Supplementary S1 The STROBE checklist

STROBE Statement—Checklist of items that should be included in reports of ***cross-sectional studies***

	Item No	Recommendation	Check	Page
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	Yes. We had indicated that this study is a cross-sectional study in title.	Page 1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	Yes. These information was listed in "Abstract".	Page 2
Introduction				
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	Yes. The research about the concordance of chronic conditions among the household members could cause people and health management department to pay attention to the effect of co-residence factor in the prevalence of some chronic diseases.	Page 3
Objectives	3	State specific objectives, including any prespecified hypotheses	Yes. We did effort to test and explore the hypothesis that whether one's chronic conditions are related to the others with chronic conditions living in the same household.	Page 4
Methods				
Study design	4	Present key elements of study design early in the paper	Yes. The data for this study was from the fifth Health Service Survey of Shanghai in 2013 (the extension of China's National Health Service Survey-NHSS), and this is a cross-sectional survey study.	Page5 - Page6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	Yes. This health survey was conducted in Shanghai, China, in 2013. Details could be found in "Data source" section.	Page 5
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	Yes. In our study, we included the households with at least two adults who aged 18 or older.	Page 6
Variables	7	Clearly define all outcomes, exposures,	Yes. We chose five chronic	Page 6

		predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	conditions with high prevalence: hypertension, diabetes, Ischemic heart disease (IHD), cerebrovascular disease (CVD), obesity. Details could be found in "Five chronic conditions" section.	
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	Yes. These five chronic conditions were from the self-reported records in the questionnaires, and we chose these diseases according to the disease coding list of the NHSS.	Page5 - Page6
Bias	9	Describe any efforts to address potential sources of bias	Yes. Some socio-demographic characteristics would be included in our analyses as covariates: Age, gender, education status, marriage status, health insurance status, smoking, drinking.	Page 7
Study size	10	Explain how the study size was arrived at	Yes. A total of 10,198 households (27,014 participants) with at least two adults who aged 18 or older were included in our study, and details could be found in figure 1.	Page8 – Page9, Figure 1
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	Yes. Then the generalized estimating equations (GEE) model with logit link would be used to find out the relationship between one's chronic conditions and the others with chronic conditions living in the same household. And we would estimate these associations in three different household scenes: all household members, dyads of parents and children, and spouses.	Page 8
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for	Yes. Then the generalized estimating equations (GEE)	Page 8

		confounding	model with logit link would be used in our study with adjusting for age, gender, health insurance status, education status, marriage status, drinking and smoking.	
		(*b*) Describe any methods used to examine subgroups and interactions	Yes. The subgroup analyses would be conducted in all household members scene according to two pre-defined stratification factors: sex (male or female), education (illiteracy/primary, secondary, and college).	Page 8
		(*c*) Explain how missing data were addressed	Yes. We did not conducted any statistical model to deal with the missing data because of low missing data rate. The observation with missing data would be excluded from the final analyses.	Page 8
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	Yes. The GEE model would be applicable to household data.	Page 8
		(*e*) Describe any sensitivity analyses	Yes. We also conducted crude GEE models to find out the relationship.	Page 8
Results				
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	Yes. The details could be found in the first paragraph of "Results" and figure 1.	Page 8 – Page 9, Figure 1
		(b) Give reasons for non-participation at each stage	Yes. The details could be found in the first paragraph of "Results" and figure 1.	Page 8 – Page 9, Figure 1
		(c) Consider use of a flow diagram	Yes. The figure 1 is a flow diagram.	Figure 1
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Yes. The details could be found in the first paragraph of "Results" and table 1.	Page 9, Table 1
		(b) Indicate number of participants with missing data for each variable of interest	Yes. The details could be found in the first paragraph of "Results" and figure 1.	Page 8 – Page 9, Figure 1

Outcome data	15*	Report numbers of outcome events or summary measures	Yes. The details could be found in table 1.	Table 1
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Yes. The final conclusion was based on the results of the adjusted models. The results of adjusted model were listed in table 2-4, and those of crude model were available in the supplemental tables.	Table 2 – 4
		(*b*) Report category boundaries when continuous variables were categorized		
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period		
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	Yes. The results of subgroup analyses were shown in figure 2 and supplemental table S2.	Figure2 & Table S2
Discussion				
Key results	18	Summarise key results with reference to study objectives	Yes. We found that the participants who live with the household members with chronic conditions were associated with 46% higher OR of having one or more chronic condition. For these five chronic conditions, the above relationship was observed in each same chronic condition.	Page 11
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	Yes. We discussed four points of limitation in the "Discussion" section.	Page 14
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Yes. The evidence about the effect of co-residence factor in some chronic conditions would suggest that people should pay more attention to their health status, especially those whose household members have chronic conditions. And the mechanisms about these associations should be investigated by further research.	Page 13 – Page 14

Generalisability	21	Discuss the generalisability (external validity) of the study results	Yes. The relationships of chronic conditions among the household members were consistent in three different scenes and subgroups.	Page 13 – Page 14
Other information				
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	This study was conducted under a grant from the Fourth Round of Shanghai Three-year Action Plan on Public Health Discipline and Talent Program: Evidence-based Public Health and Health Economics(No. 15GWZK0901).	Page 16

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.