



Hsing-Yi Chang, Dr. PH

Investigator

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Education

- Dr. PH in in Biostatistics, University of North Carolina at Chapel Hill, U.S.A.
- M.P.H. in Biostatistics, University of North Carolina at Chapel Hill, U.S.A.
- B.S. in Forestry, National Chung-Hsing University, Taiwan

Professional Experiences

- 2013.7-present
Institute of Population Health Sciences, National Health Research Institutes, Taiwan
Investigator
- 2004.4-2013.6
Division of Preventive Medicine and Health Service Researches, Institute of Population Health Sciences, National Health Research Institutes, Taiwan
Associate Investigator
- 2000.11-2005.04
Division of Health Policy Research, National Health Research Institutes, Taiwan
Assistant Investigator

Research Interests

Dr. Chang's research interest is on the time trend and development of health/risk behaviors. To achieve this, she has conducted the National Health Interview Survey (NHIS) since 2001 and the Child and Adolescent Behaviors in Long-term Evolution (CABLE) since 2006. She is also a co-pi in the Nutrition and Health Survey in Taiwan. She is able to apply her training in biostatistics to integrate the survey outcomes for her research interests.

Research Activities & Accomplishment

Using the survey results she is able to examine the temporal changes of health or risk behaviors. Using the longitudinal follow-up data, she examined the development and associated factors of health and risk behaviors. She has worked on risk prediction models providing prediction formula to the Industrial Research Institutes for health screening. Given her training in biostatistics, she is able to apply or modify statistical methods in dealing with complicated epidemiological data, such as comparing surveys using different sampling designs or examining the trajectories of certain behaviors. In addition to individual factors, she also explores the community level effects, such as regional economic, social and political environment on the disease. Those are important in monitoring

effectiveness of health policies and providing evidence for designing prevention and intervention programs. In terms of other methodologies, Dr. Chang has developed method to estimate the distribution of nutrient intakes of the population accounting for large within individual variations. This is applied to the estimation of consumption rates of various food groups, the essential element in risk assessment. She also modified the FAO method in estimating proportion of malnutrition in Taiwan. The resulted calculation method has been used by the Council of Agriculture. She developed method to compare results based on different sampling schemes. That made the international comparisons or examining time trend possible.

Selected Publications

Since Dr. Chang joined NHRI, she has published over 100 peer reviewed articles.

For complete list, please see the National Health Research Institutes Institutional Repository <http://ir.nhri.org.tw/handle/3990099045/661>

Publications in Past 5 years.

1. Tsai, J-D, Chen H-J, Ku M-S, Chen S-M, Hsu C-C, Tung M-C, Lin C-C, **Chang H-Y**, Sheu J-N, 2017, Association between allergic disease, sleep-disordered breathing, and childhood nocturnal enuresis: a population-based case-control study, *Pediatr Nephrol*, DOI 10.1007/s00467-017-3750-0
2. Chang L-Y, **Chang H-Y***, Lin L. N, Wu C-C, Yen L-L, 2017, Disentangling the effects of depression on trajectories of sleep problems from adolescence through young adulthood, *Journal of Affective Disorders*, 217:48-54. DOI 10.1016/j.jad.2017.03.067
3. Li C-L, Chiu Y-C, Bai Y-B, Lin J-D, Stanaway F. **Chang H-Y**, 2017, The co-occurrence of depressive symptoms and cognitive impairment and its relationship with selfcare behaviors among community dwelling older adults with diabetes, *Diabetes Research and Clinical Practice*, 129: 73-78.
4. Yang C-C, Chen Y-H, **Chang H-Y**, 2017, Composite marginal quantile regression analysis for longitudinal adolescent body mass index data, *Statistics in Medicine*, in press
5. Lo YL, Hsieh YT, Hsu LL, Chuang SY, **Chang HY**, Hsu CC, Chen CY, Pan WH, 2017, Dietary Pattern Associated with Frailty: Results from Nutrition and Health Survey in Taiwan, *Journal of the American Geriatrics Society*, in press.
6. Chang L-Y, **Chang H-Y**, Wu W-C, Lin LN, Wu C-C and Yen L-L, 2017, Body mass index and depressive symptoms in adolescents in Taiwan: testing

mediation effects of peer victimization and sleep problems, *International Journal of Obesity*, in press.

7. Chang, H-C, Yang H-C, **Chang H-Y**, Yeh C-J, Chen H-H, Huang K-C, Pan W-H, 2017, Morbid obesity in Taiwan: Prevalence, trends, associated social demographics, and lifestyle factors, *PLoS ONE*, Article number e0169577
8. Chen C-C, Liu K, Hsu C-C, **Chang H-Y**, Chung H-C, Liu J-S, Liu Y-H, Tsai T-L, Liaw W-J, Lin I-C, Wu H-W, Juan C-C, Chiu H-C, Lee MM, Hsiung CA, 2017, Healthy lifestyle and normal waist circumference are associated with a lower 5-year risk of type 2 diabetes in middle-aged and elderly individuals: Results from the healthy aging longitudinal study in Taiwan (HALST), *Medicine*, Article number e6025
9. Yang C-C, Cheng Y-H, & **Chang H-Y**, 2017, Joint regression analysis of marginal quantile and quantile association: application to longitudinal body mass index in adolescents, *JRSS-C Applied Statistics*, in press.
10. Chang L-Y, Wu W-C, Wu, C-C, Lin L. N., Yen L-L, **Chang H-Y***, 2017, The role of sleep problems in the relationship between peer victimization and antisocial behavior: A five-year longitudinal study, *Social Science & Medicine*, 173:126-133. DOI: 10.1016/j.socscimed.2016.11.025
11. Chiang C-Y, **Chang H-Y***, 2016, A Population Study on the time trend of cigarette smoking, cessation, and exposure to secondhand smoking from 2001 to 2013 in Taiwan. *Population Health Metrics*, 14:38. DOI: 10.1186/s12963-016-0109-x
12. Nieh H-P, Wu W-C, Luh D-L, Yen L-L, Hurng B-S and **Chang H-Y**, 2016, Will personal values predict the development of smoking and drinking behaviors? A prospective cohort study of children and adolescents in Taiwan. *Journal of Health Psychology*, doi: 10.1177/1359105316681063
13. Wang H-Y, Chang Y-L, Cheng C-C, Chao M-W, Lin S-I, Pan S-L, Hsu C-C, Liu T-W, Cheng H-C, Tseng C-P, Liu S-J, Tsai H-J, **Chang H-Y***, Hsu J T-A*, 2016, Glucocorticoids may compromise the effect of gefitinib in non-small cell lung cancer, *Oncotarget*, 7(52):85917-85928, DOI: 10.18632/oncotarget.13185 Chuang S-C, Chen H-L, Tseng W-T, Wu I-C, Hsu C-C, **Chang H-Y**, Chen I Y-D, Lee MM, Liu K, and Hsiung CA, 2016, Circulating 25-hydroxyvitamin D and physical performance in older adults: a nationwide study in Taiwan, *AJCN*, in press. doi: 10.3945/ajcn.115.122804
14. Chen, T-Y & **Chang H-Y***, 2016, Developmental Patterns of Cognitive Function and Associated Factors among the Elderly in Taiwan, *Scientific Reports*, 6:33486.

15. Wang H-H, Shyu Y-I L, **Chang H-Y**, Bai Y-B, Stanaway F, Lin J-D, Li C-L, 2016, Prevalence, characteristics, and acute care utilization of disabled older adults with an absence of help for activities of daily living: Findings from a nationally representative survey, *Archives of Gerontology and Geriatrics*, 67(11):28-33.
16. Wu, WC, Luh, DL, Lin, CI, Chiang, YC, Hung, CC, Wang, S, Wu, CC, Hurng, BS, Chang, YH;Yen, LL, **Chang, HY***, 2016, Reciprocal relationship between unhealthy eating behaviours and depressive symptoms from childhood to adolescence: 10-year follow-up of the child and adolescent behaviors in long-term evolution study, *PHN*, 19(9), 1654–1665.
17. Chang, L-Y; Wu C-C; Lin, LN; Yen, L-L; **Chang, HY***, 2016, The effects of sleep problems on the trajectory of antisocial behavior from adolescence through early adulthood in Taiwan: family functioning as a moderator, *SLEEP* 39(7): 1441-1449.
18. Pan S-C, Chou C-C, Chiang Y-T, **Chang H-Y**, Fang C-T, and Lin H-H, 2016, Health Care Visits as a Risk Factor for Tuberculosis in Taiwan: A Population-Based Case–Control Study. *American Journal of Public Health*: 106 (7): 1323-1328.
19. Chiou C-J, Wang H-H, **Chang H-Y***, 2016, Development and testing of a scale for assessing the quality of home nursing, *Geriatrics & Gerontology International*, 16(3):358–364.
20. Chuang SY, Pan W-H, **Chang H-Y**, Wu C-Y, Chen C-Y, Hsu, C-C, 2016, Protective Effect of Calcium Channel Blockers Against Frailty in Older Adults with Hypertension, *JAGS*, 64 (6): 1356-1358.
21. Ssingh, S.M.... **Chang, HY**...2015, Global, regional, and national consumption of sugar-sweetened beverages, fruit juices, and milk: A systematic assessment of beverage intake in 187 countries, *PLoS ONE*. 10(8):Article number e0124845.
22. Lai YH, Leu HB, Yeh WT, **Chang HY**, Pan WH. 2015, Low-normal serum potassium is associated with an increased risk of cardiovascular and all-cause death in community-based elderly. *Journal of the Formosan Medical Association*. 2015 Jun, 114(6):517-525.
23. Li CL, Sheu JT, Wang TA, Wen YP, Chao M, **Chang HY***, 2015, The relationship between healthy lifestyle and hospital utilization among adults with diabetes: Results from a National Cohort in Taiwan. *Asia-Pacific Journal of Public Health*. 2015 Apr, 27(3):303-313.
24. Yu ST, **Chang HY***, Yao KP, Lin YH, Hurng BS, 2015, Validity of EQ-5D in general population of Taiwan: results of the 2009 National Health

Interview and Drug Abuse Survey of Taiwan. *Quality of Life Research*. 24 (10) 2541-2548.

25. Hung C-C, **Chang H-Y***, Luh D-L, Wu C-C, Ye L-L (2015) Do parents play different roles in drinking behaviours of male and female adolescents? A longitudinal follow-up study. *BMJ-open*: 5:e007179
doi:10.1136/bmjopen-2014-007179
26. **Chang, HY**;Wahlqvist, ML;Liu, WL;Lee, MS;Shin, SJ;Li, YS;Chang, CJ;Chang, CT;Fuh, MT;Yang, HJ;Tai, TY;Hsu, CC, 2014, Management trajectories in the type 2 diabetes Integrated Delivery System project in Taiwan: Accounting for behavioral therapy, nutrition education and therapeutics. *APJCN* 23(4):592-606.
27. Shih, YH, **Chang, HY***, Lu, MI, Hurng, BS, 2014, Time trend of prevalence of self-reported cataract and its association with prolonged sitting in Taiwan from 2001 and 2013, *BMC- Ophthalmology*, 14:128
28. Lin L-J, **Chang H-Y**, Luh D-L, Hurng B-S, and Yen L-L, 2014, The Trajectory and the Related Physical and Social Determinants of Body Mass Index in Elementary School Children: Results from the Child and Adolescent Behaviors in Long-Term Evolution Study. *J of Obesity* (2014), Article ID 728762
29. Lin H-H, **Chang H-Y**, Chiang Y-T, Wu M-S, Lin J-T, Liao W-C, 2014, Smoking, Drinking, and Pancreatitis: A Population-Based Cohort Study in Taiwan. *Pancreas*. 43(7):1117-1122.
30. Lin C-Y, Chen K-H, **Chang H-Y**, Tseng F-Y, Chen C-Y, 2014, The relationship between alcohol consumption pattern and healthcare utilization in Taiwan, *TJPH* 33(2):1 97-208 .
31. Wang H-H, Sheu J-T, Shyu Y-I L, **Chang H-Y**, Li C-L, 2014, Geriatric conditions as predictors of increased number of hospital admissions and hospital bed days over one year: Findings of a nationwide cohort of older adults from Taiwan, *AGG*, 59 :169 – 174.
32. Chuang SY, **Chang H-Y**. Lee M-S. Chen R. C-Y, Pan W-H, 2014, Skeletal muscle mass and risk of death in an elderly population, in *Nutrition, Metabolism & Cardiovascular Diseases*. 24(7):784-791.
33. Chen C-Y, Wu C-C, **Chang H-Y***, Yen L-L, 2014, The effects of social structure and social capital on changes in smoking status from 8th to 9th grade: Results of the Child and Adolescent Behaviors in Long-term Evolution (CABLE) study. *Prev. Med*. 62:148-154.
34. Chiou C-J, Lee I., **Chang, H-Y***, 2014, Developing and testing a tool to evaluate the quality of home aid services. *Geriatric Nursing* 35(4):257-263
35. Chiang Y-C, Lee T S-H, Yen L-L, Wu C-C, Lin D-C, Hurng B-S, and **Chang H-Y***, 2013, Influence of stressors and possible pathways of onset of

seventh graders' suicidal ideation in urban and rural areas in Taiwan, BMC-public Health

36. Do R, Willer CJ, Schmidt EM, Sengupta S, Gao C, Peloso GM, Gustafsson S, Kanoni S, Ganna A, Chen J, Buchkovich ML, Mora S, Beckmann JS, Bragg-Gresham JL, **Chang HY.**, et al. 2013, Common variants associated with plasma triglycerides and risk for coronary artery disease. *Nature Genetics*. Oct, 45:1345-1352.
37. Lin HH, Chiang YT, Chuang JH, Yang SL, **Chang HY**, Ezzati M, Murray M. 2013, Exposure to secondhand smoke and risk of tuberculosis: prospective cohort study. *PLoS ONE*. Oct 25, 8(10):Article number e77333.
38. Wu I-C, **Chang H-Y**, Hsu C-C, Chiu Y-F, Yu S-H, Tsai Y-F, Shen S-C, Kuo KN. Kuo, Chen C-Y, Liu K, Lee M M, Hsiung CA. 2013, Association Between Dietary Fiber Intake and Physical Performance in Older Adults: A Nationwide Study in Taiwan, Accepted for publication by PLoS-ONE.
39. Luh D-L, Wu W-C, Yan L-L, and **Chang H-Y***, 2013, Non-response Trajectories of Child and Adolescent Long Term Follow-up Study and Related Socio-demographic Factors. *TJPH*, 32(2):129-139.
40. Lin CH, Wu RM, **Chang HY**, Chiang YT, Lin HH, 2013, Preceding pain symptoms and Parkinson's disease: a nationwide population-based cohort study. *Eur J Nerol*, 20(10):1398-1404
41. Li C-L, **Chang H-Y***, Hsu C-C, Lu R J-f and Fang H-L, 2013, Joint predictability of health related quality of life and leisure time physical activity on mortality risk in people with diabetes, *BMC-PH*, 13:Article number 67.
42. Chuang S-Y, Hsu P-F, **Chang H-Y**, Bai C-H, Yeh W-T, and Pan W-H, 2013, C-reactive protein predicts systolic blood pressure and pulse pressure, but not diastolic blood pressure: the CVDFACTs Study, *American Journal of Hypertension*, 26(5):657-664.
43. Chu DM, Wahlqvist ML, **Chang, HY**, Yeh NH, Lee MS, 2012, Choline and betaine food sources and intakes in Taiwanese, *APJCN*, 21(4):547-557
44. Wahlqvist M.L., Lee M-S, Chuang S-Y, Hsu C-C, Tsai H-N, Yu S-H and **Chang H-Y**, 2012, Increased risk of affective disorders in type 2 diabetes is minimised by sulfonylurea and metformin combination: a population-based cohort study. *BMC-medicine*, 10(1):150
45. Chang F-Y, Chen P-H, Wu T-C, Pan W-H, **Chang H-Y**, Wu S-J, Yeh N-H, Tang R-B, Wu L, James F. E. , 2012, Prevalence of functional gastrointestinal disorders in Taiwan: questionnaire-based survey for adults based on the Rome III criteria. *APJCN* 21 (4):594-600.
46. Pan W-H, Yeh W-T, Chen H-J, Chen, Chuang S-Y, **Chang H-Y**, Chen L, Wahlqvist ML, 2012, The U-shaped relationship between BMI and all-cause mortality contrasts with a progressive increase in medical

expenditure: a prospective cohort study. APJCN 21 (4):577-587.

47. Hsu C. C., **Chang H.Y.**, Huang M. C., Hwang S. J., Yang Y.C., Lee Y. S., Shin S. J., Tai T. Y., 2012, HbA1c variability is associated with microalbuminuria development in type 2 diabetes: a 7 year prospective cohort study, Diabetologia, 55(12):3163-3172
48. Li C-L, Chiu Y-C, **Chang H-Y**, Hsu K-H, Bai Y-B, Wang H-H, 2012, Association of geriatric conditions and cardiovascular diseases with disability in older adults with diabetes: Findings from a nationally representative survey, Geriatrics and Gerontology International, 13(3):563-70
49. Hsu, C-C, Lee C-H, Wahlqvist M.L., Huang H-L, **Chang H-Y**, Chen L, Shih S-F, Shin S-J, Tsai W-C, Cheng T., Huang C-T, Cheng J-S, 2012, Poverty increases type 2 diabetes incidence and inequality of care despite universal health coverage, Diabetes Care, 35(11):2286-2292.
50. Wang WS, Wahlqvist ML, Hsu C-C, **Chang H-Y**, Chang W-C, and Chen C-C, 2012, Age- and Gender-specific Population Attributable Risks of Metabolic Disorders on All-cause and Cardiovascular Mortality in Taiwan, BMC-PH,12:111

Other Academic Activities

Senior Reviewer: National Science Council

Co-Editor: Asian Pacific Journal of Clinical Nutrition

Statistical Editor: Asian Pacific Journal of Clinical Nutrition

Editorial board: Scientific Report

Conference Judge: International Society of Pharmaceutical Outcome Research, American Public Health Association

Member of the Referee Panel for the Food and Health Bureau, Hong-Kong

Other reviewing activities: Public Health Nutrition, Preventive Medicine, Journal of Epidemiology and Community Health, Journal of Official Statistics, Annual of Epidemiology, Diabetes Research and Clinical Practice, Journal of Adolescent Health, Journal of School Health, etc