PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Government's Subsidisation Policy and Utilization of Smoking Cessation Treatments: A Population-Based Cross-sectional Study in Taiwan
AUTHORS	Wang, Sheng-Kuang; Kao, Chi-Wen; Chuang, Hui-Wan; Tseng, Yi-Kai; Chen, Wan-Chun; Yeh, Chien-Chih; Lai, Chung-Yu; Yen, Li-Chen; Chiu, Yu-Lung

VERSION 1 – REVIEW

REVIEWER	Fei Ran Guo National Taiwan University Hospital, Taipei, Taiwan
REVIEW RETURNED	27-Jun-2020

GENERAL COMMENTS	This study used a nationally representative data of Taiwan to analyze the effect of the government's subsidization on smoking cessation treatment utilization. Major revision 1. The title is misleading. Readers will anticipate a study on the effect of smoking cessation. Suggested title "Government's Subsidisation Policy and Utilization of Smoking Cessation Treatments: A Population-Based Study in Taiwan." 2. The authors used "tobacco cessation" and "smoking cessation" alternatively through the whole manuscript, including the title. Please use "smoking cessation" uniformly because it is a more proper term. 3. Is heavy smokers using a pharmacy, and combination of a smoking cessation clinic and a pharmacy after SCPS an important finding? If not, the finding that heavy smokers use more treatment types (all of the three) is sufficient (in table 2). The analysis of heavy smokers, including table 3, did not add value to this study. They could be omitted. 4. According to No 3, the purpose of the study should be modified. Page 8, lines 1-20 could be deleted. The methods should be modified, too. Page 11, lines 49-52. 5. Heavy smokers used more smoking cessation services than light smokers, including any treatment, a smoking cessation clinic, a pharmacy, and the combination of a smoking cessation clinic and a pharmacy. This should be stated in the results (According to table 2). Also in the results of the abstract. (To replace page 3, line 46-52) 6. Page 14 line 10: "Elderly respondents had a higher chance of using a pharmacy and smoking cessation clinic in combination (Table 2)." I did not see a statistically significant trend in table 2. 7. The first paragraph of the discussion should state the important findings of this study and the value of the findings. In my opinion, the significant finding of this study was that the government's subsidization increased the utilization of treatment in heavy

	smokers, but had less impact to light smokers. Though more smokers utilized multiple treatments, i.e., the combination of a smoking cessation clinic and a pharmacy, the portion of the smokers were few (0.5%), and had little influence to the whole study population. 8. Page 26 line 43: according to the previous study, it is not the confidence of the providers should be strengthened, but the incentives of the medical institutions should be enforced to hire more smoking cessation providers. (reference 15). Reference 17: This study was conducted before SCPS and could be used to describe the quality of Outpatient Smoking Cessation Services (OSCS) in the introduction. There should be no reference in the section of the conclusion. Minor revision 9. Page 6 line 4: FCTC came into force in 2005, not 2015. 10. Page 9 line 49: “Study Sample” seems to be better placed in line 24 11. Page10 line 22: The SCPS is not a part of the study methods. I suggest introducing SCPS in the introduction, probably start on page 7, line 21. 12. Page 13 line 22: 12.8% used a smoking cessation clinic, not 12.2% 13. Table 2, page 15 line 1: the subheading “stop smoking clinic” is better to be “smoking cessation clinic” 14. Page 24 line 7: “In addition, a study in the United States used a nationally representative sample database and determined that Medicaid coverage had a positive influence on non-NRT medication use.” It is interesting to know if there is a similar finding in Taiwan. The authors could analyze medication data and add more value to this study. 15. Page 25 line 37-46: “This is the first study of an Asian country with regard to the effect …” this paragraph could be placed in the first paragraph of discussion as the value of this study. 16. Page 26 line 28: After eliminating table 3, the finding could be, “Among heavy smokers, the SCPS had a positive effect on the utilization of smoking cessation resources, including smoking cessation clinics and pharmacies.” Among light smokers, the authors could not conclude that there was no effect because they did not analyze the data individually. 17. Page 26 line 37: “In addition to providing partial subsidies, full financial subsidies should be considered …”. Suggest “Rather than providing …”.

REVIEWER	Nigar Nargis American Cancer Society, USA
REVIEW RETURNED	28-Aug-2020

GENERAL COMMENTS	This is a nicely written paper evaluating the effectiveness of a smoking cessation support program in Taiwan based on sound statistical analysis. However, I have two major concerns regarding the interpretation of results. First, comparison between the pre- and post-SCPS periods can pick up the effects of any macroeconomic shocks or policy changes happening between the two points of observation and bias the estimates. It is not clear to me how the estimate of the effect of SCPS was purged of these other effects. Please clarify. Second, the increase in the percentage of smokers using the

	combination of clinic and pharmacy from 0.3% to 0.7%, although statistically significant, is not a sizable increase. Would you please translate this change in terms of the number of smokers at the population level to understand the population level effect. The change among heavy smokers should be stated separately as well. It is not evident in Table 3. Finally, even though the study sample included adults who had reported being smokers, had quit smoking, or had made a serious attempt to quit smoking (page 8, lines 52-55), it seems that the analysis did not include those who had quit. Please clarify.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Reviewer Name: Fei Ran Guo
Institution and Country: National Taiwan University Hospital, Taipei, Taiwan
Please state any competing interests or state 'None declared': None declared.

This study used a nationally representative data of Taiwan to analyze the effect of the government's subsidization on smoking cessation treatment utilization.

Major revision
1. The title is misleading. Readers will anticipate a study on the effect of smoking cessation.
Suggested title "Government's Subsidisation Policy and Utilization of Smoking Cessation Treatments: A Population-Based Study in Taiwan."
Response: Thank you for the valuable suggestions. We have modified the title as "Government's Subsidisation Policy and Utilization of Smoking Cessation Treatments: A Population-Based Study in Taiwan." (page 1)

2. The authors used "tobacco cessation" and "smoking cessation" alternatively through the whole manuscript, including the title. Please use "smoking cessation" uniformly because it is a more proper term.
Response: Thank you for your kind reminder. We have used "smoking cessation" through the whole manuscript.

3. Is heavy smokers using a pharmacy, and combination of a smoking cessation clinic and a pharmacy after SCPS an important finding? If not, the finding that heavy smokers use more treatment types (all of the three) is sufficient (in table 2). The analysis of heavy smokers, including table 3, did not add value to this study. They could be omitted.
Response: Thank you for the important suggestions. We found that the SCPS had positive effect on the utilisation of smoking cessation treatments among heavy smokers. This implied the policy was more effective for heavy smokers compared with
light smokers. And the heavy smokers were in greater need of cessation treatments because they are less likely to quit successfully than lighter smokers. As a results,we still retain the Table 3.

4. According to No 3, the purpose of the study should be modified. Page 8, lines 1-20 could be deleted. The methods should be modified, too. Page 11, lines 49-52.
Response: Thank you for your comment. We still retain the table 3 and the related contents.

5. Heavy smokers used more smoking cessation services than light smokers, including any treatment, a smoking cessation clinic, a pharmacy, and the combination of a smoking cessation clinic and a

pharmacy. This should be stated in the results (According to table 2). Also in the results of the abstract. (To replace page 3, line 46-52)
Response: Thank you for your suggestions. We have supplemented the contents in the ABSTRACT and RESULTS as follows: “Heavy smokers used more smoking cessation services than light smokers, including any treatment [odds ratio (OR) = 1.594; 95% confidence interval (CI): 1.308-1.942], a smoking cessation clinic [odds ratio (OR) = 1.539; 95% confidence interval (CI): 1.232-1.922], a pharmacy [odds ratio (OR) = 1.632; 95% confidence interval (CI): 1.157-2.302], and the combination of a smoking cessation clinic and a pharmacy [odds ratio (OR) = 4.608; 95% confidence interval (CI): 1.331-15.949] after controlled for the related factors.” (page2 and 12)

6. Page 14 line 10: “Elderly respondents had a higher chance of using a pharmacy and smoking cessation clinic in combination (Table 2).” I did not see a statistically significant trend in table 2.
Response: Thank you for the kind reminder. According to the Table 2, elderly respondents had a lower chance of using a pharmacy and smoking cessation clinic in combination [odds ratio (OR) = 0.938; 95% confidence interval (CI): 0.892-0.987]. We have revised the sentence in the RESULTS as follows: “Elderly respondents had a lower chance of using a pharmacy and smoking cessation clinic in combination [odds ratio (OR) = 0.938; 95% confidence interval (CI): 0.892-0.987] (Table 2)” (page 14)

7. The first paragraph of the discussion should state the important findings of this study and the value of the findings. In my opinion, the significant finding of this study was that the government’s subsidization increased the utilization of treatment in heavy smokers, but had less impact to light smokers. Though more smokers utilized multiple treatments, i.e., the combination of a smoking cessation clinic and a pharmacy, the portion of the smokers were few (0.5%), and had little influence to the whole study population.
Response: Thank you. We have stated the findings among heavy smokers in the first paragraph in the DISCUSSION as follows: “We found the change in utilisation of a pharmacy and combined utilisation of a smoking cessation clinic and pharmacy were significantly increased after the SCPS among heavy smokers. However, the SCPS had no effect on the utilisation of smoking cessation treatment among light smokers (data not shown). Converted to the population level, the number of heavy smokers using a pharmacy and a combination of a smoking cessation clinic and pharmacy increased from 79,208 and 5,281 in 2010-2011 to 110,961 and 20,805 in 2013-2014. This suggests that the subsidisation policy had a greater effect on more dependent smokers. And the SCPS helped the group in greater need of cessation treatments because the heavy smokers are less likely to quit successfully than lighter smokers [14].” (page 35)

8. Page 26 line 43: according to the previous study, it is not the confidence of the providers should be strengthened, but the incentives of the medical institutions should be enforced to hire more smoking cessation providers. (reference 15). Reference 17: This study was conducted before SCPS and could be used to describe the quality of Outpatient Smoking Cessation Services (OSCS) in the introduction. There should be no reference in the section of the conclusion.
Response: Thank you for the valuable suggestions. According to reference 15, we have revised the related contents in the DISCUSSION as follows: “This suggests that the low incentives of the medical institutions to hire smoking cessation providers and provider behaviour are responsible for the insignificant increase in the utilisation of smoking cessation treatment after the SCPS.” (page 37)
In addition, we have revised the CONCLUSIONS as follows: “In addition, the incentives of the medical institutions should be enforced to hire more smoking cessation providers.” (page 39)
According to reference 17, we have supplemented the quality of Outpatient Smoking Cessation Services (OSCS) in the INTRODUCTION as follows: “Physicians should be certificated from a training program to receive reimbursement of the OSCS. A previous study indicated that the training program was effective to increase the physicians’ knowledge and adherence to a practice guideline [11].” (page 5)

Minor revision

9. Page 6 line 4: FCTC came into force in 2005, not 2015.
Response: Thank you for kindly reminds. We have revised the error in the INTRODUCTION as follows: “In 2005, the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC; WHO-FCTC) came into force.” (page 5)

10. Page 9 line 49: “Study Sample” seems to be better placed in line 24
Response: Thank you. We have placed the “Study Sample” on page 9, line 24.

11. Page10 line 22: The SCPS is not a part of the study methods. I suggest introducing SCPS in the introduction, probably start on page 7, line 21.
Response: Thank you. We have placed the “The SCPS” on page 7, line 21.

12. Page 13 line 22: 12.8% used a smoking cessation clinic, not 12.2%
Response: Thank you for kindly reminds. We have revised the sentence in the Use of smoking cessation treatments as follows: “As apparent in Table 2, 18.0% of those attempting to quit used some form of cessation treatment. Specifically, 12.8% used a smoking cessation clinic, 4.7% used a pharmacy, and 0.5% used a combination of a both.” (page 13)

13. Table 2, page 15 line 1: the subheading “stop smoking clinic” is better to be “smoking cessation clinic”
Response: Thank you. We have replaced “stop smoking clinic” with “smoking cessation clinic”.

14. Page 24 line 7: “In addition, a study in the United States used a nationally representative sample database and determined that Medicaid coverage had a positive influence on non-NRT medication use.” It is interesting to know if there is a similar finding in Taiwan. The authors could analyze medication data and add more value to this study.
Response: Thank you. We have described the motivations of our study in the introduction. One was that the subjects of the study in the United States were Medicaid population who were from mostly low-income families. The other was that the study did not evaluate the utilisation of treatments in combination or the difference in utilisation before and after implementation of the subsidisation policy. As a result, the findings of the study may be different from that of the studies in the United States. In addition, we did not analyze medication data because a lack of medication data in the ASBS. We have supplemented the limitation related to lack of the data of medication in the DISCUSSION as follows: “Finally, we did no analysis the use of medications, because the ASBS did not include the medication data. Future research could compare the effect of the subsidisation policy on the use of different cessation medications.” (page 38)

15. Page 25 line 37-46: “This is the first study of an Asian country with regard to the effect …” this paragraph could be placed in the first paragraph of discussion as the value of this study.
Response: Thank you. We have placed “This is the first study of an Asian country with regard to the effect …” in the first paragraph of the discussion.

16. Page 26 line 28: After eliminating table 3, the finding could be, “Among heavy smokers, the SCPS had a positive effect on the utilization of smoking cessation resources, including smoking cessation clinics and pharmacies.” Among light smokers, the authors could not conclude that there was no effect because they did not analyze the data individually.
Response: Thank you. Because the effects of SCPS on the utilization of smoking cessation resources were not significant statistically, we did not show the table in the manuscript. We have supplemented the content in the DISCUSSION as follows: “However, the SCPS had no effect on the utilisation of smoking cessation treatment among light smokers (data not shown).” (page 35)

17. Page 26 line 37: “In addition to providing partial subsidies, full financial subsidies should be considered …”. Suggest “Rather than providing …”.
Response: Thank you. We have revised the sentence in the CONCLUSIONS as follows: “Rather than providing partial subsidies, full financial subsidies should be considered to eliminate financial barriers.” (page 38)

Reviewer: 2
Reviewer Name: Nigar Nargis
Institution and Country: American Cancer Society, USA
Please state any competing interests or state ‘None declared’: None

This is a nicely written paper evaluating the effectiveness of a smoking cessation support program in Taiwan based on sound statistical analysis. However, I have two major concerns regarding the interpretation of results.

First, comparison between the pre- and post-SCPS periods can pick up the effects of any macroeconomic shocks or policy changes happening between the two points of observation and bias the estimates. It is not clear to me how the estimate of the effect of SCPS was purged of these other effects. Please clarify.
Response: Thank you. The tobacco control policy did not change between the pre- and post-SCPS periods. In addition, everyone in Taiwan has the national health insurance (NIH). Because the smoking cessation treatment is provided under the NIH, smokers have the identical chance to use the treatment. So, the influence of any macroeconomic shocks or policy changes may be small.

Second, the increase in the percentage of smokers using the combination of clinic and pharmacy from 0.3% to 0.7%, although statistically significant, is not a sizable increase. Would you please translate this change in terms of the number of smokers at the population level to understand the population level effect. The change among heavy smokers should be stated separately as well. It is not evident in Table 3.
Response: Thank you for valuable comments. We have translated this change in terms of the number of smokers at the population level. We have supplemented the contents in the DISCUSSION as follows: “According to the rate of our study and the number of the population in Taiwan, the number of smokers using a combination of a smoking cessation clinic and pharmacy increased from 10,888 in 2010-2011 to 22,985 in 2013-2014.” (page 36) “Converted to the population level, the number of heavy smokers using a pharmacy and a combination of a smoking cessation clinic and pharmacy increased from 79,208 and 5,281 in 2010-2011 to 110,961 and 20,805 in 2013-2014.” (page 35)
In addition, we have supplemented the change of using smoking cessation treatments among heavy smokers in the Table 3. In addition, we have modified the RESULTS as follows: “Table 3 details the effect of the SCPS on the use of smoking cessation treatment among heavy smokers. The use of only a smoking cessation clinic decreased from 16.2% in 2010-2011 to 13.8% in 2013-2014. The use of only a pharmacy increased from 4.5% in 2010-2011 to 6.4% in 2013-2014. The use of a combination of a smoking cessation clinic and pharmacy increased from 0.3% in 2010-2011 to 1.2% in 2013-2014. After controlling for individual-level characteristics, the SCPS was associated with a significant increase in the use of a pharmacy [OR = 1.676; 95% CI: 1.094–2.569] and a combination of a smoking cessation clinic and a pharmacy [OR = 8.984; 95% CI: 1.914–42.173].” (page 20)

Finally, even though the study sample included adults who had reported being smokers, had quit smoking, or had made a serious attempt to quit smoking (page 8, lines 52-55), it seems that the analysis did not include those who had quit. Please clarify.
Response: Thank you for kindly reminder. Because the smokers in the ASBS were asked the use of smoking cessation in the previous 12 months, we exclude those who have quit smoking for more than

one year. We have supplemented the exclusion criteria in the METHODS as follows: “We analysed data from adults who had reported being smokers, had quit smoking, or had made a serious attempt to quit smoking. The smokers, those who quit smoking for more than one year were exclude.” (page 9)

VERSION 2 – REVIEW

REVIEWER	Fei-Ran Guo National Taiwan Univesity Hospital
REVIEW RETURNED	15-Nov-2020

GENERAL COMMENTS	The manuscript has much improved than the previous version. There are only several minor revisions. 1. Page 7, for SCPS, “every smoker can now take two courses instead of one per year and receive up to either 8 weeks of medication or eight individual counselling sessions per course.” Suggested change “every smoker can now take two courses instead of one per year, and each course provides a combination of 8 weeks of medication and eight individual counselling sessions”. The medication and counseling are provided at the same time. 2. Page 8 “physicians can now prescribe more expensive medications such as varenicline.” Suggested change “physicians can now prescribe more expensive medications such as varenicline at a lower co-payment.” Varenicline could be prescribed in the first generation smoking cessation service as well; just the co-payment was much higher than the second generation payment.

VERSION 2 – AUTHOR RESPONSE

Reviewer: 1
Reviewer Name: Fei-Ran Guo
Institution: National Taiwan Univesity Hospital
Competing interests: None.

Comments to the Author
The manuscript has much improved than the previous version. There are only several minor revisions.

1. Page 7, for SCPS, “every smoker can now take two courses instead of one per year and receive up to either 8 weeks of medication or eight individual counselling sessions per course.” Suggested change “every smoker can now take two courses instead of one per year, and each course provides a combination of 8 weeks of medication and eight individual counselling sessions”. The medication and counseling are provided at the same time.
Response: Thank you. We have revised the sentence in The SCPS as follows: “With the SCPS, every smoker can now take two courses instead of one per year, and each course provides a combination of 8 weeks of medication and eight individual counselling sessions.” (Second-Generation Cessation Payment Scheme, page 7)

2. Page 8 “physicians can now prescribe more expensive medications such as varenicline.” Suggested change “physicians can now prescribe more expensive medications such as varenicline at a lower co-payment.” Varenicline could be prescribed in the first generation smoking cessation service as well; just the co-payment was much higher than the second generation payment.

Response: Thank you. We have revised the sentence in The SCPS as follows: “In addition, the maximum length of a prescription has been extended from 2 to 4 weeks, and physicians can now prescribe more expensive medications, such as varenicline, at a low co-payment.” (Second-Generation Cessation Payment Scheme, page 7-8)