[18].

Results

Prevalence of Chronic Diseases

Nine hundred and seventeen (38.0%) subjects reported 1416 chronic diseases, no chronic disease was reported by 1349 (56.0%) subjects and 144 (6.0%) people were not sure whether they had any.   Five hundred and forty-one (59.0%) of subjects with chronic diseases were below the age of 60 although the age-specific prevalence increased with age.

Table 2 shows the prevalence of common chronic diseases by age-sex groups. The prevalence of most chronic diseases increased with age but psychological problems were most common (7.3%) in the 40-59 year-old group.   All diagnoses were more common in females, except for stroke and chronic pulmonary diseases. Two hundred and twenty five (9.3%) subjects reported a variety of other chronic diseases including allergic rhinitis, gastrointestinal diseases, skin problems, eye conditions and cancer.

Multivariate linear regression showed that increasing age, being female and not currently married increased the number of chronic diseases but social class and education level had no independent effect (Table 3).

Impact of Chronic Diseases on Health Service Utilisation

The subjects reported 7953 consultations in the previous year and 1137 consultations in the last month. The chronically ill consumed 52.7% of all the annual consultations and 63.9% of the monthly consultations. Table 4 shows that the

reported service utilisation rates of each chronic disease group were much higher than those of subjects who did not report any chronic disease.

Table 5 shows the results of the multivariate stepwise regressions of consultation rates and hospitalisation risk on the total number of chronic diseases and specific diagnosis. The total number of chronic diseases had a linear correlation with consultation rates and hospitalisation risk. The presence of any chronic diagnosis, except for stroke, significantly increased the annual and/or monthly consultation rates. All chronic diseases except hypertension, joint problems and psychological illnesses increased the risk of hospitalisation significantly, the highest was associated with stroke.

The Effects of Chronic Diseases on Health-related Quality of Life

Table 6 compares the unadjusted SF-36 scores of the different chronic disease groups. Chronic diseases were associated with lower (poorer) SF-36 scores in all domains and the unadjusted effect sizes were generally large. Multivariate regression analysis controlling for sociodemographic factors showed that every additional chronic disease reduced the SF-36 scores by 5 to 12 points (Table 7), which was equivalent to a moderate effect size of 0.4 standard deviations [19] The effect of each chronic disease on the SF-36 scores, controlling for sociodemographic variables and co-morbidity, are also shown in Table 7.

Discussion

A reported prevalence of chronic diseases of 38% was close to the 43% found in Japan [20] and lower than the 53% in the United States [6]   A local   household survey among older adults found similar age-specific prevalence (41% in the 45-59 age group and 72% in the 60 or above group), suggesting the results of this study were valid. [10].   Lo et al reported a much lower prevalence of 16.8% of chronic diseases because they included only those conditions that required regular doctor follow-up [11].

The majority of people with chronic diseases were in the working age group, contrary to the general impression that chronic diseases are mainly problems of the elderly. This was because the absolute number of people in this age group was high in the population. Hoffman et al also found that 60% of the chronically ill in the United States were in the age group of 18-64 [6].   Health care systems that subsidise only the elderly population will exclude the majority of the chronically ill.

Five percent of the elderly and 7.3% of the middle-age subjects reported chronic psychological problems but the Census Household Survey found only 0.4% of the elderly admitting to have depression and provided no data for the middle-aged [10]. The discrepancy was because the present study included not only depression but also other psychological problems.   Many Chinese people are not familiar with the term depression and somatization, therefore, psychological problems tend to be under reported in Chinese populations [21, 22].

There was a linear correlation between consultation rates and the total number of chronic diseases, irrespective of the diagnosis. The number of annual consultations increased by 1.7 (60% of the baseline rate of people without chronic disease) per person for each additional diagnosis, after controlling for sociodemographic factors

(table 5).   The odds ratio of hospitalisation in the last year was 1.79, which is equivalent to about 79% increase in relative risk, for every additional chronic disease. The total number of chronic conditions can be used as a medical risk adjustment factor for service planning and resource allocation, if the predictive relationship and coefficients can be confirmed by prospective studies.

The lack of correlation between stroke and consultation rates could be a type II statistical error because the sample size of 21 might not have enough power to reach statistical significance. Furthermore, 86% of the stroke subjects had co-existing hypertension, diabetes mellitus or heart disease the effects of which might have 'cashed in' before stroke could be entered into the stepwise regression models.

Each chronic disease had a unique effect on different quality of life domains. As shown in other studies, psychological illnesses impair quality of life more than any other chronic disease [23-25].   It is anticipated that mental illnesses will become a major global burden of disease and cause of disability in the next two decades [26]. Chronic joint problems affected quality of life as much as chronic pulmonary diseases and more than hypertension and diabetes mellitus did.   Unfortunately, they have been much neglected by Governments and the medical profession because they are rarely lethal and are often regarded as part of normal aging [25, 27, 28].   New models of care that incorporate the promotion of health-related quality of life (HRQOL) are needed for people with chronic diseases [2, 29, 30]. The enhancement of HRQOL is not only an end in itself, it can also be a means to reduce the demand on health services because there is an inverse relationship between HRQOL and service utilisation [3-6].

Limitations of the Study

The study sample had a relatively lower proportion of middle-aged adults than the Hong Kong general population, probably because some working adults had not returned home during the time of the telephone calls.

Self-reported morbidity and service utilisation data may not be totally accurate because of recall errors. However, self-reporting is commonly used in population and household surveys [10, 13, 31, 32].   The reported prevalence of chronic diseases was likely to be a conservative estimate because only diagnoses that were recalled were counted. The service utilisation rates reported should not be interpreted as the actual rates but an indication of the utilisation pattern [5].   Despite these limitations, the results of the regression analyses should be valid because there was no suggestion of any systematic bias.

The association between chronic diseases and service utilisation rates or quality of life found in this cross-sectional study might not be causal although it was suggestive. Further prospective studies are needed to confirm the relationship and determine the predictive coefficients more accurately.

Conclusions

Chronic diseases are common among Chinese adults in Hong Kong, affecting more than one in three people. They significantly increase health service utilisation rates and impair quality of life. The annual consultation rate increases by about 60% and hospitalisation risk increases by 79% for every additional condition.

Each chronic disease has a unique influence on different domains of quality of life. Management programmes need to be multi-dimensional and tailored to the special needs of each disease group. The quality of life of a person may be further compromised if he/she has to divert much of his/her income from other life needs to pay for health services. Therefore, a good health-care system must ensure that the chronically ill are not deprived of adequate care because of a lack of means.

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Table 1: Sociodemographic Characteristics of Study Sample Compared with the Hong Kong General Population

	Sample N=2,410	Hong Kong Adults 20+ years N=4,959,100
Age Group (years)		
18-39	47.2%	46.2%
40-59	27.2%	34.3%
60 or above	21.4%	19.5%
Refused to answer	4.2%	0%
Male	47.8%	48.9%
Female	52.2%	51.1%
Marital Status		
a) Now Married	58.0%	59.4%
b) Never Married	33.8%	31.9%
c) Widowed	5.8%	6.0%
d) Divorced/Separated	1.3%	2.7%
e) Refused to Answer	1.1%	0%
Educational Level		
a) No Schooling	6.9%	8.4%
b) Primary	22.3%	20.5%
c) Secondary	52.2%	54.6%
d) Tertiary	17.8%	16.4%
e) Refused to Answer	0.9%	0%
Social Class by Occupation		
a) Professional	3.1%	5.5% [a]
b) Associate Professional	14.7%	26.0% [b]
c) Skilled Worker	35.4%	33.5% [c]
d) Semi-skilled Worker	24.6%	15.0% [d]
e) Non-skilled Worker & unclassified	14.4%	19.8% [e]
f) Refused to Answer	7.7%	0%

Notes

1. *The distribution in occupation of subjects was not directly comparable to Hong Kong Census Data which used the International Standard Classification of Occupation:-*
   a. *Professionals.*
   b. *Associate professionals, administrators and managers.*
   c. *Craft workers, plant and machine operators and assemblers.*
   d. *service and shop sales workers.*
   e. *Workers in elementary occupation, agriculture and fishery, and unclassified.*

2. *Percentages may not add up to 100% because of rounding.*

Table 2: The Prevalence (%) of Chronic Diseases by Age and Sex Groups

	Any Diagnosis	HT	DM	Heart	Pulmonary	Stroke	Joint	Psycho
All Age								
Overall (n=2410)	38.0	11.2	4.6	3.9	5.3	0.9	19.6	3.9
M ((n=1152)	32.5	9.3	3.8	3.2	5.7	1.2	14.6	2.9
F (n=1258)	43.2	13.0	5.2	4.5	4.9	0.6	24.2	4.8
Age 18-39								
Overall (1137)	20.5	1.8	0.9	1.4	5.2	0	6.9	1.6
M (n=601)	19.3	1.2	0.8	1.3	4.8	0	5.5	2.0
F (n=536)	21.8	2.6	0.9	1.5	5.6	0	8.6	1.1
Age 40-59								
Overall (n=655)	47.0	13.1	4.1	2.4	5.8	0.8	26.0	7.3
M (n=278)	37.8	10.4	4.0	1.8	6.5	0.7	18.7	4.0
F (n=377)	53.8	15.1	4.2	2.9	5.3	0.8	31.3	9.8
Age 60+								
Overall (n=516)	68.0	30.2	13.8	11.4	5.0	3.1	42.1	5.2
M (n=245)	60.0	27.3	11.0	9.4	6.5	4.9	33.9	4.1
F (n=271)	75.3	32.8	16.2	13.3	3.7	1.5	49.4	6.3

Notes

1.　102 subjects refused to disclose their age.

Table 3: Effects of Sociodemographic Factors on the Total Number of Chronic Diseases

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	Multivariate Forward Stepwise Linear Regressions			
	Coefficients[a]	Beta[b]	P	R square change[c]
Age	0.0251	0.478	<0.001	0.203
Gender (1=male, 2= female)	0.191	0.104	<0.001	0.010
Marital Status (1=married, 2=others)	0.118	0.063	0.003	0.003
Social Class	---	---	---	---
Education	---	---	---	---
Constant	-0.937			

Statistical Notes

a. _Regression coefficients of variables that were statistically significant at the 5% level are shown. The total number of chronic diseases can be estimated by summating the constant and the products of the value and regression coefficient of the independent variables._

b. _Beta is the standardised regression coefficient that indicates the change in standard units of the dependent variable for each increase of one standard unit in the independent variable._

c. _R square change is the proportion of variance in the dependent variable explained by the relevant independent variable._

Table 4:Distribution of Service Utilisation Rates by the Number and Type of Chronic Diseases

| | No. Consultations | | Proportion of Persons | | |
	Annual	Monthly	Hospitalised Last Year	Regular Consultations	Regular Medications
Total Sample (n=2410)	3.73	0.48	4.5%	18.2%	16.6%
No Chronic Disease (n=1349)	2.75	0.28	2.5%	4.3%	2.2%
≥ 1 Chronic Disease (n=917)	5.47	0.81	7.7%	40.9%	39.9%
Total Number of Chronic Disease					
One (n=579)	4.82	0.66	5.9%	29.9%	27.3%
Two (n=226)	5.43	0.82	8.8%	56.2%	54.4%
Three (n=79)	8.90	1.34	8.9%	62.0%	70.9%
Four (n=20)	9.81	2.40	25.0%	80.0%	90.0%
Five (n=10)	0.50	1.50	40.0%	70.0%	80.0%
Six (n=3)	14.00	1.00	33.3%[#]	100%	100%
Specific Diagnosis					
HT (n=271)	6.68	0.81	9.6%	64.2%	73.7%
DM (n=110)	6.95	0.97	17.3%	77.3%	85.5%
Heart (n=94)	7.10	1.36	17.0%	73.1%	77.4%
Pulmonary (n=128)	6.04	0.88	14.2%	30.5%	28.9%
Stroke (n=21)	7.18	0.89	33.3%	100%	95.2%
Joint (n=473)	5.21	0.91	6.1%	37.5%	34.0%
Psychological (n=94)	6.69	1.30	8.5%	42.1%	41.5%
Others (n=225)	6.81	0.95	8.0%	38.7%	36.0%

Statistical Notes

1. *The differences in service utilisation rates between each disease group and the 'no chronic disease' group were statistically significant by the two-sample t tests or Chi square tests, except for the group marked with # (p=0.06, Fisher's Exact Test).*

Table 5: Effects of Chronic Diseases on Service Utilisation Rates

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5a.Multivariate Stepwise Linear/Logistic Regressions on the Total Number of Chronic Diseases[a]
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	Annual Consultation Rate (N=1904)		Monthly Consultation Rate (N=2107)		Hospitalisation Risk (N=2119)
	Coefficients[c]	Beta[d]	Coefficients[c]	Beta[d]	Odds Ratio[e] (95%CI)
Per Chronic Disease	1.724	0.341	0.309	0.248	1.791 (1.527, 2.100))
R^2 Change[f]	0.117		0.065		0.061

5b.Multivariate Stepwise Linear/Logistic Regressions on Chronic Diagnosis[b]
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	Annual Consultation Rate (N=1904)		Monthly Consultation Rate (N=2107)		Hospitalisation Risk (N=2119)
	Coefficients[c]	Beta[d]	Coefficients[c]	Beta[d]	Odds Ratio[e] (95%CI)
HT	2.534	0.172	----	----	----
DM	1.681	0.074	----	----	3.448 (1.812, 6.560)
Heart	----	----	0.521	0.086	2.212 (1.056, 4.634)
Pulmonary	2.223	0.114	0.330	0.067	3.416 (1.868, 6.247)
Stroke	----	----	----	----	5.776 (1.950, 17.116)
Joint	0.954	0.083	0.312	0.110	----
Psychological	1.493	0.062	0.486	0.083	----
Others	1.742	0.112	0.400	0.104	1.894 (1.070, 3.353)
R^2 Change[f]	0.125		0.067		0.085

Statistical Notes

a. *The total number of chronic diseases (continuous) and all sociodemographic variables were entered as independent variables.*

b. *Diagnosis (0=absent, 1=present) and all sociodemographic variables were entered as independent variables.*

c. *Regression coefficients of variables that were statistically significant at the 5% level by multivariate linear regression.*

d. *Beta is the standardised regression coefficient that indicates the change in standard units of the dependent variable for each increase of one standard unit in the independent variable by multivariate stepwise linear regression. .*

e. *The odds ratios of variables that were statistically significant at the 5% level by multivariate stepwise logistic regression.*

f. R^2 change *is the proportion of variance in the dependent variable explained by the relevant independent variables shown. The Nagelkerke R square was used for the logistic regression models.*

Table 6: Mean SF-36 Scores by Number of Chronic Diseases and Diagnosis

	PF	RP	BP	GH	VT	SF	RE	MH
All subjects (N=2410)								
Mean	91.83	82.43	83.98	55.98	60.27	91.19	71.66	72.79
S.D.	12.89	30.97	21.89	20.18	18.65	16.57	38.36	16.57
No Chronic Disease (N=1349)								
Mean	96.12	89.05	89.75	62.12	63.86	92.96	75.61	75.25
S.D.	6.89	24.68	17.21	17.60	17.42	14.27	35.98	14.71
≥1 Chronic Disease (N=917)								
Mean	85.07	71.78	75.49	46.88	55.25	88.81	65.98	69.67
Effect Size	0.86	0.56	0.65	0.76	0.46	0.25	0.25	0.34
Hypertension (N=271)								
Mean	80.89	71.40	76.40	46.34	56.68	88.98	68.02	71.57
Effect Size	1.18	0.57	0.61	0.78	0.38	0.24	0.20	0.22
Diabetes mellitus (N=110)								
Mean	77.36	63.86	72.31	40.76	55.09	86.59	67.27*	71.93[#]
Effect Size	1.46	0.81	0.80	1.06	0.47	0.38	0.22	0.20
Heart disease (N=94)								
Mean	72.55	57.98	67.85	35.04	50.16	84.04	60.99	67.62
Effect Size	1.83	1.00	1.00	1.34	0.73	0.54	0.38	0.46
Pulmonary (N=128)								
Mean	85.94	59.77	72.28	44.20	53.52	84.57	55.99	66.09
Effect Size	0.79	0.95	0.80	0.89	0.55	0.51	0.51	0.55
Stroke (N=21)								
Mean	68.57	58.33	66.48	34.10	55.48	79.76*	58.73[#]	68.38[#]
Effect Size	2.14	0.99	1.06	1.39	0.45	0.80	0.44	0.41
Joint (N=473)								
Mean	81.58	68.39	70.90	44.70	52.93	88.42	65.12	68.80
Effect Size	1.13	0.67	0.86	0.86	0.59	0.27	0.27	0.39
Psychological (N=94)								
Mean	82.55	55.05	70.49	37.10	44.52	80.32	51.06	55.66
Effect Size	1.05	1.10	0.88	1.24	1.04	0.76	0.64	1.18
Others (N=225)								
Mean	86.64	69.11	71.00	44.16	54.16	86.56	63.70	68.50
Effect Size	0.74	0.64	0.86	0.89	0.52	0.39	0.31	0.41

Statistical Notes

1.   _The differences in mean SF-36 scores between the disease group and people without any chronic disease were statistically significant with p<0.01, except for those marked with * (significant with p<0.05) or # (not significant with p>0.05) by the Two-sample t tests._
2.   _Effect size= difference in mean score between the disease and 'no chronic disease' groups / S.D. of all subjects._

Table 7: Effects of Chronic Diseases on SF-36 Scores

7a. Multivariate Stepwise Linear Regression on the Total Number of Chronic Diseases[a]

N=2122	Regression Coefficient[c] (Beta[d])							
	PF	RP	BP	GH	VT	SF	RE	MH
Per Chronic Diseases	-5.16 (-0.37)	-11.67 (-0.35)	-8.48 (-0.35)	-8.47 (-0.38)	-5.92 (-0.29)	-4.46 (-0.25)	-9.76 (-0.23)	-4.66 (-0.26)
R^2 Change[e]	0.274	0.118	0.127	0.162	0.055	0.030	0.017	0.029

7b. Multivariate Stepwise Linear Regression on Diagnosis[b]

N=2122	Regression Coefficient[c] (Beta[d])							
	PF	RP	BP	GH	VT	SF	RE	MH
HT	-3.54 (-0.08)	----	----	-3.70 (-0.06)	----	-2.94 (-0.06)	-8.90 (-0.07)	-2.91 (-0.06)
DM	-4.12 (-0.07)	-10.57 (-0.07)	-6.52 (-0.06)	-9.34 (-0.10)	----	-4.02 (-0.05)	----	----
Heart	-8.67 (-0.13)	-15.17 (-0.09)	-7.79 (-0.07)	-11.10 (-0.10)	-7.16 (-0.07)	-4.17 (-0.05)	----	----
Pulmonary	-4.49 (-0.08)	-18.79 (-0.14)	-10.94 (-0.11)	-9.75 (-0.11)	-4.61 (-0.06)	-5.28 (-0.07)	-11.72 (-0.07)	-5.02 (-0.07)
Stroke	-10.14 (-0.08)	----	----	----	----	----	----	----
Joint	-6.56 (-0.20)	-13.56 (-0.17)	-13.26 (-0.24)	-9.22 (-0.18)	-8.76 (-0.19)	-3.98 (-0.10)	-12.65 (-0.13)	-5.72 (-0.14)
Psychological	-4.62 (-0.07)	-22.71 (-0.14)	-5.85 (-0.05)	-12.20 (-0.12)	-13.94 (-0.14)	-10.11 (-0.12)	-20.91 (-0.11)	-16.64 (-0.19)
Others	-3.06 (-0.07)	-11.25 (-0.11)	-11.87 (-0.16)	-9.95 (-0.14)	-5.47 (-0.09)	-4.22 (-0.08)	-8.41 (-0.06)	-3.57 (-0.06)
R^2 Change[e]	0.128	0.131	0.141	0.164	0.077	0.052	0.046	0.077

Statistical Notes

a. *The total number of chronic diseases (continuous) and all sociodemographic variables were the independent variables.*
b. *Diagnosis (0=absent, 1=present) and all sociodemographic variables were the independent variables.*
c. *Regression coefficients of variables that were statistically significant at the 5% level are shown.*
d. *Beta is the standardised regression coefficient that indicates the change in standard units of the dependent variable for each increase of one standard unit in the independent variable.*
e. *The R^2 change is the proportion of variance in the dependent variable that is explained by the relevant independent variables shown.*